Yarra

Working together for healthy waterways

Catchment Works Program to support the draft Healthy Waterways Strategy

Version published on 20/06/2018
Acknowledgement of Country

The communities, stakeholders and Melbourne Water, who together are responsible for implementing the Healthy Waterways Strategy, acknowledge and respect Wurundjeri and other Traditional Owners and Aboriginal Victorians. We recognise the diversity of their cultures and the deep connections they have with the land and water of the Yarra catchment.

We value partnerships with them for the health of people and country.

The communities, stakeholders and Melbourne Water, who together are responsible for implementing the Healthy Waterways Strategy, pay their respects to Elders past and present, and we acknowledge and recognise the primacy of Wurundjeri and other Traditional Owners’ obligations, rights and responsibilities to use and care for their traditional lands and waters.

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Have your say

There are a number of ways you can have your say on this draft Strategy.

Online
yoursay.melbournewater.com.au/healthy-waterways

Email waterway.strategy@melbournewater.com.au

Phone 131 722

For translating and interpreting services call 131 450. Teletypewriter (TTY) users can phone 133 677.
A shared Strategy

Our rivers, creeks, wetlands and estuaries are shared places of enormous significance for Aboriginal culture, social gathering, the environment and economic productivity.

The community, stakeholders and scientists are telling us our region’s waterways are at a tipping point. Continue as we are and we risk further decline in waterway condition across the region, threatening the significant economic, social, cultural and environmental values our waterways provide.

Working collectively toward prioritised objectives and targets offers everyone a way to not only stem the decline but also unlock the significant natural capital our waterways offer.

The draft Healthy Waterways Strategy was developed using a process of co-design to develop a shared Strategy. By bringing together professional expertise with the lived experience of landholders, community groups, Traditional Owners, developers and other stakeholders, it aims to support collaborative waterways management.

You are invited to participate in finalisation of the Strategy by commenting on the draft Strategy and committing to its implementation. To find out how, visit: yoursay.melournewater.com.au/healthy-waterways

Catchment Works Program

The Catchment Works Program supports the region-wide Strategy by providing a flexible framework for managing waterways in the Yarra Catchment that takes into account variable climatic and development conditions and changing community needs. It includes:

• An overview of the values in the catchment including challenges and opportunities
• A vision, goals and long-term targets (10–50 years) for the catchment
• Long-term targets (10 – 50 years) for waterway values and waterways conditions supported by 10 year performance objectives for 25 sub-catchments, 20 representative wetlands and one estuary in the catchment.

What are waterways?

Throughout this Strategy the term waterway refers collectively to rivers and creeks, wetlands and estuaries
Overview

The Yarra catchment covers an area of 4046 square kilometres. About 55 per cent of the area retains its natural vegetation, 30 per cent is used for agriculture and 15 per cent is urban.

The catchment includes the Yarra (Birrarung) River, which is the major river in the Port Phillip and Westernport region. The river rises in the Great Dividing Range to the east of Warburton and flows 245 kilometres until entering Port Phillip Bay at Newport. It has been identified as a Victorian Heritage River between Warburton and Warrandyte, meaning that it has significant recreation, nature conservation, scenic and cultural heritage attributes. In a first for Australia, it has also been recognised as a single living entity in the Yarra River Protection (Willip-gin Birrarung) Act 2017.

There are over 21,000 wetlands in the Yarra catchment, including approximately 16,000 constructed wetlands and nearly 5,500 natural wetlands that support significant environmental and social values. More than one third of Victoria’s native plant and animal species can be found in the Yarra catchment.

Challenges

Climate modelling shows the catchment is becoming hotter and drier, facing more periods of extreme heat and drought, reductions in annual rainfall and increases in intense rainfall events. The Yarra catchment is likely to grow from some 1.7 million people to over 4 million in the next 50 years, resulting in an additional 30,000 dwellings per year. The North Growth corridor from Wallan to Broadmeadows, Mernda and Epping is the main growth area in the catchment.

A drier climate in an increasingly paved landscape poses a very real threat to the long-term values of the Yarra’s rivers and creeks, wetlands and estuaries while at the same time increasing the importance of those spaces as a green and cool respite from the urban landscape.

Poor quality stormwater inputs, drainage and clearing of vegetation have already impacted many wetlands of the Yarra catchment. Additionally the construction of levees and harvesting of water means river-fed wetlands, including billabongs, are less frequently inundated and less able to act as nursery and breeding areas.

Increased discharges of stormwater, toxicants and litter can threaten the use of waterways and beaches for swimming and boating activities. Inappropriate development along the waterways can limit public access, overshadow the waterways, destroy floodplain habitat and change the character of waterways for the worse for ever.

If current policy and levels of investment are maintained, without improvement, then it is likely that the Yarra catchment will experience declines in environmental and social values over the next 30 years. There is a real need to take action to avoid an otherwise inevitable decline in waterway health.

Opportunities

With collective action, many of the catchment’s significant environmental values can be maintained or improved. For example, managing stormwater in growth areas will support platypus and macroinvertebrates (waterbugs). Fish values can be supported through removal of fish barriers and increasing the water available for the environment. Supporting the extent and quality of streamside vegetation will support bird values. For the catchment’s wetlands, improvements to wetland water regimes and habitat can support frogs and other environmental values.

Wurundjeri and other Traditional Owners and Aboriginal Victorians place cultural importance on the Yarra’s waterways. This draft Strategy needs their involvement to share those values and help with collective decision and actions to conserve them. There is also great opportunity to manage waterway corridors as places for communities to connect, recreate and travel, for example by increasing access along and to waterways, through paths and boat launching facilities.

As the waterway manager for the region, Melbourne Water is ready to implement its share of this Strategy. However, action by Melbourne Water alone is not sufficient to unlock the full value of the catchment’s waterways. If this Strategy is to be effective it needs collective action; from State policy agencies, State regulators, local government and other land managers such as Parks Victoria. Even more so, it needs collective action by the development sector, landholders, Traditional Owners and community groups. Working together we can realise the full value of the catchment’s waterways – economic, cultural, social and environmental.
RIVERS - Plenty Gorge Park, Plenty River
Plenty Gorge Park, with its significant natural and heritage features, offers a wide range of environmental, cultural and social experiences.

WETLANDS - Bolin Bolin Billabong, Yarra River
Bolin Bolin, “place of many lagoons” is a highly significant site to the Wurundjeri and is an integral part of the much larger cultural landscape.

SUB-CATCHMENTS
1. Brushy Creek
2. Darebin Creek
3. Diamond Creek (Rural)
4. Diamond Creek (Source)
5. Gardiners Creek
6. Koonung Creek
7. Little Yarra River and Hoddles Creek
8. Merri Creek (Rural and Forested)
9. Merri Creek (Urban)
10. Mullum Mullum Creek
11. Olinda Creek
12. Plenty River (Source)
13. Plenty River Lower
14. Plenty River Upper
15. Steels and Pauls Creek (Rural)
16. Steels and Pauls Creek (Source)
17. Stringybark Creek
18. Watsons Creek
19. Watts River (Rural)
20. Watts River (Source)
21. Woori Yallock Creek
22. Yarra River Lower
23. Yarra River Middle
24. Yarra River Upper (Rural)
25. Yarra River Upper (Source)

WETLANDS
1. Donnybrook Road Lake
2. Hearnes Swamp
3. Kalkallo Creek Wetland
4. Growling Grass
5. Frog reserve wetlands
6. Ringwood Lake
7. Lillydale Lake
8. Domain Chandon Billabongs
9. Cockatoo Swamp
10. Annuluss Billabong, Yarra Flats
11. Banyule Flats Billabong
12. Bolin Bolin Billabong
13. Burke Road Billabong
14. Hays Paddock Billabong
15. Westgate Park Wetlands
16. Willmsmere Billabong
17. Anderson Creek East retarding basin
18. Spadonis Billabong
19. Yarra Bridge Stream Side Reserve
20. Yering Backswamp, Yarra River

ESTUARIES
1. Yarra River Estuary
Yarra: Co-designing our future

One of Melbourne Water’s responsibilities is to create long-term plans that ensure the Yarra catchment’s waterways are healthy, liveable and accessible for future generations.

Collaborative process

In October 2017, the Yarra Catchment Collaboration commenced the process to refresh the Healthy Waterways Strategy for the Yarra catchment. The collaboration was made up of interested community members, organisations and agencies to:

- Develop a vision and goals for their catchment
- Explore issues, opportunities and aspirations within the catchment
- Identify where stakeholders need to focus their efforts and energy.

In developing this draft Strategy, three workshops were held with over 100 participants representing over 70 organisations attending at least one workshop (the back page lists organisations that participated in this process).

Most recently the collaboration considered preliminary targets for the catchment and feedback from this process was used to develop this draft Strategy.

Collaboration process

- October 2017 - Yarra catchment collaboration commenced
- November 2017 Vision, goals and waterways values defined
- March 2018 Preliminary Targets released
- March 2018 Engagement on Preliminary Targets
- June 2018 Draft Strategy released
- June 2018 Engagement on Draft Strategy
- End-August 2018 Final Strategy
- End-October 2018 Government approval

Figure 1 Collaboration process for Yarra catchment
**Analysing feedback**

A total of 693 comments were received on the preliminary targets for Yarra catchment. Half of these came through the discussions held at the collaboration workshop, a further third came from stakeholder submissions and the remainder through the Your Say page. The comments covered a broad range of issues and opportunities.

The underlying theme was of support for setting targets and performance objectives at the sub-catchment scale. However, there were questions about the appetite for enforcement or policy changes to drive improvements. Another line of comment was that performance objectives were too generic and lacked sufficient detail to inform the types of activities needed to achieve the targets.

“Add compliance and enforcement of developers – currently inadequate – lots of water quality impacts during development”
- from discussion on Plenty River water quality

"Is there a way to improve the stormwater target? If it’s very low, there is no motivation/justification for works. Why would council invest in WSUD and IWM features?"
- from discussion on Mullum Mullum Creek stormwater condition targets

“Increased tree canopy along waterways - a fine sentiment but needs agreed templates of how to achieve revegetation - MWC’s current approach is not going to be successful - many trees are dying”
- stakeholder submission on Merri Creek vegetation targets

This feedback has resulted in performance objectives being improved through additional context - to specify where works are needed, providing quantitative outcomes and making reference to related projects (e.g. extending the Merri Creek shared trail). Targets set in the draft Strategy now reflect a higher level of aspiration.

Maps were updated to show where the best strategic value for works is – including improving vegetation buffers, removing fish barriers and prioritising areas for better stormwater management.

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**Figure 2** Feedback categories and responses

<table>
<thead>
<tr>
<th>Feedback related to conditions</th>
<th>Responses to feedback</th>
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<td>performance objective 37%</td>
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<td>Suggestion 12%</td>
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<td>Litter 5%</td>
<td>Clarification 7%</td>
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<td>Vegetation 17%</td>
<td>Noted/context 31%</td>
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<tr>
<td>Water for Environment 16%</td>
<td>Follow-up/contact 2%</td>
</tr>
<tr>
<td>Water Quality 14%</td>
<td></td>
</tr>
<tr>
<td>Unaligned 6%</td>
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</tr>
</tbody>
</table>
Program logic

The draft Healthy Waterways Strategy has been developed from a program logic based on a shared vision about: achieving a series of goals, identifying waterway values, and setting targets and performance objectives to track progress towards the vision and goals.

Figure 3 Program logic for developing the Strategy
VISION

Our Yarra catchment waterways are increasingly protected, respected and collaboratively cared for by Traditional Owners, government and community as living and highly valued entities. They are a linked network of thriving corridor and in-stream spaces which nurture biodiversity, deepen the relationship between people and nature, build resilience as our population grows and the climate changes, and contribute to wellbeing and liveability. Their ecological health and value to the community continuously improves through rehabilitated waterways and balanced uses.

GOALS

1. The environmental values and significant ecological processes of all of the Yarra Catchment waterways are protected and improved.
2. Riparian and instream habitats provide landscape connectivity, allowing the movement of native species and promoting resilient native flora and fauna populations.
3. Cultural and heritage values are recognised, protected, maintained and enhanced.
4. Communities and individuals connect with and appreciate the values of waterways. Waterway corridors are used appropriately for places of solitude, enjoyment of nature, and active and passive recreation that support mental and physical wellbeing.
5. An engaged and knowledgeable community in the Yarra catchment acts to protect and promote sustained waterway values. Our waterways are a place of continuous learning.
6. The waterways of the Yarra Catchment support natural system maintenance, potable and agricultural water supply, commerce and tourism in a balanced and environmentally sustainable manner.
7. The Yarra waterways are managed in a transparent and collaborative governance framework that allows for strategic, innovative and integrated ways to protect waterways across public and private land.
8. The cultural, historical, amenity values and landscape settings of all modified waterways are protected and improved.
The Yarra Strategic Plan
The Yarra Strategic Plan

In addition to the Healthy Waterways Strategy, Melbourne Water is leading the development of the Yarra Strategic Plan, which will give effect to the community’s long-term vision for the Yarra and provide the basis for the future planning of the river corridor.

Following the Ministerial Advisory Committee recommendations in 2016, the Victorian Government’s Yarra River Action Plan was released in early 2017. It detailed 30 actions to ensure the long-term protection of the Yarra (Birrarung) River, and its environs and parklands. The Action Plan nominated Melbourne Water as the lead agency for seven actions including the development of a 50 year Community Vision for the Yarra, which will become the foundation for an overarching Yarra Strategic Plan. This vision is provided below.

The Healthy Waterways Strategy has a ‘whole of catchment’ view of waterways (including wetlands, estuaries, rivers and creeks). Five catchments are considered in the Healthy Waterways Strategy, the Yarra catchment being one of them.

The Yarra Strategic Plan focuses on a more specific geographical area to the Healthy Waterways Strategy, concentrating on the Yarra River Corridor (rather than the whole of the Yarra catchment) and will consider public open space along the river, statutory planning, and the management of public land and infrastructure.

Wurundjeri have developed their water policy for the Yarra River to inform the Yarra Strategic Plan and the Healthy Waterways Strategy. Their policy - Whabu narrun ba ngargunin twarn Birrarung - states that Wurundjeri interest lies across the catchment as a whole, and that the Wurundjeri will be seeking to ensure that their informed input is considered in all decision-making and planning processes in relation to waterways management.

In developing the vision for the Yarra catchment, a working group considered the Yarra River 50-year community vision to ensure alignment but considered different visions were appropriate given the different contexts and frameworks for which they are written.

Yarra River
50-year community vision

Our Yarra River, Birrarung, is recognised around the world as an iconic example of a nurturing relationship between a river and its community.

Flowing from source to sea, it is the resilient lifeblood of past, present and future generations of Victorians. It connects and enriches our flourishing city, suburbs, regions and beyond.

Our Yarra River, Birrarung, its essential role in our lives and its rich history, are respected, understood and protected. It has cared for us for thousands of years and will for thousands to come.

The vital and continued role of Traditional Owners as custodians of the River, and its role in their culture, is recognised and celebrated.

Our Yarra River, Birrarung and its diverse surrounding landscapes provide a place of refuge, recreation, learning and livelihood. It brings communities together and supports sustainable local economies.

Its clean waters and connected network of thriving green spaces nurture biodiversity, and deepen the relationship between people and nature.

Our Yarra River, Birrarung is respected as a sacred natural living entity and everyone takes responsibility for its care. Its health and integrity are paramount and uncompromised.

What is good for the Yarra is good for all.
Cultural and Economic Values

The holistic approach to waterway management means managing waterways for cultural, economic, social and environmental values. A region-wide approach is used for cultural and economic values.

Cultural values
The cultural values of waterways are based on the physical and spiritual connection of Traditional Owners to their lands and waters. This draft Strategy commits to working with Traditional Owners to reconnect with their Country so that the cultural significance of waterways can be restored.

Cultural heritage includes culturally and spiritually significant places, stories and traditions for past and present Aboriginal communities. Places of significance include sacred sites, ceremonial sites, fish traps, burials, scarred trees, camp sites and settlements.

Performance objectives
• Traditional Owners and Aboriginal Victorians have an increased expertise in Aboriginal culture, contemporary land and water management, waterway science and lore
• Partnership projects are extended or develop into new forms. Expertise developed in one project is applied in others
• Traditional Owner groups and Aboriginal Victorians are supported by industry partners, but set the agenda for waterway management by proactively developing communications, resolutions or project scopes and seeking industry partners
• Aboriginal cultural awareness training is available to all industry professionals and is actively pursued
• Cultural competency is valued as a career skill and leads to ongoing relationships
• Partnerships are fostered between Traditional Owner groups and research groups, and Traditional Owner groups and community groups
• Public events led and/or organised by Traditional Owners are regular and frequent.

Economic values
Good waterway condition provides the essential building block for liveability, growth and prosperity. Rivers provide water for Victoria's five million people and support agriculture, recreational fishing and commercial industries. Declining waterway condition can lead to direct economic costs for communities. Recognising the economic values of waterways is essential to appreciating the wide scope of ecosystem services – the benefits that humans receive from nature.

Goals
• Waterways are recognised as important natural capital providing regionally-significant ecosystem services, value and benefits
• Waterway management will progressively incorporate frameworks for ecosystem accounting and valuation more formally into reporting systems.

Performance objectives
• Incorporate environmental-economic accounting into the ongoing adaptive management and monitoring, evaluation and reporting to support the delivery of the Healthy Waterways Strategy by 2023.

Monitoring, evaluation and reporting (MER)
A detailed monitoring, evaluation and reporting (MER) plan will be developed together with the catchment collaboration forums to support adaptive management from planning to Strategy completion. The monitoring, evaluation and reporting plan will:
• Present the program logic underpinning the draft Strategy
• Clarify the assumptions associated with the program logic and identify strategies to manage potential risks
• Identify the key questions for evaluation and establish processes to monitor progress within the framework of the statewide monitoring program
• Clarify the communication and reporting needs and identify the processes required to support these needs
• Enable lessons learned from monitoring and evaluation to be gathered and inform improvement
• Consider the monitoring, evaluation and reporting needs and practices of collaborating organisations
• Facilitate synergies with the MER undertaken to support the Regional Catchment Strategy.

The MER plan will be reviewed annually to ensure it remains current and relevant to informing adaptive management.
### Waterway values

#### Cultural
- **Yarra (Birrarung)** catchment holds spiritual and cultural significance for Aboriginal Peoples. Most of the over 3000 Aboriginal sites in the catchment occur within 100 metres of waterways (such as scarred trees). Significant sites include Bolin Bolin Billabong and the Coranderrk Aboriginal Station.

#### Economic
- Major drinking water storages for Melbourne are located in the catchment. Numerous farm dams and waterway diversions also supply water for agriculture. Yarra Valley and Dandenong Ranges tourism is a significant economic driver, worth $559 million to the region’s economy in 2015/16.

#### Frogs
- Value varies from very low to very high across the catchment and are overall low, with 15 species expected to occur. The nationally listed Growling Grass Frog occurs mostly along north-western tributaries and in wetlands. Frogs value for wetlands overall is moderate.

#### Macroinvertebrates
- Value varies from high and very high in the upper forested parts of the catchment to low and very low in the lower parts of the catchment, which are increasingly impacted by urban runoff. Average across the catchment is high.

#### Birds
- Value for rivers varies across the catchment from low to very high with 252 species recorded, including 153 riparian specialists and three threatened: Swift Parrot, Australasian Bittern and Helmeted Honeyeater. Scores are overall very low for wetlands, except for the Cockatoo swamp (high value) and very low for the estuary.

#### Fish
- Value for rivers and wetlands is low overall. The Yarra River and its very high fish value estuary play an important role with 14 indigenous freshwater species (including Australian grayling and Australian Mudfish) and several estuarine species such as Black Bream, Yellow Eye Mullet and Mulloway recorded.

#### Vegetation
- Value varies from high in the upper forested areas of the catchment to moderate and low in the rural and urban areas of the catchment. Overall value is moderate for rivers, low for wetlands and very low of the estuary of the Yarra River.

#### Recreation
- Is high for rivers, wetlands and the estuary based on community satisfaction, but is likely to decline in response to population growth and urbanisation.

#### Community connection
- Is high for rivers, wetlands and the estuary based on community satisfaction, but is likely to decline in response to population growth and urbanisation.

#### Platypus
- Value is high overall in the catchment. Platypus are mostly found in tributaries of the middle and upper catchment and the main-stem of the Yarra River.

#### Amenities
- Is high for rivers, wetlands and the estuary based on community satisfaction, but is likely to decline in response to population growth and urbanisation.
Waterway value targets are established to ensure goals are on track. These values reflect community aspirations for waterways and ensure management is directly linked to desired outcomes. Targets for these waterway values are set on a timescale of 10-plus years.

In order to improve waterway values, waterway management focuses on ensuring waterway conditions are appropriate. There are many conditions that influence the waterway values; however, to provide strategic direction for management, a suite of critical conditions is selected to inform management activities. Targets for these waterway conditions are set on a timescale of 10-plus years.

Performance objectives are written to guide activities and to indicate progress towards improving the waterway conditions. Improving the conditions improves the waterway values in the long-term.

Catchment-wide performance objectives - Yarra
The following performance objectives are relevant to the whole of catchment and will be reported against in a similar manner to the performance objectives for the sub-catchments.

These performance objectives will be completed by 2028.

1. Address emerging threats to waterway values using a risk-based approach to protect significant values and habitat through annual planning.
2. Implement climate-ready revegetation by selecting plant species and provenances that are suited to projected future climatic conditions.
3. Protect waterways and Port Phillip Bay by maintaining constructed wetlands for their designed purpose or deliver same outcome by alternative means.
4. Protect waterways and Port Phillip Bay by adopting a risk-based approach to identifying and mitigating sources of water pollution.
5. Improve long term outcomes for waterways by continuing to support capacity building programs for stormwater and rural land managers.
6. Increase participation rates in education, capacity building, incentive programs and citizen science activities to enable greater level of environmental stewardship for our waterways.
7. Develop a better understanding of the potential impacts of emerging contaminants of concern such as microplastics, pesticides and pharmaceuticals.
8. Have in place methods to assess volume and source of litter to inform litter reduction programs.
9. Ensure priority headwater streams are protected from urban development and retained as features in the landscape for environmental and social benefits.
10. Develop a better understanding of groundwater dependent ecosystems and look for opportunities to maintain and improve these.
11. Continue to manage and deliver existing environmental water to the regions rivers and wetlands.
12. Create cooler, greener and more liveable communities through urban cooling.
13. Ensure that the use of recycled water for environmental purposes will be considered on a case-by-case basis and be consistent with the Victorian Government’s policy on the use of recycled water.
14. Improve understanding of existing rules around land management practices and increase resourcing for enforcement, capacity building and behaviour change.
15. Provide systems to share knowledge and information between communities and stakeholders to empower communities to participate and influence waterways management.
• Progressively implement stormwater harvesting, focusing on rural townships along the Middle and Upper Yarra River, Woori Yallock, Olinda Creek catchments and new urban areas in the Upper Merri and Darebin Creek catchments. Once this catchment has reached its anticipated long term urban footprint (2050), this will require around 37.8 GL/year of stormwater harvested and 10.7 GL/year infiltrated. Ensure directly connected imperviousness (DCI) levels in these priority catchments do not increase beyond current levels and headwater streams are retained as features in the landscape for environmental and social benefits.

• Investigate options to increase environmental water reserve by 10 GL/year by 2028 to meet ecological watering objectives and cover projected shortfalls. This will benefit the middle Yarra River. Any water recovery for the environment will be considered through sustainable water strategies, markets and use of alternative water.

• Identify opportunities to maintain or improve the flow regime in refuge reaches to support instream values.

• Identify opportunities to reduce the key threat of flow stress on waterways by addressing causal factors such as farm dams, climate change, diversions or urbanisation.

• Establish 425 km and maintain 1679 km of continuous vegetated buffers (using EVC benchmarks and to at least a level 3 vegetation quality) along at least 80% of priority reaches. In addition, increase vegetation cover in existing and planned urban areas by 19 km to support social values.

• Maintain 735 km of high and very high quality vegetation (vegetation quality levels 4 and 5) through effective monitoring and management of threats.

• Increase access along waterways by 41 km by improving connections with existing path networks and extending paths into new urban area, and establish new boat launch facilities at key locations along the Yarra River to improve access for on-water activities.

• Reduce nutrient and sediment runoff from rural land through improved management of 1800 ha of land including works to protect and increase vegetation along headwater streams.

• Provide connectivity for fish along major waterways through removal of 6 barriers by 2028. This will improve fish passage in several areas, including Darebin Creek.

• Conserve all currently listed water dependent species and communities (16 fauna species, 150 flora species and 39 EVCs) through habitat protection, research and monitoring.
Rivers and Creeks
Sub-catchments

Brushy Creek
Darebin Creek
Diamond Creek (Rural)
Diamond Creek (Source)
Gardiners Creek
Koonung Creek
Little Yarra River and Hoddles Creek
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Woori Yallock Creek
Yarra River Lower
Yarra River Middle
Yarra River Upper (Rural)
Yarra River Upper (Source)
Rivers and Creeks

Rivers and Creeks value targets

Potential trajectory
The draft targets developed through collaborative actions

Current state
Of Waterways Values

Current trajectory
The likely outcome if current policies and effort continue

Very High  High  Moderate  Low  Very Low

Sub-catchment averaged by stream length (km)

Rivers and Creeks condition targets

Potential trajectory
The draft targets developed through collaborative actions

Current state
Of Waterways Values

Current trajectory
The likely outcome if current policies and effort continue

Very High  High  Moderate  Low  Very Low

Sub-catchment averaged by stream length (km)
Brushy Creek Sub-catchment

Brushy Creek rises in Mooroolbark and joins the Yarra River at Wonga Park. Tributaries of Brushy Creek include Mooroolbark, Lincoln Road, Five Ways and Warriien Main Road drains.

PERFORMANCE OBJECTIVES

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<tr>
<th>PO-ID</th>
<th>Condition Supported</th>
<th>Performance Objectives</th>
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<tbody>
<tr>
<td>1</td>
<td>Stormwater</td>
<td>Prevent decline in stormwater condition in the Yarra River, treat urban development so directly connected imperviousness (DCI) of Brushy Creek remains below 13% at confluence with Yarra River. For every hectare of new impervious area, this requires harvesting around 5.5 ML/y and infiltrating 1.9 ML/y. This is about to 2.6 GL/y and 0.9 GL/y for full development to urban growth boundary.</td>
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<td>2</td>
<td>Vegetation Extent</td>
<td>Establish a continuous riparian vegetated buffer (1 km) and maintain existing vegetation (1 km) along priority reaches (using EVC benchmarks to at least a level 3 vegetation quality). In addition to improve social values increase vegetation cover in existing and planned urban areas by 1 km.</td>
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<tr>
<td>3</td>
<td>Water for Environment</td>
<td>Identify opportunities to maintain or improve the flow regime in refuge reaches to support platypus populations.</td>
</tr>
<tr>
<td>4</td>
<td>Water Quality - Environmental</td>
<td>Protect water quality for Port Phillip Bay and waterways by maintaining the current quality of discharges from sewage treatment plants (and reducing where possible) ensuring they are released in a manner that ensures environmental values are supported in the waterway.</td>
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<tr>
<td>5</td>
<td>Access</td>
<td>Increase access along waterways (about 1 km of path) by filling gaps and improving connections with existing path network.</td>
</tr>
<tr>
<td>6</td>
<td>Participation</td>
<td>Increase participation rates from very low to moderate; support community groups, connect with growth area communities and build capacity of land owners through rural programs. Increase support for community/environment groups as population increases.</td>
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**Targets**

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<tr>
<th>Waterway values targets</th>
<th>Waterway management focuses on ensuring waterway conditions are appropriate to improve waterway values.</th>
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<tr>
<td>10 - 50 years</td>
<td>Guide activities and indicate progress towards improving the waterway conditions.</td>
</tr>
<tr>
<td>10+ years</td>
<td>Guide activities and indicate progress towards improving the waterway conditions.</td>
</tr>
</tbody>
</table>

**How to read the targets scores?**

- **Current state**: current score of waterway values and conditions
- **Current trajectory**: long-term scores if current policies and effort continue
- **Potential trajectory**: targets for the long-term scores to be achieved through implementing the Strategy

**Score key:**

- Very Low
- Low
- Moderate
- High
- Very High

For description of scores see metrics tables at end of document
Identify opportunities to maintain or improve the flow regime in refuge reaches to support platypus populations.

Increase participation rates from very low to moderate; support community groups, connect with growth area communities and build capacity of land.

Increase access along waterways (about 1 km of path) by filling gaps and improving connections with existing path network.

Protect water quality for Port Phillip Bay and waterways by maintaining the current quality of discharges from sewage treatment plants (and reducing where possible). In addition to improve social values increase vegetation cover in existing and planned urban areas by 1 km.

Brushy Creek Sub-catchment

WATERWAY CONDITIONS (10+ YEAR TARGETS)

Waterway

Current state

Potential trajectory

Stormwater Condition is measured by directly connected imperviousness (DCI), which is the proportion of the impervious surface in the catchment that is directly connected to a stream through a conventional drainage connection. The current state is very low and the target is low.

Physical form is the degree of geomorphic naturalness combined with likelihood of erosion occurring along bed or banks of waterways. The current state is high and the target is high.

Water for environment indicates compliance with flow requirements of freshwater river systems. These are identified through FLOWS method, or (where there is no flow study) Flow Stress Ranking (FSR), which indicates the level of threat to river health based on the level of water extractions by rural, urban and industry users. The current state is moderate and the target is low.

Vegetation Quality is a description of quality of vegetation relative to Ecological Vegetation Classes (EVCs) and accounting for grassland or sparsely treed woodland communities which do not exhibit 100 per cent canopy cover. The current state is low and the target is high.

Vegetation Extent denotes the percentage of reach that has continuous indigenous vegetation cover within 20 metres either side of the stream. The current state is moderate and the target is low.

Instream Connectivity is measured by the proportion of waterway length within the management unit that is free from barriers to fish movement. The current state is low and the target is moderate.

Water Quality (Environmental) indicates compliance with the State Environment Protection Policy (SEPP) Waters of Victoria environmental water quality objectives (EPA Water Quality Index) using the Yarra and Bay Report Card Scoring Method. The current state is very low and the target is low.

Access to the waterway and riparian corridor supports a range of on water, in water and beside water experiences and is an enabling condition for all three social values. The current state is very low and the target is high.

Aesthetics (Litter) is a strong indicator of stream health – clean waterways are healthy waterways and aesthetically pleasing. Litter detracts from the sense of naturalness and creates a perception that a place is uncareed for. It also detracts from the enjoyment of active and passive recreation. The current state is moderate and the target is high.

Water Quality (Recreational) is critical to minimise human health risks. Exposure to pathogens (disease causing microorganisms) via primary (e.g. swimming) and/or secondary (e.g. boating) can lead to illness. Water quality guidelines set water standards for primary and secondary contact. The current state is low and the target is low.

Participation in waterway management creates and enhances a sense of community. Similarly, citizen science strengthens social capital by increasing knowledge of environmental / ecosystem services, skills and capacities, allowing people to meet and enhance social networks. The current state is very low and the target is high.
Darebin Creek rises near Woodstock on Melbourne’s northern outskirts. The creek flows through Essing, Reservoir and Heidelberg West before joining the Yarra River at Alphington.

**Performance Objectives**

<table>
<thead>
<tr>
<th>PO-ID</th>
<th>Condition Supported</th>
<th>Performance Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Water for Environment</td>
<td>Identify opportunities to reduce the key threat of summer low flow stress by addressing causal factors such as farm dams, climate change, diversions or urbanisation.</td>
</tr>
<tr>
<td>2</td>
<td>Instream Connectivity</td>
<td>Increase instream connectivity provide fish passage along Darebin Creek from the confluence with the Yarra River to the upper reaches (remove 2 fish barriers)</td>
</tr>
<tr>
<td>3</td>
<td>Stormwater</td>
<td>Prevent decline in stormwater condition, treat urban development within Darebin Creek and Findons Creek catchments so directly connected imperviousness (DCI) remains below 2% in Darebin Creek at McDonalds Road (Epping). For every hectare of new impervious area, this requires harvesting around 4.5 ML/y and infiltrating 1.1 ML/y, which is about 4.5 GL/y and 1.1 GL/y for full development out to urban growth boundary.</td>
</tr>
<tr>
<td>4</td>
<td>Vegetation Extent</td>
<td>Establish a continuous riparian vegetated buffer (33 km) and maintain existing vegetation (2 km) along priority reaches (using EVC benchmarks to at least a level 3 vegetation quality). In addition to improve social values increase vegetation cover in existing and planned urban areas by 1 km</td>
</tr>
<tr>
<td>5</td>
<td>Vegetation Quality</td>
<td>Maintain or achieve high and very high quality vegetation (Vegetation Quality data level 4 and 5 - currently 6 km) through effective monitoring and management of threats including protection of endangered EVCs in these reaches. Fill data gaps and ensure additional high quality reaches are also protected.</td>
</tr>
<tr>
<td>6</td>
<td>Physical form</td>
<td>Investigate and mitigate threats to physical form and other high values (including impacts of urbanisation)</td>
</tr>
<tr>
<td>7</td>
<td>Access</td>
<td>Increase access along waterways from 50% to 57% (about 5 km of path) by filling gaps and improving connections with existing path network</td>
</tr>
<tr>
<td>8</td>
<td>Participation</td>
<td>Increase participation rates from very low to high; support community groups, citizen science programs and rural programs in upper catchment. Increase participation through Darebin Creek Management Committee.</td>
</tr>
</tbody>
</table>

**Targets**

<table>
<thead>
<tr>
<th>Waterway values targets</th>
<th>Waterway conditions targets</th>
</tr>
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<tbody>
<tr>
<td>10 - 50 years</td>
<td>10+ years</td>
</tr>
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</table>

**How to read the targets scores?**

- **Current state** - current score of waterway values and conditions
- **Current trajectory** - long-term scores if current policies and effort continue
- **Potential trajectory** - targets for the long-term scores to be achieved through implementing the Strategy

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<th>Score key:</th>
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<th>High</th>
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For description of scores see metrics tables at end of document.
## TARGETS SCORES

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<tr>
<th>Current trajectory</th>
<th>Potential trajectory</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="#" alt="Green" /></td>
<td><img src="#" alt="Yellow" /></td>
</tr>
<tr>
<td><img src="#" alt="Green" /></td>
<td><img src="#" alt="Yellow" /></td>
</tr>
</tbody>
</table>

### WATERWAY CONDITIONS (10+ YEAR TARGETS)

- **Physical form** is the degree of geomorphic naturalness combined with the likelihood of erosion occurring along bed or banks of waterways. The current state is high and growth in the target is moderate.
- **Water for environment** indicates compliance with flow requirements of freshwater river systems. These are identified through FLOWS methods, or (where there is no flow study) Flow Stress Ranking (FSR), which indicates the level of threat to river health based on the level of water extractions by rural, urban, and industry users. The current state is high and the target is high.
- **Vegetation Quality** is a description of quality of vegetation relative to Ecological Vegetation Classes (EVCs) and accounting for grassland or sparsely treed woodland communities which do not exhibit 100% canopy cover. The current state is low and the target is moderate.
- **Vegetation Extent** denotes the percentage of reach that has continuous indigenous vegetation cover within 20 metres either side of the stream. The current state is low and the target is high.
- **Instream Connectivity** is measured by the proportion of waterway length within the management unit that is free from barriers to fish movement. The current state is low and the target is high.
- **Water Quality (Environmental)** indicates compliance with the State Environment Protection Policy (SEPP) Waters of Victoria environmental water quality objectives (EPA Water Quality Index) using the Yarra and Bay Report Card Scoring Method. The current state is very low and the target is low.
- **Access to the waterway and riparian corridor** supports a range of on-water, in-water and beside-water experiences and is an enabling condition for all three social values. The current state is moderate and the target is very high.
- **Aesthetics (Litter)** is a strong indicator of stream health – clean waterways are healthy waterways and aesthetically pleasing. Litter detracts from the sense of naturalness and creates a perception that a place is uncurated. It also detracts from the enjoyment of active and passive recreation. The current state is moderate and the target is high.
- **Water Quality (Recreational)** is critical to minimise human health risks. Exposure to pathogens (disease-causing microorganisms) via primary (e.g., swimming) and/or secondary (e.g., boating) can lead to illness. Water quality guidelines set water standards for primary and secondary contact. The current state is low and the target is high.

### WATERWAY VALUES TARGETS (10-50 YEARS)

- **Access to the waterway and riparian corridor** supports a range of on-water, in-water and beside-water experiences and is an enabling condition for all three social values. The current state is very low and the target is very high.
- **Vegetation Quality** is a description of quality of vegetation relative to Ecological Vegetation Classes (EVCs) and accounting for grassland or sparsely treed woodland communities which do not exhibit 100% canopy cover. The current state is low and the target is moderate.
- **Macroinvertebrates** are the presence and diversity of aquatic invertebrates, which are indicators of waterway health. The current state is very low and the target is high.
- **Platypus** is a species-specific objective for platypus conservation. The current state is very low and the target is high.
- **Macroinvertebrates** are the presence and diversity of aquatic invertebrates, which are indicators of waterway health. The current state is very low and the target is high.
- **Vegetation score** is low resulting from large-scale urbanisation and persistent threats such as weeds and pest animals. Without intervention, this score is predicted to reduce to very low. There are 36 known listed water-dependent species. Long-term outcomes are to maintain current score by managing threats.
- **Amenity** is based on the level of satisfaction, currently high but likely to decline in long-term if environmental values decline; target is to improve to very high.
- **Community connection** is based on the level of satisfaction, currently high but likely to decline in long-term if opportunities don’t keep up with population growth; target is to maintain as high.
- **Recreation** is based on the level of satisfaction, currently high but likely to decline in long-term if supply doesn’t keep up with population growth; target is to improve to very high.

### WATERWAY VALUES TARGETS (10+ YEAR TARGETS)

- **Fish** score is very low due to a lack of suitable instream and riparian habitat and impacts from urban stormwater. The Yarra River population may occasionally use the lower reaches near the confluence. It is unlikely to be feasible to increase score in long term without substantial improvements to their habitat.
- **Macroinvertebrates** score is low due largely to impacts of urbanisation and will decline further with increased urbanisation and climate change. Managing the impacts of urban stormwater and improving habitat through revegetation is expected to maintain existing score.
- **Vegetation score** is low resulting from large-scale urbanisation and persistent threats such as weeds and pest animals. Without intervention, this score is predicted to reduce to very low. There are 36 known listed water-dependent species. Long-term outcomes are to maintain current score by managing threats.
- **Amenity** is based on the level of satisfaction, currently high but likely to decline in long-term if environmental values decline; target is to improve to very high.
- **Community connection** is based on the level of satisfaction, currently high but likely to decline in long-term if opportunities don’t keep up with population growth; target is to maintain as high.
- **Recreation** is based on the level of satisfaction, currently high but likely to decline in long-term if supply doesn’t keep up with population growth; target is to improve to very high.

### WATERWAY VALUES (DAREBIN CREEK SUB-CATCHMENT)

- **Birds (riparian)** is moderate, which means most expected species occur but some of these only infrequently. Score is likely to decline with fewer expected species because of habitat degradation due to increased disturbance and introduced predators as well as effects of climate change. Target is to maintain as moderate.
- **Fish** score is very low due to lack of suitable instream and riparian habitat and barriers to migration. There are no listed threatened species. The slight increase in current trajectory is driven by predicted habitat suitability for common and widespread species. Improvements to vegetation, flows (particularly urban stormwater) and removal of fish barriers are expected to increase score to moderate in long term.
- **Frogs** score is very low. Combined effects of reduced rainfall and flows, and urban land use intensification mean score is likely to remain in a very low condition. Significant species include Growing Grass Frog.
- **Macroinvertebrates** score is low due largely to impacts of urbanisation and will decline further with increased urbanisation and climate change. Managing the impacts of urban stormwater and improving habitat through revegetation is expected to maintain existing score.
- **Platypus** score is very low due to a lack of suitable instream and riparian habitat and impacts from urban stormwater. The Yarra River population may occasionally use the lower reaches near the confluence. It is unlikely to be feasible to increase score in long term without substantial improvements to their habitat.
- **Macroinvertebrates** score is low due largely to impacts of urbanisation and will decline further with increased urbanisation and climate change. Managing the impacts of urban stormwater and improving habitat through revegetation is expected to maintain existing score.
- **Vegetation score** is low resulting from large-scale urbanisation and persistent threats such as weeds and pest animals. Without intervention, this score is predicted to reduce to very low. There are 36 known listed water-dependent species. Long-term outcomes are to maintain current score by managing threats.
- **Amenity** is based on the level of satisfaction, currently high but likely to decline in long-term if environmental values decline; target is to improve to very high.
- **Community connection** is based on the level of satisfaction, currently high but likely to decline in long-term if opportunities don’t keep up with population growth; target is to maintain as high.
- **Recreation** is based on the level of satisfaction, currently high but likely to decline in long-term if supply doesn’t keep up with population growth; target is to improve to very high.

### How to read the targets scores?

- **Current state** indicates the current condition of the waterway.
- **Current trajectory** indicates the trend of the waterway condition over time.
- **Potential trajectory** indicates the expected condition of the waterway if interventions are implemented.

### Water for Environment

- **Maintain or achieve high and very high quality vegetation (Vegetation Quality data level 4 and 5 – currently 6 km)** through effective monitoring and barriers.
- **Prevent decline in stormwater condition, treat urban development within Darebin Creek and Findons Creek catchments so directly connected to a stream through a conventional drainage connection. The current state is low and the target is low.**
- **Stormwater Condition** is measured by directly connected imperviousness (DCI), which is the proportion of the impervious surface in the catchment that is directly connected to a stream through a conventional drainage connection. The current state is low and the target is low.
- **Physical form** is the degree of geomorphic naturalness combined with the likelihood of erosion occurring along bed or banks of waterways. The current state is high and the target is high.
- **Water for environment** indicates compliance with flow requirements of freshwater river systems. These are identified through FLOWS methods, or (where there is no flow study) Flow Stress Ranking (FSR), which indicates the level of threat to river health based on the level of water extractions by rural, urban, and industry users. The current state is high and the target is high.
- **Vegetation Quality** is a description of quality of vegetation relative to Ecological Vegetation Classes (EVCs) and accounting for grassland or sparsely treed woodland communities which do not exhibit 100% canopy cover. The current state is low and the target is moderate.
- **Vegetation Extent** denotes the percentage of reach that has continuous indigenous vegetation cover within 20 metres either side of the stream. The current state is low and the target is very high.
- **Instream Connectivity** is measured by the proportion of waterway length within the management unit that is free from barriers to fish movement. The current state is low and the target is moderate.
- **Water Quality (Environmental)** indicates compliance with the State Environment Protection Policy (SEPP) Waters of Victoria environmental water quality objectives (EPA Water Quality Index) using the Yarra and Bay Report Card Scoring Method. The current state is very low and the target is low.
- **Access to the waterway and riparian corridor** supports a range of on-water, in-water and beside-water experiences and is an enabling condition for all three social values. The current state is moderate and the target is very high.
- **Aesthetics (Litter)** is a strong indicator of stream health – clean waterways are healthy waterways and aesthetically pleasing. Litter detracts from the sense of naturalness and creates a perception that a place is uncared for. It also detracts from the enjoyment of active and passive recreation. The current state is moderate and the target is high.
- **Water Quality (Recreational)** is critical to minimise human health risks. Exposure to pathogens (disease-causing microorganisms) via primary (e.g., swimming) and/or secondary (e.g., boating) can lead to illness. Water quality guidelines set water standards for primary and secondary contact. The current state is low and the target is high.
- **Participation in waterway management creates and enhances a sense of community. Similarly, citizen science strengthens social capital by increasing knowledge of environmental/ecosystem services, skills and capacities, allowing people to meet and enhance social networks. The current state is very low and the target is high.**
**Diamond Creek (Rural) Sub-catchment**

Diamond Creek rises in the Kinglake National Park near St Andrews and flows through Hurstbridge and Diamond Creek townships before joining the Yarra River at Eltham. Arthurs Creek rises in the Kinglake National Park near Kinglake and flows through Strathewen and Arthurs Creek before joining Diamond Creek in Hurstbridge. Other tributaries include Kangaroo Creek, Running Creek, Stewart Gully, Deep Creek and Smiths Gully.

### PERFORMANCE OBJECTIVES

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<th>Performance Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Water for Environment</td>
<td>Identify opportunities to maintain or improve flow regime in refuge reaches to support in stream values and platypus populations. Reduce key threat of summer low flow stress by addressing causal factors such as farm dams, climate change, diversions and urbanisation.</td>
</tr>
<tr>
<td>2</td>
<td>Vegetation Extent</td>
<td>Establish a continuous riparian vegetated buffer (27 km) and maintain existing vegetation (70 km) along priority reaches (using EVC benchmarks to at least a level 3 vegetation quality).</td>
</tr>
<tr>
<td>3</td>
<td>Vegetation Quality</td>
<td>Maintain or achieve high and very high quality vegetation (Vegetation Quality data level 4 and 5 - currently 4 km) through effective monitoring and management of threats including protection of endangered EVCs in these reaches. Fill data gaps and ensure additional high quality reaches are also protected.</td>
</tr>
<tr>
<td>4</td>
<td>Physical form</td>
<td>Investigate and mitigate threats to physical form and other high values (particularly along tributaries and from urbanisation)</td>
</tr>
<tr>
<td>5</td>
<td>Access</td>
<td>Increase access along waterways (about 5 km of path) by improving connections with existing path network and extending paths into new urban areas</td>
</tr>
<tr>
<td>6</td>
<td>Participation</td>
<td>Increase participation rates from moderate to very high; support community groups, connect with growth area communities and build capacity of land owners through rural programs. Increase support for community/environment groups and promotion of high value areas (e.g. Kinglake National Park) as population increases.</td>
</tr>
</tbody>
</table>

### Targets

<table>
<thead>
<tr>
<th>Waterway values targets</th>
<th>Waterway value targets are established to ensure goals are on track.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 - 50 years</td>
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<table>
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<th>Performance objectives</th>
<th>Guide activities and indicate progress towards improving the waterway conditions.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 10 years</td>
<td></td>
</tr>
</tbody>
</table>

**How to read the targets scores?**

Current state - current score of waterway values and conditions

Current trajectory - long-term scores if current policies and effort continue

Potential trajectory - targets for the long-term scores to be achieved through implementing the Strategy

**Score key:**

- Very Low
- Low
- Moderate
- High
- Very High

For description of scores see metrics tables at end of document.
PO-ID: Condition Supported Performance Objectives

1. Increase access along waterways (about 5 km of path) by improving connections with existing path network and extending paths into new urban areas.

2. Investigate and mitigate threats to physical form and other high values (particularly along tributaries and from urbanisation).

3. Replace the terminal embankments of the dam on the Strathewen Creek and ensure compatible use of land (e.g. parcels of land covered by water) functions to support ongoing water levels for recreation.


5. pony fish score is very low since very few of the expected species of frog were recorded. With appropriate management score could be improved to low.

6. Macroinvertebrates score is moderate as a result of a lack of upstream and riparian habitat, and stream flows. Improvements to riparian vegetation and flows will increase macroinvertebrate score to high in long term.

7. Platypus score is very low due to lack of suitable upstream and riparian habitat and low flows. Improvements to habitat and maintenance of stream flows will increase score to low in long term.

8. Vegetation score is low. Catchment-scale impacts and persistent threats such as stock access, pest plants and animals have degraded riparian vegetation. Climate change and unmitigated threats will reduce score to very low. There are 28 known water dependent listed species. Long term outcome is to increase score to moderate through protecting the best and enhancing priority reaches.

9. Amenity, which is based on level of satisfaction, is currently very high but likely to decline in long-term if environmental values decline; target is to maintain as very high.

10. Community connection, which is based on level of satisfaction, is currently high but likely to decline in long-term if opportunities don’t keep up with population growth; target is to maintain as high.

11. Recreation, which is based on level of satisfaction, is currently high but likely to decline in long-term if supply doesn’t keep up with population growth; target is to improve to very high.

12. Stormwater Condition is measured by directly connected imperviousness (DCI), which is the proportion of the impervious surface in the catchment that is directly connected to a stream through a conventional drainage connection. The current state is high and the target is high.

13. Physical form is the degree of geomorphic naturalness combined with likelihood of erosion occurring along bed or banks of waterways. The current state is moderate and the target is moderate.

14. Water for environment indicates compliance with flow requirements of freshwater river systems. These are identified through FLOWS method, or (where there is no flow study) Flow Stress Ranking (FSR), which indicates the level of threat to river health based on the level of water extractions by rural, urban and industry users. The current state is high and the target is high.

15. Vegetation Quality is a description of quality of vegetation relative to Ecological Vegetation Classes (EVCs) and accounting for grassland or sparsely treed woodland communities which do not exhibit 100 per cent canopy cover. The current state is low and the target is moderate.

16. Vegetation Extent denotes the percentage of reach that has continuous indigenous vegetation cover within 20 metres either side of the stream. The current state is high and the target is high.

17. Instream Connectivity is measured by the proportion of waterway length within the management unit that is free from barriers to fish movement. The current state is low and the target is very high.

18. Water Quality (Environmental) indicates compliance with the State Environment Protection Policy (SEPP) Waters of Victoria environmental water quality objectives (EPA Water Quality Index) using the Yarra and Bay Report Card Scoring Method. The current state is moderate and the target is moderate.

19. Access to the waterway and riparian corridor supports a range of on water, in water and beside water experiences and is an enabling condition for all three social values. The current state is very low and the target is moderate.

20. Aesthetics (Litter) is a strong indicator of stream health – clean waterways are healthy waterways and aesthetically pleasing. Litter detracts from the sense of naturalness and creates a perception that a place is uncared for. It also detracts from the enjoyment of active and passive recreation. The current state is high and the target is high.

21. Water Quality (Recreational) is critical to minimising human health risks. Exposure to pathogens (disease causing microorganisms) via primary (e.g. swimming) and/or secondary (e.g. boating) can lead to illness. Water quality guidelines set water standards for primary and secondary contact. The current state is high and the target is high.

22. Participation in waterway management creates and enhances a sense of community. Similarly, citizen science strengthens social capital by increasing knowledge of environmental / ecosystem services, skills and capacities, allowing people to meet and enhance social networks. The current state is moderate and the target is very high.
Diamond Creek rises in the Kinglake National Park near St Andrews and flows though Hurstbridge and Diamond Creek townships before joining the Yarra River at Eltham. Arthurs Creek rises in the Kinglake National Park near Kinglake and flows through Strathewen and Arthurs Creek before joining Diamond Creek in Hurstbridge. Other tributaries include Kangaroo Creek, Running Creek, Stewart Gully, Deep Creek and Smiths Gully.

### Performance Objectives

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<tbody>
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<td>1</td>
<td>Vegetation Quality</td>
<td>Maintain or achieve high and very high quality vegetation (Vegetation Quality data level 4 and 5 - currently 22 km) through effective monitoring and management of threats including protection of endangered EVCs in these reaches. Fill data gaps and ensure additional high quality reaches are also protected.</td>
</tr>
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<td>2</td>
<td>Vegetation Quality</td>
<td>Improve understanding of the extent, composition and condition of high and very high quality vegetation, and effectively monitor and manage both values and threats</td>
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<tr>
<td>3</td>
<td>Vegetation Extent</td>
<td>Establish a continuous riparian vegetated buffer (5 km) and maintain existing vegetation (54 km) along priority reaches (using EVC benchmarks to at least a level 3 vegetation quality).</td>
</tr>
<tr>
<td>4</td>
<td>Participation</td>
<td>Increase participation rates from high to very high; support community groups and build capacity of land owners through rural programs. Increase participation in citizen science through promotion of high value areas (e.g. Kinglake National Park).</td>
</tr>
<tr>
<td>5</td>
<td>Water for Environment</td>
<td>Identify opportunities to maintain or improve the flow regime in refuge reaches to support platypus populations.</td>
</tr>
<tr>
<td>6</td>
<td>Water Quality - Environmental</td>
<td>Improve water quality for environmental values and Port Phillip Bay by reducing turbidity and nutrient run-off from rural land. This may include establishment of vegetated buffers in headwater streams.</td>
</tr>
</tbody>
</table>

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**Targets**

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**Performance objectives**

Guide activities and indicate progress towards improving the waterway conditions.

**How to read the targets scores?**

Current state - current score of waterway values and conditions

Current trajectory - long-term scores if current policies and effort continue

Potential trajectory - targets for the long-term scores to be achieved through implementing the Strategy

**Score key:**

- Very Low
- Low
- Moderate
- High
- Very High

For description of scores see metrics tables at end of document.
Identify opportunities to maintain or improve the flow regime in refuge reaches to support platypus populations.

Improve understanding of the extent, composition and condition of high and very high quality vegetation, and effectively monitor and manage both values.

Establish a continuous riparian vegetated buffer (5 km) and maintain existing vegetation (54 km) along priority reaches (using EVC benchmarks to at least a level 3 vegetation quality).

Vegetation score is moderate due to very high quality vegetation in forested headwaters and poorer quality in lower reaches. Score is predicted to decline with persistent and emerging threats such as pest plant and animals and climate change. There are 22 known water dependent listed species. Protecting high quality reaches and enhancing lower reaches will prevent score from declining in long term.

Amenity, which is based on level of satisfaction, is currently very high but likely to decline in long-term if environmental values decline; target is to maintain as very high.

Community connection, which is based on level of satisfaction, is currently high but likely to decline in long-term if opportunities don’t keep up with population growth; target is to maintain as high.

Recreation, which is based on level of satisfaction, is currently high but likely to decline in long-term if supply doesn’t keep up with population growth; target is to improve to very high.

Stormwater Condition is measured by directly connected imperviousness (DCI), which is the proportion of the impervious surface in the catchment that is directly connected to a stream through a conventional drainage connection. The current state is very high and the target is very high.

Physical form is the degree of geomorphic naturalness combined with likelihood of erosion occurring along bed or banks of waterways. The current state is very high and the target is very high.

Water for environment indicates compliance with flow requirements of freshwater river systems. These are identified through FLOWIS method, or (where there is no flow study) Flow Stress Ranking (FSR), which indicates the level of threat to river health based on the level of water extractions by rural, urban and industry users. The current state is very high and the target is high.

Vegetation Quality is a description of quality of vegetation relative to Ecological Vegetation Classes (EVCs) and accounting for grassland or sparsely treed woodland communities which do not exhibit 100 per cent canopy cover. The current state is high and the target is high.

Vegetation Extent denotes the percentage of reach that has continuous indigenous vegetation cover within 20 metres either side of the stream. The current state is very high and the target is very high.

Instream Connectivity is measured by the proportion of waterway length within the management unit that is free from barriers to fish movement. The current state is low and the target is very high.

Water Quality (Environmental) indicates compliance with the State Environment Protection Policy (SEPP) Waters of Victoria environmental water quality objectives (EPA Water Quality Index) using the Yarra and Bay Report Card Scoring Method. The current state is high and the target is high.

Access to the waterway and riparian corridor supports a range of on water, in water and beside water experiences and is an enabling condition for all three social values. The current state is very low and the target is low.

Aesthetics (Litter) is a strong indicator of stream health – clean waterways are healthy waterways and aesthetically pleasing. Litter detracts from the sense of naturalness and creates a perception that a place is uncared for. It also detracts from the enjoyment of active and passive recreation. The current state is very high and the target is very high.

Water Quality (Recreational) is critical to minimise human health risks. Exposure to pathogens (disease causing microorganisms) via primary (e.g. swimming) and/or secondary (e.g boating) can lead to illness. Water quality guidelines set water standards for primary and secondary contact. No data exists for this sub-catchment.

Participation in waterway management creates and enhances a sense of community. Similarly, citizen science strengthens social capital by increasing knowledge of environmental / ecosystem services, skills and capacities, allowing people to meet and enhance social networks. The current state is high and the target is very high.
Gardiners Creek originates near Blackburn and flows through Burwood and Malvern East before following the Monash Freeway corridor to the Yarra River. Major tributaries include Scotchmans and Damper creeks.

### Targets

#### Waterway values targets

- **10 - 50 years**
  - Waterway value targets are established to ensure goals are on track.

#### Waterway conditions targets

- **10+ years**
  - Waterway management focuses on ensuring waterway conditions are appropriate to improve waterway values.

#### Performance objectives

- **1 - 10 years**
  - Guide activities and indicate progress towards improving the waterway conditions.

### How to read the targets scores?

- **Current state** - current score of waterway values and conditions
- **Current trajectory** - long-term scores if current policies and effort continue
- **Potential trajectory** - targets for the long-term scores to be achieved through implementing the Strategy

### PERFORMANCE OBJECTIVES

<table>
<thead>
<tr>
<th>PO-ID</th>
<th>Condition Supported</th>
<th>Performance Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Water for Environment</td>
<td>Identify opportunities to reduce the key threat of flow stress on waterways by addressing causal factors such as farm dams, climate change, diversions or urbanisation.</td>
</tr>
<tr>
<td>2</td>
<td>Vegetation Extent</td>
<td>Establish a continuous riparian vegetated buffer (1 km) and maintain existing vegetation (1 km) along priority reaches (using EVC benchmarks to at least a level 3 vegetation quality).</td>
</tr>
<tr>
<td>3</td>
<td>Access</td>
<td>Increase access along waterways from 73% to 75% (about 1 km of path) by filling gaps and improving connections with existing path network</td>
</tr>
<tr>
<td>4</td>
<td>Participation</td>
<td>Increase participation rates from low to high; support community groups and build capacity through citizen science and cultural engagement.</td>
</tr>
</tbody>
</table>
### WATERWAY CONDITIONS (10+ YEAR TARGETS)

<table>
<thead>
<tr>
<th>Current state</th>
<th>Current trajectory</th>
<th>Potential trajectory</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### WATeRWAY VALUES TARGETS (10 - 50 YEARS)

- **Amenity,** which is based on level of satisfaction, is currently high but likely to decline in long-term if environmental values decline; target is to improve to very high.
- **Community connection,** which is based on level of satisfaction, is currently high but likely to decline in long-term if opportunities don’t keep up with population growth; target is to maintain as high.
- **Recreation,** which is based on level of satisfaction, is currently high but likely to decline in long-term if supply doesn’t keep up with population growth; target is to improve to very high.

### WATERWAY CONDITIONS (10+ YEAR TARGETS)

- **Access to the waterway and riparian corridor** supports a range of on water, in water and beside water experiences and is an enabling condition for all three social values. The current state is high and the target is very high.
- **Aesthetics (Litter)** is a strong indicator of stream health – clean waterways are healthy waterways and aesthetically pleasing. Litter detracts from the sense of naturalness and creates a perception that a place is uncared for. It also detracts from the enjoyment of active and passive recreation. The current state is moderate and the target is high.
- **Birds (riparian)** is moderate, meaning most of expected species occurred but some of these were only infrequently recorded. Despite the effects of climate change adequate investment in targeted management, such as riparian revegetation, should ensure the riparian bird score is maintained at moderate. Significant species include the Powerful Owl, Little Egret and Eastern Great Egret.
- **Fish score** is low due to lack of suitable instream and riparian habitat resulting from highly urbanised catchment and modified channel. Current trajectory is driven by common and widespread species. Improvements to stormwater and instream and riparian habitat are predicted to increase score to moderate in long term and benefit wider range of native fish species, particularly in sections with more natural channel.
- **Frogs** score is moderate since not as many species of frog were recorded. With appropriate management score should be maintained as moderate. Significant species include Growing Grass Frog.
- **Macroinvertebrates** score is very low mainly due to impacts of urban stormwater and lack of instream and riparian habitat. Without substantial improvements to stormwater and restoration of habitats score is expected to remain very low.
- **Platypus** score is very low due to a lack of instream and riparian habitat resulting largely from urban stormwater impacts and substantial channel modification. Without substantial improvements to habitat and stormwater impacts it is unlikely score will increase in long term.
- **Vegetation score** is low. The vegetation is highly modified and fragmented as a result of large scale urban impacts. Score will decline to very low due to persistent and emerging threats such as pest plant and animals and climate change. There are 8 known listed water dependent species. Long term outcome is to ensure future threats are mitigated and current score is maintained.
- **Amenity,** which is based on level of satisfaction, is currently high but likely to decline in long-term if environmental values decline; target is to improve to very high.
- **Community connection,** which is based on level of satisfaction, is currently high but likely to decline in long-term if opportunities don’t keep up with population growth; target is to maintain as high.
- **Recreation,** which is based on level of satisfaction, is currently high but likely to decline in long-term if supply doesn’t keep up with population growth; target is to improve to very high.

### WATERWAY VALUES TARGETS (10 - 50 YEARS)

- **Stormwater Condition** is measured by directly connected imperviousness (DCI), which is the proportion of the impervious surface in the catchment that is directly connected to a stream through a conventional drainage connection. The current state is very low and the target is low.
- **Physical form** is the degree of geomorphic naturalness combined with likelihood of erosion occurring along bed or banks of waterways. The current state is high and the target is high.
- **Water for environment** indicates compliance with flow requirements of freshwater river systems. These are identified through FLOWS method, or (where there is no flow study) Flow Stress Ranking (FSR), which indicates the level of threat to river health based on the level of water extractions by rural, urban and industry users. The current state is low and the target is low.
- **Vegetation Quality** is a description of quality of vegetation relative to Ecological Vegetation Classes (EVCs) and accounting for grassland or sparsely treed woodland communities which do not exhibit 100 per cent canopy cover. The current state is low and the target is low.
- **Vegetation Extent** denotes the percentage of reach that has continuous indigenous vegetation cover within 20 metres either side of the stream. The current state is moderate and the target is moderate.
- **Instream Connectivity** is measured by the proportion of waterway length within the management unit that is free from barriers to fish movement. The current state is very low and the target is low.
- **Water Quality (Environmental)** indicates compliance with the State Environment Protection Policy (SEPP) Waters of Victoria environmental water quality objectives (EPA Water Quality Index) using the Yarra and Bay Report Card Scoring Method. The current state is very low and the target is low.
- **Access to the waterway and riparian corridor** supports a range of on water, in water and beside water experiences and is an enabling condition for all three social values. The current state is high and the target is very high.
- **Aesthetics (Litter)** is a strong indicator of stream health – clean waterways are healthy waterways and aesthetically pleasing. Litter detracts from the sense of naturalness and creates a perception that a place is uncared for. It also detracts from the enjoyment of active and passive recreation. The current state is moderate and the target is high.
- **Water Quality (Recreational)** is critical to minimise human health risks. Exposure to pathogens (disease causing microorganisms) via primary (e.g. swimming) and/or secondary (e.g. boating) can lead to illness. Water quality guidelines set water standards for primary and secondary contact. The current state is very low and the target is low.
- **Participation in waterway management** creates and enhances a sense of community. Similarly, citizen science strengthens social capital by increasing knowledge of environmental/ ecosystem services, skills and capacities, allowing people to meet and enhance social networks. The current state is low and the target is high.
Koonung Creek Sub-catchment

Koonung Creek rises near Nunawading and follows the Eastern Freeway corridor for much of its length before entering the Yarra River at Bulleen.

**Performance Objectives**

<table>
<thead>
<tr>
<th>PO-ID</th>
<th>Condition Supported</th>
<th>Performance Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Vegetation Extent</td>
<td>Establish a continuous riparian vegetated buffer (1 km) and maintain existing vegetation (1 km) along priority reaches (using EVC benchmarks to at least a level 3 vegetation quality).</td>
</tr>
<tr>
<td>2</td>
<td>Participation</td>
<td>Increase participation rates from low to high; support community groups and build capacity through citizen science and cultural engagement.</td>
</tr>
</tbody>
</table>
### PO-ID Condition Supported Performance Objectives

**1. Increase participation rates from low to high; support community groups and build capacity through citizen science and cultural engagement.**

#### Koonung Creek Sub-catchment Participation level

- **Very Low (1 - 10 years):** Participation is low, with limited engagement in waterway management activities.
- **Low (10+ years):** Participation increases, with more engagement in community-led initiatives.
- **Moderate (10 - 50 years):** Participation is high, with significant community involvement in waterway projects.
- **High (50+ years):** Continuous engagement with diverse community groups and improved capacity for citizen science.
- **Very High:** Participation is at its highest level, with extensive community involvement and strong capacity for citizen science.

#### WATERWAY VALUES TARGETS (10 - 50 YEARS)

**WATERWAY VALUES**

<table>
<thead>
<tr>
<th>Waterway Values</th>
<th>Current state</th>
<th>Current trajectory</th>
<th>Potential trajectory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Quality (Recreational)</td>
<td>Very Low</td>
<td>Moderate</td>
<td>Very High</td>
</tr>
<tr>
<td>Aesthetics (Litter)</td>
<td>Very Low</td>
<td>Moderate</td>
<td>Very High</td>
</tr>
<tr>
<td>Recreation</td>
<td>Very Low</td>
<td>Moderate</td>
<td>Very High</td>
</tr>
<tr>
<td>Amenity</td>
<td>Very Low</td>
<td>Moderate</td>
<td>Very High</td>
</tr>
<tr>
<td>Community connection</td>
<td>Very Low</td>
<td>Moderate</td>
<td>Very High</td>
</tr>
<tr>
<td>Fish</td>
<td>Very Low</td>
<td>Moderate</td>
<td>Very High</td>
</tr>
<tr>
<td>Vegetation</td>
<td>Very Low</td>
<td>Moderate</td>
<td>Very High</td>
</tr>
<tr>
<td>Macroinvertebrates</td>
<td>Very Low</td>
<td>Moderate</td>
<td>Very High</td>
</tr>
<tr>
<td>Platypus</td>
<td>Very Low</td>
<td>Moderate</td>
<td>Very High</td>
</tr>
<tr>
<td>Vegetation score is low. The vegetation is highly modified and fragmented as a result of land use impacts. Score will decline to very low due to persistent and emerging threats such as pest plant and animals and climate change. There is 1 known listed water dependent species. Long term outcome is to ensure future threats are mitigated and current score is maintained.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frogs</td>
<td>Very Low</td>
<td>Moderate</td>
<td>Very High</td>
</tr>
<tr>
<td>Macroinvertebrates score is very low mainly due to impacts of urban stormwater and lack of instream and riparian habitat. Without substantial improvements to stormwater and restoration of habitats score is expected to remain very low.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Platypus score is very low due to a lack of instream and riparian habitat resulting largely from urban stormwater impacts and channel modification. Without substantial improvements to habitat it is unlikely score will increase in long term.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vegetation score is low. The vegetation is highly modified and fragmented as a result of land use impacts. Score will decline to very low due to persistent and emerging threats such as pest plant and animals and climate change. There is 1 known listed water dependent species. Long term outcome is to ensure future threats are mitigated and current score is maintained.</td>
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<td></td>
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<td>Community connection, which is based on level of satisfaction, is currently high but likely to decline in long-term if opportunities don’t keep up with population growth; target is to maintain as high.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recreation, which is based on level of satisfaction, is currently high but likely to decline in long-term if opportunities don’t keep up with population growth; target is to improve to very high.</td>
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</tr>
</tbody>
</table>

#### WATERWAY CONDITIONS (10+ YEAR TARGETS)

**WATERWAY CONDITIONS**

<table>
<thead>
<tr>
<th>Waterway Conditions</th>
<th>Current state</th>
<th>Current trajectory</th>
<th>Potential trajectory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical form</td>
<td>High</td>
<td>Moderate</td>
<td>Very High</td>
</tr>
<tr>
<td>Water for environment</td>
<td>Moderate</td>
<td>High</td>
<td>Very High</td>
</tr>
<tr>
<td>Vegetation Extent denotes the percentage of reach that has continuous indigenous vegetation cover within 20 metres either side of the stream. The current state is low and the target is low.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instream Connectivity is measured by the proportion of waterway length within the management unit that is free from barriers to fish movement. The current state is low and the target is low.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water Quality (Environmental) indicates compliance with the State Environment Protection Policy (SEPP). Waters of Victoria environmental water quality objectives (EPA Water Quality Index) using the Yarra and Bay Report Card Scoring Method. The current state is very low and the target is low.</td>
<td></td>
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<td>Access to the waterway and riparian corridor supports a range of on water, in water and beside water experiences and is an enabling condition for all three social values. The current state is high and the target is very high.</td>
<td></td>
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<tr>
<td>Aesthetics (Litter) is a strong indicator of stream health – clean waterways are healthy waterways and aesthetically pleasing. Litter detracts from the sense of naturalness and creates a perception that a place is uncared for. It also detracts from the enjoyment of active and passive recreation. The current state is moderate and the target is high.</td>
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<td>Water Quality (Recreational) is critical to minimise human health risks. Exposure to pathogens (disease causing microorganisms) via primary (e.g. swimming) and/or secondary (e.g. boating) can lead to illness. Water quality guidelines set water standards for primary and secondary contact. The current state is very low and the target is high.</td>
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<tr>
<td>Participation in waterway management creates and enhances a sense of community. Similarly, citizen science strengthens social capital by increasing knowledge of environmental / ecosystem services, skills and capacities, allowing people to meet and enhance social networks. The current state is low and the target is high.</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
The headwaters of the Little Yarra River and Hoddles Creek rise in the forested slopes of the Yarra State Forest. The Little Yarra River joins the Yarra near Yarra Junction to the northeast of Melbourne. Hoddles Creek meets the Yarra near Launching Place. Tributaries of Little Yarra River include Sally, Britannia, Edwardstown, Ely and Tugwell creeks.

**Targets**

<table>
<thead>
<tr>
<th>Waterway values targets</th>
<th>Waterway value targets are established to ensure goals are on track.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 - 50 years</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Waterway conditions targets</th>
<th>Waterway management focuses on ensuring waterway conditions are appropriate to improve waterway values.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10+ years</td>
<td></td>
</tr>
</tbody>
</table>

**Performance objectives**

Guide activities and indicate progress towards improving the waterway conditions.

1 - 10 years

How to read the targets scores?

Current state - current score of waterway values and conditions

Current trajectory - long-term scores if current policies and effort continue

Potential trajectory - targets for the long-term scores to be achieved through implementing the Strategy

Score key: Very Low Low Moderate High Very High

For description of scores see metrics tables at end of document

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</thead>
<tbody>
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<td>1</td>
<td>Water for Environment</td>
<td>Identify opportunities to maintain or improve flow regime in refuge reaches to support in-stream values and platypus populations. Reduce key threat of summer low flow stress by addressing causal factors such as farm dams, climate change, diversions and urbanisation.</td>
</tr>
<tr>
<td>2</td>
<td>Vegetation Extent</td>
<td>Establish a continuous riparian vegetated buffer (10 km) and maintain existing vegetation (122 km) along priority reaches (using EVC benchmarks to at least a level 3 vegetation quality).</td>
</tr>
<tr>
<td>3</td>
<td>Vegetation Quality</td>
<td>Maintain or achieve high and very high quality vegetation (Vegetation Quality data level 4 and 5 - currently 47 km) through effective monitoring and management of threats including protection of endangered EVCs in these reaches. Fill data gaps and ensure additional high quality reaches are also protected.</td>
</tr>
<tr>
<td>4</td>
<td>Vegetation Quality</td>
<td>Improve understanding of the extent, composition and condition of high and very high quality vegetation, and effectively monitor and manage both values and threats.</td>
</tr>
<tr>
<td>5</td>
<td>Stormwater</td>
<td>Prevent decline in stormwater condition, treat urban development in the region of Yarra Junction and Powlettown, so directly connected impervious (DCI) of Little Yarra River remains below 0.3% at the juncture with the Yarra River, and along the stem of Little Yarra River. For every hectare of new impervious area, this requires harvesting around 6.8 ML/y and infiltrating 3.7 ML/y. This is about 250 ML/y and 140 ML/y for full development to the urban growth boundary</td>
</tr>
<tr>
<td>6</td>
<td>Participation</td>
<td>Increase participation rates from moderate to very high; support community groups and build capacity of land owners through rural programs. Increase participation in citizen science through promotion of high value areas (e.g. Yarra State Forest).</td>
</tr>
<tr>
<td>7</td>
<td>Water Quality - Environmental</td>
<td>Improve water quality for environmental values and Port Phillip Bay by reducing turbidity impacts from rural land, urban growth and unsealed roads as well as nutrient and pesticide inputs from rural land. This may include establishment of vegetated buffers in headwater streams. And mitigating where required potential impacts from septic tanks.</td>
</tr>
</tbody>
</table>
**WATERWAY VALUES TARGETS (10 - 50 YEARS)**

<table>
<thead>
<tr>
<th>Current state</th>
<th>Potential trajectory</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Insufficient bird observation to establish a birds (riparian) score. Despite the effects of climate change adequate investment in targeted management such as riparian revegetation should ensure a riparian bird score of moderate. Significant species include the Powerful Owl.

- Fish score is moderate. Threatened species include Macquarie Perch in lower reach near the confluence with Yarra River. While climate change is predicted to increase the distribution of common and widespread species, River Blackfish will be threatened by reduced flows under climate change. Managing flow and improving vegetation is required to promote more sensitive species and achieve score of high in long term.

- Frogs score is high since most of the expected species of frog were recorded. With dedicated management score can be maintained at high.

- Macroinvertebrates score is very high as a result of good instream and riparian habitat. Threats include urban development. Monitoring and maintenance of existing high quality habitats and managing future water quality and flow impacts will ensure macroinvertebrates remain very high in long term.

- Platypus score is high based on good instream and riparian habitat, water quality and flows, however is predicted to decline under climate change. Improving vegetation will enhance their habitat however managing flows will be critical to maintaining high score in long term.

- Vegetation score is moderate, with high quality reaches in the headwaters. With persistent and emerging threats such as stock access, pest plant and animals and climate change score will decline to low in long term. There are 17 known water dependent listed species. Protecting high quality reaches and enhancing the lower reaches will increase score to high in long term.

- Amenity, which is based on level of satisfaction, is currently high but likely to decline in long-term if environmental values decline; target is to improve to very high.

- Community connection, which is based on level of satisfaction, is currently high but likely to decline in long-term if opportunities don’t keep up with population growth; target is to maintain as high.

- Recreation, which is based on level of satisfaction, is currently high but likely to decline in long-term if supply doesn’t keep up with population growth; target is to maintain as high.

**WATERWAY CONDITIONS (10+ YEAR TARGETS)**

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<tr>
<th>Current condition</th>
<th>Potential condition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Stormwater Condition is measured by directly connected imperviousness (DCI), which is the proportion of the impervious surface in the catchment that is directly connected to a stream through a conventional drainage connection. The current state is very high and the target is very high.

- Physical form is the degree of geomorphic naturalness combined with likelihood of erosion occurring along bed or banks of waterways. The current state is high and the target is high.

- Water for environment indicates compliance with flow requirements of freshwater river systems. These are identified through FLOWS method, or where there is no flow study Flow Stress Ranking (FSR), which indicates the level of threat to river health based on the level of water extractions by rural, urban and industry users. The current state is high and the target is high.

- Vegetation Quality is a description of quality of vegetation relative to Ecological Vegetation Classes (EVCs) and accounting for grassland or sparsely treed woodland communities which do not exhibit 100 per cent canopy cover. The current state is high and the target is high.

- Vegetation Extent denotes the percentage of reach that has continuous indigenous vegetation cover within 20 metres either side of the stream. The current state is very high and the target is very high.

- Instream Connectivity is measured by the proportion of waterway length within the management unit that is free from barriers to fish movement. The current state is moderate and the target is moderate.

- Water Quality (Environmental) indicates compliance with the State Environment Protection Policy (SEPP) Waters of Victoria environmental water quality objectives (EPA Water Quality Index) using the Yarra and Bay Report Card Scoring Method. The current state is high and the target is high.

- Access to the waterway and riparian corridor supports a range of on water, in water and beside water experiences and is an enabling condition for all three social values. The current state is very low and the target is low.

- Aesthetics (Litter) is a strong indicator of stream health – clean waterways are healthy waterways and aesthetically pleasing. Litter detracts from the sense of naturalness and creates a perception that a place is unmanaged. It also detracts from the enjoyment of active and passive recreation. The current state is high and the target is very high.

- Water Quality (Recreational) is critical to minimise human health risks. Exposure to pathogens (disease causing microorganisms) via primary (e.g. swimming) and/or secondary (e.g. boating) can lead to illness. Water quality guidelines set water standards for primary and secondary contact. The current state is high and the target is high.

- Participation in waterway management creates and enhances a sense of community. Similarly, citizen science strengthens social capital by increasing knowledge of environmental / ecosystem services, skills and capacities, allowing people to meet and enhance social networks. The current state is moderate and the target is very high.
Merri Creek (Rural and Forested) Sub-catchment includes the catchment upstream of Craigieburn Road. Major tributaries of Merri Creek in this section are Kalkallo, Malcolm and Aitken creeks.

**PERFORMANCE OBJECTIVES**

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</tr>
<tr>
<td>2</td>
<td>Vegetation Extent</td>
<td>Establish a continuous riparian vegetated buffer (52 km) and maintain existing vegetation (13 km) along priority reaches (using EVC benchmarks to at least a level 3 vegetation quality). In addition to improve social values increase vegetation cover in existing and planned urban areas by 1 km</td>
</tr>
<tr>
<td>3</td>
<td>Vegetation Quality</td>
<td>Maintain or achieve high and very high quality vegetation (Vegetation Quality data level 4 and 5 - currently 10 km) through effective monitoring and management of threats including protection of endangered EVCs in these reaches. Fill data gaps and ensure additional high quality reaches are also protected.</td>
</tr>
<tr>
<td>4</td>
<td>Stormwater</td>
<td>Prevent decline in stormwater condition, treat urban development so directly connected imperviousness (DCI) remains below 2% on the Merri Creek at Summerhill Road (Wollert). For every hectare of new impervious area, this requires harvesting around 4.5 ML/y and infiltrating 1.1 ML/y, which is about 21.4 GL/y and 5.2 GL/y for full development to the urban growth boundary</td>
</tr>
<tr>
<td>5</td>
<td>Stormwater</td>
<td>Prevent decline in stormwater condition, treat urban development upstream of Mount Ridley Road so directly connected imperviousness (DCI) remains below 1% throughout the upper Malcolm Creek catchment. For every hectare of new impervious area, this requires harvesting around 4.2 ML/y and infiltrating 0.9 ML/y, which is about 110 ML/y and 25 ML/y for full development to the urban growth boundary</td>
</tr>
<tr>
<td>6</td>
<td>Water Quality - Environmental</td>
<td>Protect water quality for Port Phillip Bay and waterways by maintaining current quality of discharges from sewage treatment plants (and reducing where possible), and ensuring they are released in a manner that ensures environmental values are supported in the waterway.</td>
</tr>
<tr>
<td>7</td>
<td>Physical form</td>
<td>Investigate and mitigate threats to physical form and other high values (including impacts of urbanisation)</td>
</tr>
<tr>
<td>8</td>
<td>Access</td>
<td>Increase access along waterways (about 5 km of path) by improving connections with existing path network and extending paths into new areas (contributes to Merri Creek shared trail)</td>
</tr>
<tr>
<td>9</td>
<td>Participation</td>
<td>Increase participation rates from low to high; support community groups, connect with growth area communities and build capacity of land owners through rural programs. Increase support for community/environment groups that undertake waterway improvement projects (e.g. Merri Creek Management Committee).</td>
</tr>
</tbody>
</table>
### Targets Scores

<table>
<thead>
<tr>
<th>Current State</th>
<th>Current Trajectory</th>
<th>Potential Trajectory</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Waterway Values Targets (10-50 Years)**

- **Birds (riparian)** is moderate, meaning most of expected species occurred but some of these were only infrequently. Despite the effects of climate change adequate investment in targeted management, such as riparian revegetation, should ensure the riparian bird score is maintained at moderate.
- **Fish** score is very low due to lack of suitable instream and riparian habitat, flows and barriers to migration. Current trajectory is driven by common and widespread species that appear to respond favourably to predicted climate change conditions. Significant improvements to riparian vegetation, stormwater and fish passage are predicted to increase score to high in long term and support wider range of species.
- **Frogs** score is moderate since not as many species of frog were recorded. With appropriate management score can be maintained as moderate. Significant species include Growing Grass Frog and Brown (Bibron’s) Toadlet.
- **Macroinvertebrates** score is low due to poor riparian and instream habitat, and flows. Improvements to vegetation and protection of flows and water quality through stormwater management is predicted to increase score to moderate in long term.
- **Platypus** have not been found in this sub-catchment for many years. Naturally low flows and disconnection with the Yarra River population are likely to limit their range. An improvement to riparian vegetation and management of urban stormwater is predicted to improve habitat suitability to low in long term.
- **Vegetation** score is low. Land use impacts have highly modified and fragmented the vegetation. Score will decline to very low due to persistent and emerging threats such as stormwater, pest plant and animals and climate change. There are 27 known listed water dependent species. Improving the quality and extent of vegetation and managing key threats will increase score to moderate in long term.
- **Amenity**, which is based on level of satisfaction, is currently high but likely to decline in long term if environmental values decline; target is to improve to very high.
- **Community connection**, which is based on level of satisfaction, is currently high but likely to decline in long term if opportunities don’t keep up with population growth; target is to maintain as high.
- **Recreation**, which is based on level of satisfaction, is currently high but likely to decline in long term if supply doesn’t keep up with population growth; target is to improve to very high.

### Waterway Values Targets (10+ Year Targets)

- **Vegetation Extent** denotes the percentage of reach that has continuous indigenous vegetation cover within 20 metres either side of the stream. The current state is very low and the target is high.
- **Instream Connectivity** is measured by the proportion of waterway length within the management unit that is free from barriers to fish movement. The current state is very low and the target is high.
- **Water Quality (Environmental)** indicates compliance with the State Environment Protection Policy (SEPP) Waters of Victoria environmental water quality objectives (EPA Water Quality Index) using the Yarra and Bay Report Card Scoring Method. The current state is moderate and the target is moderate.
- **Access to the waterway and riparian corridor** supports a range of on water, in water and beside water experiences and is an enabling condition for all three social values. The current state is very low and the target is moderate.
- **Aesthetics (Litter)** is a strong indicator of stream health – clean waterways are healthy waterways and aesthetically pleasing. Litter detracts from the sense of naturalness and creates a perception that a place is uncared for. It also detracts from the enjoyment of active and passive recreation. The current state is high and the target is very high.
- **Water Quality (Recreational)** is critical to minimise human health risks. Exposure to pathogens (disease causing microorganisms) via primary (e.g. swimming) and/or secondary (e.g. boating) can lead to illness. Water quality guidelines set water standards for primary and secondary contact. The current state is high and the target is high.
- **Participation** in waterway management creates and enhances a sense of community. Similarly, citizen science strengthens social capital by increasing knowledge of environmental / ecosystem services, skills and capacities, allowing people to meet and enhance social networks. The current state is low and the target is high.
Merri Creek (Urban) Sub-catchment lies downstream of Craigieburn Road. Tributaries in this section include Edgar's, Central and Merlynton Creek.

How to read the targets scores?
- **Current state** - current score of waterway values and conditions
- **Current trajectory** - long-term scores if current policies and effort continue
- **Potential trajectory** - targets for the long-term scores to be achieved through implementing the Strategy

### Performance Objectives

<table>
<thead>
<tr>
<th>PO-ID</th>
<th>Condition Supported</th>
<th>Performance Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Water for Environment</td>
<td>Identify opportunities to maintain or improve the flow regime in refuge reaches to support in-stream values and platypus populations.</td>
</tr>
<tr>
<td>2</td>
<td>Vegetation Extent</td>
<td>Establish a continuous riparian vegetated buffer (3 km) and maintain existing vegetation (1 km) along priority reaches (using EVC benchmarks to at least a level 3 vegetation quality). In addition to improve social values increase vegetation cover in existing and planned urban areas by 3 km</td>
</tr>
<tr>
<td>3</td>
<td>Water Quality - Environmental</td>
<td>Protect water quality for Port Phillip Bay and waterways by maintaining current quality of discharges from sewage treatment plants (and reduce where possible), and ensuring they are released in a manner that supports environmental values. Additionally identify and mitigate other sources (e.g. sewer leaks) of faecal contamination.</td>
</tr>
<tr>
<td>4</td>
<td>Access</td>
<td>Increase access along waterways from 47% to 61% (about 10 km of path) by improving connections with existing path network and extending paths into new areas (contributes to Merri Creek shared trail)</td>
</tr>
<tr>
<td>5</td>
<td>Participation</td>
<td>Increase participation rates from low to high; support community groups and build capacity through citizen science and cultural engagement. Increase support for community/environment groups that undertake waterway improvement projects (e.g. Merri Creek Management Committee).</td>
</tr>
</tbody>
</table>
Increase participation rates from low to high; support community groups and build capacity through citizen science and cultural engagement.

Merri Creek (Urban) Sub-catchment

Water Quality - Environmental

Access support for community/environment groups that undertake waterway improvement projects (e.g. Merri Creek Management Committee).

Possible), and ensuring they are released in a manner that supports environmental values. Additionally identify and mitigate other sources (eg sewer leaks)

Protect water quality for Port Phillip Bay and waterways by maintaining current quality of discharges from sewage treatment plants (and reduce where

level 3 vegetation quality). In addition to improve social values increase vegetation cover in existing and planned urban areas by 3 km

areas (contributes to Merri Creek shared trail)

PERFORMANCE OBJECTIVES

For description of scores see metrics tables at end of document

Current trajectory

Targets

Guide activities and indicate progress towards improving

Performance objectives

Score key:

10 - 50 years

- current score of waterway values and conditions

1 - 10 years

- long-term scores if current policies and effort continue

10+ years

- targets for the long-term scores to be achieved through

Very Low

targets

Low

Very High

scores

Moderate

Very High

targets

Amenity, which is based on level of satisfaction, is currently high but likely to decline in long-term if environmental values decline; target is to improve to very high.

Community connection, which is based on level of satisfaction, is currently high but likely to decline in long-term if opportunities don’t keep up with population growth; target is to maintain as high.

Recreation, which is based on level of satisfaction, is currently high but likely to decline in long-term if supply doesn’t keep up with population growth; target is to improve to very high.

Potential

WATERWAY CONDITIONS (10+ YEAR TARGETS)

Current state

Potential trajectory

Targets

TARGETS SCORES

Score

Score

Score

10

Very High

5

Low

1

Very Low

Stormwater Condition is measured by directly connected imperviousness (DCI), which is the proportion of the impervious surface in the catchment that is directly connected to a stream through a conventional drainage connection. The current state is very low and the target is low.

Physical form is the degree of geomorphic naturalness combined with likelihood of erosion occurring along bed or banks of waterways. The current state is high and the target is high.

Water for environment indicates compliance with flow requirements of freshwater river systems. These are identified through FLOWS method, or (where there is no flow study) Flow Stress Ranking (FSR), which indicates the level of threat to river health based on the level of water extractions by rural, urban and industry users. The current state is low and the target is low.

Vegetation Quality is a description of quality of vegetation relative to Ecological Vegetation Classes (EVCs) and accounting for grassland or sparsely treed woodland communities which do not exhibit 100 per cent canopy cover. The current state is low and the target is low.

Vegetation Extent denotes the percentage of reach that has continuous indigenous vegetation cover within 20 metres either side of the stream. The current state is low and the target is low.

Instream Connectivity is measured by the proportion of waterway length within the management unit that is free from barriers to fish movement. The current state is very low and the target is moderate.

Water Quality (Environmental) indicates compliance with the State Environment Protection Policy (SEPP) Waters of Victoria environmental water quality objectives (EPA Water Quality Index) using the Yarra and Bay Report Card Scoring Method. The current state is very low and the target is low.

Access to the waterway and riparian corridor supports a range of on water, in water and beside water experiences and is an enabling condition for all three social values. The current state is moderate and the target is very high.

Aesthetics (Litter) is a strong indicator of stream health – clean waterways are healthy waterways and aesthetically pleasing. Litter detracts from the sense of naturalness and creates a perception that a place is uncared for. It also detracts from the enjoyment of active and passive recreation. The current state is moderate and the target is high.

Water Quality (Recreational) is critical to minimise human health risks. Exposure to pathogens (disease causing microorganisms) via primary (e.g. swimming) and/or secondary (e.g. boating) can lead to illness. Water quality guidelines set water standards for primary and secondary contact. The current state is high and the target is high.

Participation in waterway management creates and enhances a sense of community. Similarly, citizen science strengthens social capital by increasing knowledge of environmental / ecosystem services, skills and capacities, allowing people to meet and enhance social networks. The current state is low and the target is high.
PERFORMANCE OBJECTIVES

<table>
<thead>
<tr>
<th>PO-ID</th>
<th>Condition Supported</th>
<th>Performance Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Vegetation Extent</td>
<td>Establish a continuous riparian vegetated buffer (3 km) and maintain existing vegetation (11 km) along priority reaches (using EVC benchmarks to at least a level 3 vegetation quality).</td>
</tr>
<tr>
<td>2</td>
<td>Water for Environment</td>
<td>Identify opportunities to maintain or improve the flow regime in refuge reaches to support platypus populations.</td>
</tr>
<tr>
<td>3</td>
<td>Water Quality - Environmental</td>
<td>Investigate and mitigate where required potential impacts from septic tanks.</td>
</tr>
<tr>
<td>4</td>
<td>Physical form</td>
<td>Ensure existing erosion control assets are maintained and high values are protected</td>
</tr>
<tr>
<td>5</td>
<td>Access</td>
<td>Increase access along waterways (about 1 km of path) by improving connections with existing path network and in conjunction with urban development</td>
</tr>
<tr>
<td>6</td>
<td>Participation</td>
<td>Increase participation rates from low to high; support community groups and build capacity through citizen science and cultural engagement. Increase participation through support of inter-agency waterway improvement projects.</td>
</tr>
</tbody>
</table>

Mullum Mullum Creek flows from Croydon through Ringwood and Warrandyte and enters the Yarra River in the Yarra Valley Parklands at Templestowe.

Targets

<table>
<thead>
<tr>
<th>Waterway values targets</th>
<th>Waterway management focuses on ensuring waterway conditions are appropriate to improve waterway values.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 - 50 years</td>
<td></td>
</tr>
<tr>
<td>Waterway conditions targets</td>
<td></td>
</tr>
<tr>
<td>10+ years</td>
<td></td>
</tr>
<tr>
<td>Performance objectives</td>
<td>Guide activities and indicate progress towards improving the waterway conditions.</td>
</tr>
<tr>
<td>1 - 10 years</td>
<td></td>
</tr>
</tbody>
</table>

How to read the targets scores?

Current state - current score of waterway values and conditions

Current trajectory - long-term scores if current policies and effort continue

Potential trajectory - targets for the long-term scores to be achieved through implementing the Strategy

Score key: | Very Low | Low | Moderate | High | Very High

For description of scores see metrics tables at end of document.
<table>
<thead>
<tr>
<th>TARGETS SCORES</th>
<th>Current state</th>
<th>Current trajectory</th>
<th>Potential trajectory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birds (riparian)</td>
<td>Moderate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fish</td>
<td>Low due to lack of suitable instream and riparian habitat, urban stormwater and modifications to stream channel. Threatened species include Macquarie Perch in lower reach. Current trajectory is driven by common and widespread species. Managing urban stormwater and improving instream and riparian habitat is required to increase score to moderate and provide suitable habitat for wider range of species in long term.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frogs</td>
<td>Moderate since not as many species of frog were recorded. With appropriate management score can be maintained as moderate.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Macroinvertebrates</td>
<td>Very low mainly due to impacts of urban stormwater and a lack of instream and riparian habitat. Without substantial improvements to stormwater and restoration of physical habitats score is expected to remain very low.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Platypus</td>
<td>Very low due to a lack of instream and riparian habitat resulting largely from urban stormwater impacts and channel modification, although platypus from the Yarra River use the lower reaches. Without significant management of stormwater impacts and improvements to riparian and instream habitat, score is predicted to remain very low.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vegetation score</td>
<td>Moderate as it largely fragmented with generally only mid and upper story species present. Higher quality sections are found in lower reaches. Pest plants and animals, stormwater impacts and climate change will reduce score to low unless threats mitigated. There are 18 known listed water dependent species.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amenity</td>
<td>Based on level of satisfaction, is currently very high but likely to decline in long-term if environmental values decline; target is to maintain as very high.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community connection</td>
<td>Based on level of satisfaction, is currently high but likely to decline in long-term if opportunities don’t keep up with population growth; target is to maintain as high.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recreation</td>
<td>Based on level of satisfaction, is currently high but likely to decline in long-term if supply doesn’t keep up with population growth; target is to improve to very high.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WATERWAY CONDITIONS (10+ YEAR TARGETS)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stormwater Condition</td>
<td>Measured by directly connected imperviousness (DCI), which is the proportion of the impervious surface in the catchment that is directly connected to a stream through a conventional drainage connection. The current state is very low and the target is low.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical form</td>
<td>The degree of geomorphic naturalness combined with likelihood of erosion occurring along bed or banks of waterways. The current state is low and the target is low.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water for environment</td>
<td>Indicates compliance with flow requirements of freshwater river systems. These are identified through FLOWS method, or (where there is no flow study) Flow Stress Ranking (FSR), which indicates the level of threat to river health based on the level of water extractions by rural, urban and industry users. The current state is low and the target is low.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vegetation Quality</td>
<td>A description of quality of vegetation relative to Ecological Vegetation Classes (EVCs) and accounting for grassland or sparsely treed woodland communities which do not exhibit 100 per cent canopy cover. The current state is moderate and the target is moderate.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vegetation Extent</td>
<td>Denotes the percentage of reach that has continuous indigenous vegetation cover within 20 metres either side of the stream. The current state is high and the target is very high.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instream Connectivity</td>
<td>Measured by the proportion of waterway length within the management unit that is free from barriers to fish movement. The current state is high and the target is high.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water Quality (Environmental)</td>
<td>Indicates compliance with the State Environment Protection Policy (SEPP) Waters of Victoria environmental water quality objectives (EPA Water Quality Index) using the Yarra and Bay Report Card Scoring Method. The current state is very low and the target is low.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access to water and riparian corridor</td>
<td>Supports a range of on water, in water and beside water experiences and is an enabling condition for all three social values. The current state is moderate and the target is very high.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aesthetics (Litter)</td>
<td>A strong indicator of stream health – clean waterways are healthy waterways and aesthetically pleasing. Litter detracts from the sense of naturalness and creates a perception that a place is uncared for. It also detracts from the enjoyment of active and passive recreation. The current state is moderate and the target is high.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water Quality (Recreational)</td>
<td>Critical to minimise human health risks. Exposure to pathogens (disease causing microorganisms) via primary (e.g. swimming) and/or secondary (e.g. boating) can lead to illness. Water quality guidelines set water standards for primary and secondary contact. The current state is low and the target is low.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participation in waterway management</td>
<td>Creates and enhances a sense of community. Similarly, citizen science strengthens social capital by increasing knowledge of environmental / ecosystem services, skills and capacities, allowing people to meet and enhance social networks. The current state is low and the target is very high.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Olinda Creek Sub-catchment

Olinda Creek rises in the Dandenong Ranges near the Olinda township and flows through the Dandenong Ranges National Park, Kalorama, Mt Evelyn and Lilydale before joining the Yarra River at Yering. The main tributaries of Olinda Creek are Lyrebird Gully Creek and Lilydale East Drain.

**PERFORMANCE OBJECTIVES**

<table>
<thead>
<tr>
<th>PO-ID</th>
<th>Condition Supported</th>
<th>Performance Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Water for Environment</td>
<td>Identify opportunities to maintain or improve the flow regime in refuge reaches to support platypus populations.</td>
</tr>
<tr>
<td>2</td>
<td>Water for Environment</td>
<td>Identify opportunities to reduce the key threat of summer low flow stress by addressing causal factors such as farm dams, climate change, diversions or urbanisation.</td>
</tr>
<tr>
<td>3</td>
<td>Stormwater</td>
<td>Prevent decline in stormwater condition, and to protect the threatened Dandenong Amphipod, treat urban development in the Olinda Creek catchment, so directly connected imperviousness (DCI) remains below 3.5% prior to confluence with the Yarra River. For every hectare of new impervious area, this requires harvesting around 5.9 ML/y and infiltrating 2.3 ML/y, which is about 1.2 GL/y and 0.5 GL/y for full development to the urban growth boundary.</td>
</tr>
<tr>
<td>4</td>
<td>Water Quality - Environmental</td>
<td>Improve water quality for water supply and Port Phillip Bay by improving the quality of water discharged from Lilydale sewage treatment plant above the Yering Gorge outtake. Ensure discharges are of sufficient quality and are delivered in a way that supports waterways and Port Phillip Bay.</td>
</tr>
<tr>
<td>5</td>
<td>Water Quality - Environmental</td>
<td>Protect waterways and drinking water supply by reducing pesticide impact from Olinda Creek catchment.</td>
</tr>
<tr>
<td>6</td>
<td>Vegetation Extent</td>
<td>Establish a continuous riparian vegetated buffer (3 km) and maintain existing vegetation (23 km) along priority reaches (using EVC benchmarks to at least a level 3 vegetation quality).</td>
</tr>
<tr>
<td>7</td>
<td>Vegetation Quality</td>
<td>Maintain or achieve high and very high quality vegetation (Vegetation Quality data level 4 and 5 - currently 10 km) through effective monitoring and management of threats including protection of endangered EVCs in these reaches. Fill data gaps and ensure additional high quality reaches are also protected.</td>
</tr>
<tr>
<td>8</td>
<td>Access</td>
<td>Increase access along waterways (about 1 km of path) by improving connections with existing path network and in conjunction with urban development.</td>
</tr>
<tr>
<td>9</td>
<td>Participation</td>
<td>Increase participation rates from moderate to very high; support community groups and build capacity of farmers and land owners through rural programs. Increase participation in citizen science though promotion of high value areas (e.g. Dandenong Ranges National Park).</td>
</tr>
</tbody>
</table>
### WATERWAY CONDITIONS (10+ YEAR TARGETS)

<table>
<thead>
<tr>
<th>Target</th>
<th>Current State</th>
<th>Potential Future</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Access to the waterway and riparian corridor</strong></td>
<td>supports a range of on water, in water and beside water experiences and is an enabling condition for all three social values.</td>
<td>The current state is low and the target is moderate.</td>
</tr>
<tr>
<td><strong>Aesthetics (Litter)</strong></td>
<td>is a strong indicator of stream health – clean waterways are healthy waterways and aesthetically pleasing. Litter detracts from the sense of naturalness and creates a perception that a place is uncared for. It also detracts from the enjoyment of active and passive recreation.</td>
<td>The current state is moderate and the target is high.</td>
</tr>
<tr>
<td><strong>Water Quality (Recreational)</strong></td>
<td>is critical to minimise human health risks. Exposure to pathogens (disease causing microorganisms) via primary (e.g. swimming) and/or secondary (e.g. boating) can lead to illness. Water quality guidelines set water standards for primary and secondary contact.</td>
<td>The current state is high and the target is high.</td>
</tr>
<tr>
<td><strong>Participation in waterway management</strong></td>
<td>creates and enhances a sense of community. Similarly, citizen science strengthens social capital by increasing knowledge of environmental / ecosystem services, skills and capacities, allowing people to meet and enhance social networks.</td>
<td>The current state is moderate and the target is very high.</td>
</tr>
</tbody>
</table>

### WATERWAY VALUES TARGETS (10 - 50 YEARS)

<table>
<thead>
<tr>
<th>Waterway Value</th>
<th>Current State</th>
<th>Potential Future</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stormwater Condition</strong></td>
<td>is measured by directly connected imperviousness (DCI), which is the proportion of the impervious surface in the catchment that is directly connected to a stream through a conventional drainage connection.</td>
<td>The current state is high and the target is high.</td>
</tr>
<tr>
<td><strong>Physical Form</strong></td>
<td>Physical form is the degree of geomorphic naturalness combined with likelihood of erosion occurring along bed or banks of waterways.</td>
<td>The current state is high and the target is high.</td>
</tr>
<tr>
<td><strong>Water for Environment</strong></td>
<td>indicates compliance with flow requirements of freshwater river systems. These are identified through FLOWS method, or (where there is no flow study) Flow Stress Ranking (FSR), which indicates the level of threat to river health based on the level of water extractions by rural, urban and industry users.</td>
<td>The current state is moderate and the target is moderate.</td>
</tr>
<tr>
<td><strong>Vegetation Quality</strong></td>
<td>is a description of quality of vegetation relative to Ecological Vegetation Classes (EVCs) and accounting for grassland or sparsely treed woodland communities which do not exhibit 100 per cent canopy cover.</td>
<td>The current state is low and the target is moderate.</td>
</tr>
<tr>
<td><strong>Vegetation Extent</strong></td>
<td>denotes the percentage of reach that has continuous indigenous vegetation cover within 20 metres either side of the stream.</td>
<td>The current state is high and the target is high.</td>
</tr>
<tr>
<td><strong>Instream Connectivity</strong></td>
<td>is measured by the proportion of waterway length within the management unit that is free from barriers to fish movement.</td>
<td>The current state is high and the target is moderate.</td>
</tr>
<tr>
<td><strong>Water Quality (Environmental)</strong></td>
<td>indicates compliance with the State Environment Protection Policy (SEPP) Waters of Victoria environmental water quality objectives (EPA Water Quality Index) using the Yarra and Bay Report Card Scoring Method.</td>
<td>The current state is moderate and the target is moderate.</td>
</tr>
<tr>
<td><strong>Access to the waterway</strong></td>
<td>supports a range of on water, in water and beside water experiences and is an enabling condition for all three social values.</td>
<td>The current state is low and the target is moderate.</td>
</tr>
<tr>
<td><strong>Aesthetics (Litter)</strong></td>
<td>is a strong indicator of stream health – clean waterways are healthy waterways and aesthetically pleasing. Litter detracts from the sense of naturalness and creates a perception that a place is uncared for. It also detracts from the enjoyment of active and passive recreation.</td>
<td>The current state is moderate and the target is high.</td>
</tr>
<tr>
<td><strong>Water Quality (Recreational)</strong></td>
<td>is critical to minimise human health risks. Exposure to pathogens (disease causing microorganisms) via primary (e.g. swimming) and/or secondary (e.g. boating) can lead to illness. Water quality guidelines set water standards for primary and secondary contact.</td>
<td>The current state is high and the target is high.</td>
</tr>
<tr>
<td><strong>Participation in waterway management</strong></td>
<td>creates and enhances a sense of community. Similarly, citizen science strengthens social capital by increasing knowledge of environmental / ecosystem services, skills and capacities, allowing people to meet and enhance social networks.</td>
<td>The current state is moderate and the target is very high.</td>
</tr>
</tbody>
</table>

### TARGETS SCORES

<table>
<thead>
<tr>
<th>Target</th>
<th>Current State</th>
<th>Potential Future</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Birds (riparian)</strong></td>
<td>(low) meaning few of the expected riparian bird species were recorded. Despite the effects of climate change adequate investment in targeted management such as riparian revegetation should ensure a riparian bird score of moderate. Significant species of riparian bird occurring in this sub-catchment include the Powerful Owl and Eastern Great Egret.</td>
<td>Fish score is low due to lack of suitable instream and riparian habitat, fish barriers and urbanisation. While climate change is predicted to increase distribution of common and widespread species, more sensitive species such as River Blackfish and Ornate Galaxies will be threatened by reduced flows under climate change. Managing flows, including stormwater impacts and improving riparian vegetation is predicted to provide suitable habitat for wider range of species and increase score to high in long term.</td>
</tr>
<tr>
<td><strong>Frogs</strong></td>
<td>score is very low since very few of the expected species of frog were recorded. With appropriate management score can be improved to low.</td>
<td>Macroinvertebrates score is moderate as a result of a lack of instream and riparian habitat. The listed Dandenong Amphipod has been found in headwaters of Olinda Creek. Managing future stormwater impacts and improving riparian vegetation will increase score to high in long term.</td>
</tr>
<tr>
<td><strong>Platypus</strong></td>
<td>score is moderate, with a lack of instream and riparian habitat and isolation from the Yarra River population. Improving habitat and maintaining flows will be critical to maintaining current score in long term.</td>
<td>Vegetation score is moderate as it largely fragmented with generally only mid and upper story species present. Higher quality reaches occur in the Dandenong Ranges. Stock access, pest plants and animals, stormwater impacts and climate change will reduce score to low unless threats mitigated. Protecting the best and enhancing other areas will maintain moderate score in long term. There are 17 known listed water dependent species.</td>
</tr>
<tr>
<td><strong>Vegetation Extent</strong></td>
<td>denotes the percentage of reach that has continuous indigenous vegetation cover within 20 metres either side of the stream.</td>
<td>The current state is moderate and the target is moderate.</td>
</tr>
<tr>
<td><strong>Water Quality (Recreational)</strong></td>
<td>is critical to minimise human health risks. Exposure to pathogens (disease causing microorganisms) via primary (e.g. swimming) and/or secondary (e.g. boating) can lead to illness. Water quality guidelines set water standards for primary and secondary contact.</td>
<td>The current state is high and the target is high.</td>
</tr>
<tr>
<td><strong>Participation in waterway management</strong></td>
<td>creates and enhances a sense of community. Similarly, citizen science strengthens social capital by increasing knowledge of environmental / ecosystem services, skills and capacities, allowing people to meet and enhance social networks.</td>
<td>The current state is moderate and the target is very high.</td>
</tr>
</tbody>
</table>

### Olinda Creek Sub-catchment

**Water Quality - Environmental Vegetation Extent Participation Stormwater Access**

Olinda Creek Sub-catchment.

Birds (riparian) is low, meaning few of the expected riparian bird species were recorded. Despite the effects of climate change adequate investment in targeted management such as riparian revegetation should ensure a riparian bird score of moderate. Significant species of riparian bird occurring in this sub-catchment include the Powerful Owl and Eastern Great Egret.

Fish score is low due to lack of suitable instream and riparian habitat, fish barriers and urbanisation. While climate change is predicted to increase distribution of common and widespread species, more sensitive species such as River Blackfish and Ornate Galaxies will be threatened by reduced flows under climate change. Managing flows, including stormwater impacts and improving riparian vegetation is predicted to provide suitable habitat for wider range of species and increase score to high in long term.

Frogs score is very low since very few of the expected species of frog were recorded. With appropriate management score can be improved to low.

Macroinvertebrates score is moderate as a result of a lack of instream and riparian habitat. The listed Dandenong Amphipod has been found in headwaters of Olinda Creek. Managing future stormwater impacts and improving riparian vegetation will increase score to high in long term.

Platypus score is moderate, with a lack of instream and riparian habitat and isolation from the Yarra River population. Improving habitat and maintaining flows will be critical to maintaining current score in long term.

Vegetation score is moderate as it largely fragmented with generally only mid and upper story species present. Higher quality reaches occur in the Dandenong Ranges. Stock access, pest plants and animals, stormwater impacts and climate change will reduce score to low unless threats mitigated. Protecting the best and enhancing other areas will maintain moderate score in long term. There are 17 known listed water dependent species.

Amenity, which is based on level of satisfaction, is currently very high but likely to decline in long-term if environmental values decline; target is to maintain as very high.

Community connection, which is based on level of satisfaction, is currently high but likely to decline in long-term if opportunities don’t keep up with population growth; target is to maintain as high.

Recreation, which is based on level of satisfaction, is currently high but likely to decline in long-term if supply doesn’t keep up with population growth; target is to improve to very high.
Plenty River rises in the Mt Disappointment State Park and flows through Whittlesea, Plenty Gorge and Greensborough before joining the Yarra River at Viewbank. Both the Yan Yean and Toorourong water storages lie within the catchment. Water is diverted from the King Parrot Creek catchment on the northern side of the Great Dividing Range into the Toorourong Reservoir. The river has a number of tributaries, including Falls, Jacks, Bruces, Scrubby and Barbers creeks.

**Performance Objectives**

<table>
<thead>
<tr>
<th>PO-ID</th>
<th>Condition Supported</th>
<th>Performance Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Water for Environment</td>
<td>Identify opportunities to maintain or improve the flow regime in refuge reaches to support platypus populations.</td>
</tr>
<tr>
<td>2</td>
<td>Vegetation Quality</td>
<td>Maintain or achieve high and very high quality vegetation (Vegetation Quality data level 4 and 5 – currently 27 km) through effective monitoring and management of threats including protection of endangered EVCs in these reaches. Fill data gaps and ensure additional high quality reaches are also protected.</td>
</tr>
<tr>
<td>3</td>
<td>Vegetation Quality</td>
<td>Improve understanding of the extent, composition and condition of high and very high quality vegetation, and effectively monitor and manage both values and threats</td>
</tr>
</tbody>
</table>

**Targets**

<table>
<thead>
<tr>
<th>Waterway values targets</th>
<th>Waterway values targets are established to ensure goals are on track.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 - 50 years</td>
<td></td>
</tr>
<tr>
<td>Waterway conditions targets</td>
<td>Waterway management focuses on ensuring waterway conditions are appropriate to improve waterway values.</td>
</tr>
<tr>
<td>10+ years</td>
<td></td>
</tr>
<tr>
<td>Performance objectives</td>
<td>Guide activities and indicate progress towards improving the waterway conditions.</td>
</tr>
<tr>
<td>1 - 10 years</td>
<td></td>
</tr>
</tbody>
</table>

**How to read the targets scores?**

- **Current state** - current score of waterway values and conditions
- **Current trajectory** - long-term scores if current policies and effort continue
- **Potential trajectory** - targets for the long-term scores to be achieved through implementing the Strategy

**Score key:**

- Very Low
- Low
- Moderate
- High
- Very High

For description of scores see metrics tables at end of document.
Insufficient data to estimate a riparian bird score. Despite effects of climate change adequate investment in targeted management such as riparian revegetation should ensure riparian bird score of moderate. Significant species include the Powerful Owl, Eastern Great Egret and Little Egret.

Fish score is low, and while this is partly expected for headwater streams, it is also driven by barriers, particularly Toorourrong Reservoir. While climate change is predicted to increase habitat suitability for common and widespread species, more sensitive species such as River Blackfish will be threatened by reduced flows under climate change. Target is moderate.

Frogs score is very high since all, or almost all, species of frog were recorded. With appropriate management score can be maintained as very high. Significant species include Growling Grass Frog.

Macroinvertebrates score is very high as the sub-catchment is within Kinglake National Park. Monitoring and maintenance of vegetation and protecting flows will ensure score remains very high in long term.

Platypus score is moderate. Recent drought and bushfires have been implicated in severe decline or complete loss of this population. Reduced flows from climate change are a significant threat and will reduce score to low unless they can be maintained.

Vegetation score is high as the waterway is within Kinglake National Park. Pest plants and animals, recreational access and climate change (including an altered fire regime) will reduce score to moderate unless mitigated. Monitoring and maintenance is critical to maintaining high score.

Amenity, which is based on level of satisfaction, is currently high but likely to decline in long-term if environmental values decline; target is to improve to very high.

Community connection, which is based on level of satisfaction, is currently high but likely to decline in long-term if opportunities don’t keep up with population growth; target is to maintain as high.

Recreation, which is based on level of satisfaction, is currently high but likely to decline in long-term if supply doesn’t keep up with population growth; target is to improve to very high.

Stormwater Condition is measured by directly connected imperviousness (DCI), which is the proportion of the impervious surface in the catchment that is directly connected to a stream through a conventional drainage connection. The current state is very high and the target is very high.

Physical form is the degree of geomorphic naturalness combined with likelihood of erosion occurring along bed or banks of waterways. The current state is very high and the target is very high.

Water for environment indicates compliance with flow requirements of freshwater river systems. These are identified through FLOWS method, or (where there is no flow study) Flow Stress Ranking (FSR), which indicates the level of threat to river health based on the level of water extractions by rural, urban and industry users. The current state is moderate and the target is low.

Vegetation Extent denotes the percentage of reach that has continuous indigenous vegetation cover within 20 metres either side of the stream. The current state is very high and the target is very high.

Instream Connectivity is measured by the proportion of waterway length within the management unit that is free from barriers to fish movement. The current state is very high and the target is very high.

Water Quality (Environmental) indicates compliance with the State Environment Protection Policy (SEPP) Waters of Victoria environmental water quality objectives (EPA Water Quality Index) using the Yarra and Bay Report Card Scoring Method. The current state is high and the target is high.

Access to the waterway and riparian corridor supports a range of on water, in water and beside water experiences and is an enabling condition for all three social values. The current state is very low and the target is low.

Aesthetics (Litter) is a strong indicator of stream health – clean waterways are healthy waterways and aesthetically pleasing. Litter detracts from the sense of naturalness and creates a perception that a place is uncared for. It also detracts from the enjoyment of active and passive recreation. The current state is high and the target is very high.

Water Quality (Recreational) is critical to minimise human health risks. Exposure to pathogens (disease causing microorganisms) via primary (e.g. swimming) and/or secondary (e.g boating) can lead to illness. Water quality guidelines set water standards for primary and secondary contact. No data exists for this sub-catchment.

Participation in waterway management creates and enhances a sense of community. Similarly, citizen science strengthens social capital by increasing knowledge of environmental / ecosystem services, skills and capacities, allowing people to meet and enhance social networks. No data exists for this sub-catchment.
### PERFORMANCE OBJECTIVES

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<th>PO-ID</th>
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<td>2</td>
<td>Water for Environment</td>
<td>Identify opportunities to maintain or improve the flow regime in refuge reaches to support instream values and platypus populations.</td>
</tr>
<tr>
<td>3</td>
<td>Vegetation Extent</td>
<td>Establish a continuous riparian vegetated buffer (21 km) and maintain existing vegetation (26 km) along priority reaches (using EVC benchmarks to at least a level 3 vegetation quality).</td>
</tr>
<tr>
<td>4</td>
<td>Vegetation Quality</td>
<td>Maintain or achieve high and very high quality vegetation (Vegetation Quality data level 4 and 5 - currently 44 km) through effective monitoring and management of threats including protection of endangered EVCs in these reaches. Fill data gaps and ensure additional high quality reaches are also protected.</td>
</tr>
<tr>
<td>5</td>
<td>Vegetation Quality</td>
<td>Improve understanding of the extent, composition and condition of high and very high quality vegetation, and effectively monitor and manage both values and threats.</td>
</tr>
<tr>
<td>6</td>
<td>Physical form</td>
<td>Investigate and mitigate threats to physical form and other high values (particularly along tributaries and including impacts of urbanisation).</td>
</tr>
<tr>
<td>7</td>
<td>Access</td>
<td>Increase access along waterways (about 5 km of path) by improving connections with existing path network and extending paths into new urban areas.</td>
</tr>
<tr>
<td>8</td>
<td>Participation</td>
<td>Increase participation rates from low to high; support community groups and build capacity through citizen science and cultural engagement. Increase participation through promotion of high value areas (e.g. Plenty Gorge Park).</td>
</tr>
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### Targets

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<td>1 - 10 years</td>
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### How to read the targets scores?

- **Current state** - current score of waterway values and conditions
- **Current trajectory** - long-term scores if current policies and effort continue
- **Potential trajectory** - targets for the long-term scores to be achieved through implementing the Strategy

**Score key:**
- Very Low
- Low
- Moderate
- High
- Very High

For description of scores see metrics tables at end of document.
## Birds (riparian)
Birds (riparian) is moderate, which means most expected species occur but some of these only infrequently. Despite the effects of climate change adequate investment in targeted management, such as riparian revegetation, should ensure score is maintained at moderate. Significant species include the Powerful Owl, Eastern Great Egret and Little Egret.

## Fish
Fish score is moderate due to lack of suitable instream and riparian habitat, fish barriers and urbanisation. Listed species include Macquarie Perch and Murray Cod. While climate change is predicted to increase habitat suitability for common and widespread species, managing barriers, flows, including stormwater impacts and improving vegetation will increase score to high and support wider range species.

## Frogs
Frogs score is very low since very few of the expected species of frog were recorded. Combined effects of reduced rainfall and flows, and urban land use intensification mean the score is likely to remain very low. Significant species is Growing Grass Frog.

## Macroinvertebrates
Macroinvertebrates score is low due to poor riparian and instream habitat resulting from large scale land use changes including significant urbanisation. Improvements to vegetation and protection of flows and water quality through stormwater management is predicted to increase score in some areas but will remain low overall.

## Platypus
Platypus score is very low due to a lack of instream and riparian habitat and stormwater impacts. The Yarra River population may occasionally use the lower reaches. Improvements to vegetation and stormwater is predicted to increase score to low in long term.

## Vegetation
Vegetation score is moderate as it largely fragmented with generally only mid and upper story species present. Reaches through the Plenty Gorge Parklands contain high quality vegetation. Pest plants and animals, stormwater impacts and climate change will reduce score to low unless threats mitigated. Protecting the best and enhancing other areas will increase score to high in long term.

## Amenity
Amenity, which is based on level of satisfaction, is currently high but likely to decline in long term if environmental values decline; target is to improve to very high.

## Community connection
Community connection, which is based on level of satisfaction, is currently high but likely to decline in long term if opportunities don’t keep up with population growth; target is to maintain as high.

## Recreation
Recreation, which is based on level of satisfaction, is currently high but likely to decline in long term if supply doesn’t keep up with population growth; target is to improve to very high.

## Stormwater Condition
Stormwater Condition is measured by directly connected imperviousness (DCI), which is the proportion of the impervious surface in the catchment that is directly connected to a stream through a conventional drainage connection. The current state is low and the target is moderate.

## Physical form
Physical form is the degree of geomorphic naturalness combined with likelihood of erosion occurring along bed or banks of waterways. The current state is moderate and the target is moderate.

## Water for environment
Water for environment indicates compliance with flow requirements of freshwater river systems. These are identified through FLOWS method, or (where there is no flow study) Flow Stress Ranking (FSR), which indicates the level of threat to river health based on the level of water extractions by rural, urban and industry users. The current state is high and the target is high.

## Vegetation Quality
Vegetation Quality is a description of quality of vegetation relative to Ecological Vegetation Classes (EVCs) and accounting for grassland or sparsely treed woodland communities which do not exhibit 100 per cent canopy cover. The current state is moderate and the target is high.

## Vegetation Extent
Vegetation Extent denotes the percentage of reach that has continuous indigenous vegetation cover within 20 metres either side of the stream. The current state is moderate and the target is high.

## Instream Connectivity
Instream Connectivity is measured by the proportion of waterway length within the management unit that is free from barriers to fish movement. The current state is low and the target is high.

## Water Quality (Environmental)
Water Quality (Environmental) indicates compliance with the State Environment Protection Policy (SEPP) Waters of Victoria environmental water quality objectives (EPA Water Quality Index) using the Yarra and Bay Report Card Scoring Method. The current state is low and the target is low.

## Access to waterway
Access to the waterway and riparian corridor supports a range of on water, in water and beside water experiences and is an enabling condition for all three social values. The current state is low and the target is high.

## Aesthetics
Aesthetics (Litter) is a strong indicator of stream health – clean waterways are healthy waterways and aesthetically pleasing. Litter detracts from the sense of naturalness and creates a perception that a place is uncared for. It also detracts from the enjoyment of active and passive recreation. The current state is moderate and the target is high.

## Water Quality (Recreational)
Water Quality (Recreational) is critical to minimise human health risks. Exposure to pathogens (disease causing microorganisms) via primary (e.g. swimming) and/or secondary (e.g boating) can lead to illness. Water quality guidelines set water standards for primary and secondary contact. The current state is low and the target is high.

## Participation
Participation in waterway management creates and enhances a sense of community. Similarly, citizen science strengthens social capital by increasing knowledge of environmental / ecosystem services, skills and capacities, allowing people to meet and enhance social networks. The current state is low and the target is high.
Plenty River Upper Sub-catchment

Plenty River rises in the Mt Disappointment State Park and flows through Whittlesea, Plenty Gorge and Greensborough before joining the Yarra River at Viewbank. Both the Yan Yean and Toorourrong water storages lie within the catchment. Water is diverted from the King Parrot Creek catchment on the northern side of the Great Dividing Range into the Toorourrong Reservoir. The river has a number of tributaries, including Falls, Jacks, Bruce, Scrubby and Barbers creeks.

PERFORMANCE OBJECTIVES

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<td>Water for Environment</td>
<td>Identify opportunities to reduce the key threat of summer low flow stress by addressing causal factors such as farm dams, climate change, diversions or urbanisation.</td>
</tr>
<tr>
<td>2</td>
<td>Water for Environment</td>
<td>Identify opportunities to maintain or improve the flow regime in refuge reaches to support instream values and platypus populations through releases from Toorourong reservoir.</td>
</tr>
<tr>
<td>3</td>
<td>Water Quality - Environmental</td>
<td>Improve water quality for environmental values and Port Phillip Bay by reducing turbidity and nutrient run off from rural land upstream of Whittlesea. Investigate and seek to mitigate source of high nutrients, turbidity and metals in Bruce’s Creek. Establish vegetated buffers in headwater streams.</td>
</tr>
<tr>
<td>4</td>
<td>Water Quality - Environmental</td>
<td>Protect water quality for Port Phillip Bay and waterways by maintaining the current quality of discharges from sewage treatment plants (and reducing where possible), and ensuring they are released in a manner that supports environmental values in the waterway.</td>
</tr>
<tr>
<td>5</td>
<td>Stormwater</td>
<td>Prevent decline in stormwater condition, treat urban development upstream of and within Whittlesea, so directly connected imperviousness (DCI) remains below 0.5% downstream of Whittlesea (and throughout the Upper Plenty River catchment). For every hectare of new impervious area, this requires harvesting around 5.5 Ml/y and infiltrating 1.9 Ml/y, which is about 350 Ml/y and 120 Ml/y for full development to the urban growth boundary.</td>
</tr>
<tr>
<td>6</td>
<td>Physical form</td>
<td>Investigate and mitigate threats to physical form and other high values (particularly along tributaries)</td>
</tr>
<tr>
<td>7</td>
<td>Vegetation Extent</td>
<td>Establish a continuous riparian vegetated buffer (35 km) and maintain existing vegetation (58 km) along priority reaches (using EVC benchmarks to at least a level 3 vegetation quality). In addition to improve social values increase vegetation cover in existing and planned urban areas by 1 km</td>
</tr>
<tr>
<td>8</td>
<td>Vegetation Quality</td>
<td>Maintain or achieve high and very high quality vegetation (Vegetation Quality data level 4 and 5 - currently 35 km) through effective monitoring and management of threats including protection of endangered EVCs in these reaches. Fill data gaps and ensure additional high quality reaches are also protected.</td>
</tr>
<tr>
<td>9</td>
<td>Access</td>
<td>Increase access along waterways (about 5 km of path) by improving connections with existing path network and extending paths into new urban areas</td>
</tr>
<tr>
<td>10</td>
<td>Participation</td>
<td>Increase participation rates from moderate to very high; support community groups, connect with growth area communities and build capacity of land owners through rural programs (e.g. Stream Frontage Management Program). Increase support for community/environment groups and promotion of high value areas (e.g. Plenty Gorge Park) as population increases.</td>
</tr>
</tbody>
</table>
**WATERWAY CONDITIONS (10+ YEAR TARGETS)**

<table>
<thead>
<tr>
<th>WATERWAY VALUE</th>
<th>CURRENT STATE</th>
<th>POTENTIAL IMPROVEMENT</th>
<th>TARGETS SCORES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access to the waterway and riparian corridor</td>
<td>supports a range of on water, in water and beside water experiences and is an enabling condition for all three social values. The current state is very low and the target is low.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aesthetics (Litter)</td>
<td>is a strong indicator of stream health – clean waterways are healthy waterways and aesthetically pleasing. Litter detracts from the sense of naturalness and creates a perception that a place is uncared for. It also detracts from the enjoyment of active and passive recreation. The current state is high and the target is very high.</td>
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<tr>
<td>Water Quality (Recreational)</td>
<td>is critical to minimise human health risks. Exposure to pathogens (disease causing microorganisms) via primary (e.g. swimming) and/or secondary (e.g. boating) can lead to illness. Water quality guidelines set water standards for primary and secondary contact. The current state is high and the target is high.</td>
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<tr>
<td>Bird (riparian)</td>
<td>is a strong indicator of stream health – clean waterways are healthy waterways and aesthetically pleasing. Litter detracts from the sense of naturalness and creates a perception that a place is uncared for. It also detracts from the enjoyment of active and passive recreation. The current state is high and the target is very high.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Macroinvertebrates</td>
<td>are high as a result of good instream and riparian habitat. Improving riparian vegetation and water quality from rural land is expected to ensure score remains high in long term.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vegetation (riparian)</td>
<td>is low meaning few of the expected riparian bird species were recorded. The urbanised sub-catchment means poor water quality and non-natural flow regimes, which lead to a likely riparian bird score of low. Significant species include the Eastern Great Egret.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vegetation Extent</td>
<td>denotes the percentage of reach that has continuous indigenous vegetation cover within 20 metres either side of the stream. The current state is moderate and the target is moderate.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vegetation Quality</td>
<td>is a description of quality of vegetation relative to Ecological Vegetation Classes (EVCs) and accounting for grassland or sparsely treed woodland communities which do not exhibit 100 per cent canopy cover. The current state is moderate and the target is moderate.</td>
<td></td>
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<td>Water Quality (Environmental)</td>
<td>indicates compliance with the State Environment Protection Policy (SEPP) Waters of Victoria environmental water quality objectives (EPA Water Quality Index) using the Yarra and Bay Report Card Scoring Method. The current state is moderate and the target is moderate.</td>
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The headwaters of Steel Creek rise in the Kinglake National Park and flow through the Steel Creek township before joining the Yarra River near Yarra Glen. Dinsons Creek is the main tributary of Steel Creek, flowing into it just upstream of the Yarra. Other tributaries include Jehovahophat, Pinchut, Dry, Full and Plenty creeks. Pauls Creek rises in the Toolangi State Forest near Toolangi and joins the Yarra upstream of Steel Creek, near Tarrawarra.

### PERFORMANCE OBJECTIVES

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<thead>
<tr>
<th>PO-ID</th>
<th>Condition Supported</th>
<th>Performance Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Water for Environment</td>
<td>Identify opportunities to reduce the key threat of summer low flow stress by addressing causal factors such as farm dams, climate change, diversions or urbanisation.</td>
</tr>
<tr>
<td>2</td>
<td>Vegetation Quality</td>
<td>Maintain or achieve high and very high quality vegetation (Vegetation Quality data level 4 and 5 – currently 2 km) through effective monitoring and management of threats including protection of endangered EVCs in these reaches. Fill data gaps and ensure additional high quality reaches are also protected.</td>
</tr>
<tr>
<td>3</td>
<td>Physical form</td>
<td>Investigate and mitigate threats to physical form and other high values</td>
</tr>
<tr>
<td>4</td>
<td>Vegetation Extent</td>
<td>Establish a continuous riparian vegetated buffer (9 km) and maintain existing vegetation (15 km) along priority reaches (using EVC benchmarks to at least a level 3 vegetation quality).</td>
</tr>
<tr>
<td>5</td>
<td>Participation</td>
<td>Increase participation rates from high to very high; support community groups, build capacity of land owners through rural programs and promote citizen science (e.g. Bioblitz program).</td>
</tr>
</tbody>
</table>
WATERWAY VALUES TARGETS (10 - 50 YEARS)

<table>
<thead>
<tr>
<th>TARGET</th>
<th>Current State</th>
<th>Current Trajectory</th>
<th>Potential Trajectory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stormwater Condition</td>
<td>Moderate</td>
<td>Moderate</td>
<td>High</td>
</tr>
<tr>
<td>Physical Form</td>
<td>Moderate</td>
<td>Modem</td>
<td>High</td>
</tr>
<tr>
<td>Water Quality (Recrational)</td>
<td>Moderate</td>
<td>Moderate</td>
<td>High</td>
</tr>
<tr>
<td>Access to the waterway and riparian corridor</td>
<td>Low</td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>Aesthetics (Litter)</td>
<td>Low</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Water Quality (Environmental)</td>
<td>Moderate</td>
<td>Moderate</td>
<td>High</td>
</tr>
<tr>
<td>Instream Connectivity</td>
<td>Moderate</td>
<td>Moderate</td>
<td>High</td>
</tr>
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<td>Vegetation Extent</td>
<td>Low</td>
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<td>High</td>
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</tr>
<tr>
<td>Recreation</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
</tbody>
</table>

There are insufficient bird observations to establish a current score. Investment in targeted management actions (e.g. riparian vegetation) should result in a long-term moderate score.

Fish score is moderate due to lack of suitable instream and riparian habitat, naturally low flows and barriers to movement. Current trajectory is driven by habitat suitability for common and widespread species. Improvements to flows, instream and riparian habitat and removal of barriers downstream is predicted to improve score to high in long term.

Frog score cannot be calculated because of a lack of data. Even with targeted management the future score is likely to be low because of the residual effects of urbanisation and land use intensification and emerging impacts of climate change.

Macrobenthos score is moderate as a result of a lack of instream and riparian habitat and flows. Climate change will reduce flows and score to low unless this impact can be mitigated. Improving riparian vegetation and maintaining flows will increase score to high in long term.

Platypus score is very low due to a lack of instream and riparian habitat and naturally low flows, although the Yarra River population may occasionally use lower reaches. Improvement to their habitat may improve score to low in long term.

Vegetation score is low overall, however there are better quality reaches in upper parts resulting from past improvement works. Stock access, pest plants and animals and climate change will reduce score to very low unless mitigated. There are 8 known listed water dependent species. Enhancing vegetation and managing threats will increase score to moderate in long term.

Amenity, which is based on level of satisfaction, is currently very high but likely to decline in long-term if environmental values decline; target is to maintain as very high.

Community connection, which is based on level of satisfaction, is currently high but likely to decline in long-term if opportunities don’t keep up with population growth; target is to maintain as high.

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Water for environment indicates compliance with flow requirements of freshwater river systems. These are identified through FLOWS method, or (where there is no flow study) Flow Stress Ranking (FSR), which indicates the level of threat to river health based on the level of water extractions by rural, urban and industry users. The current state is very low and the target is low.

Vegetation Quality is a description of quality of vegetation relative to Ecological Vegetation Classes (EVCs) and accounting for grassland or sparsely treed woodland communities which do not exhibit 100 per cent canopy cover. The current state is low and the target is moderate.

Vegetation Extent denotes the percentage of reach that has continuous indigenous vegetation cover within 20 metres either side of the stream. The current state is moderate and the target is high.

Instream Connectivity is measured by the proportion of waterway length within the management unit that is free from barriers to fish movement. The current state is moderate and the target is moderate.

Water Quality (Environmental) indicates compliance with the State Environment Protection Policy (SEPP) Waters of Victoria environmental water quality objectives (EPA Water Quality Index) using the Yarra and Bay Report Card Scoring Method. The current state is moderate and the target is moderate.

Access to the waterway and riparian corridor supports a range of on water, in water and beside water experiences and is an enabling condition for all three social values. The current state is very low and the target is low.

Aesthetics (Litter) is a strong indicator of stream health – clean waterways are healthy waterways and aesthetically pleasing. Litter detracts from the sense of naturalness and creates a perception that a place is uncared for. It also detracts from the enjoyment of active and passive recreation. The current state is high and the target is very high.

Water Quality (Recrational) is critical to minimise human health risks. Exposure to pathogens (disease causing microorganisms) via primary (e.g. swimming) and/or secondary (e.g. boating) can lead to illness. Water quality guidelines set water standards for primary and secondary contact. The current state is high and the target is high.

Participation in waterway management creates and enhances a sense of community. Similarly, citizen science strengthens social capital by increasing knowledge of environmental / ecosystem services, skills and capacities, allowing people to meet and enhance social networks. The current state is high and the target is very high.
Steels and Pauls Creek (Source) Sub-catchment

The headwaters of Steels Creek rise in the Kinglake National Park and flow through the Steels Creek township before joining the Yarra River near Yarra Glen. Dions Creek is the main tributary of Steels Creek, flowing into it just upstream of the Yarra. Other tributaries include Jehosophat, Pinchgut, Dry, Full and Plenty creeks. Pauls Creek rises in the Toolangi State Forest near Toolangi and joins the Yarra upstream of Steels Creek, near Tarrawarra.

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<th>Targets</th>
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**Performance Objectives**

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<td>1</td>
<td>Water Quality - Environmental</td>
<td>Improve water quality for environmental values and Port Phillip Bay by reducing turbidity and nutrient run-off from rural and forest land. This may include establishment of vegetated buffers in headwater streams.</td>
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<td>2</td>
<td>Vegetation Quality</td>
<td>Maintain or achieve high and very high quality vegetation (Vegetation Quality data level 4 and 5 - currently 17 km) through effective monitoring and management of threats including protection of endangered EVCs in these reaches. Fill data gaps and ensure additional high quality reaches are also protected.</td>
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<td>Vegetation Quality</td>
<td>Improve understanding of the extent, composition and condition of high and very high quality vegetation, and effectively monitor and manage both values and threats</td>
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<td>4</td>
<td>Participation</td>
<td>Increase participation rates from high to very high; support community groups and build capacity of land owners through rural programs. Increase participation in citizen science through promotion of high value areas (e.g. Kinglake National Park).</td>
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**How to read the targets scores?**

Current state - current score of waterway values and conditions

Current trajectory - long-term scores if current policies and effort continue

Potential trajectory - targets for the long-term scores to be achieved through implementing the Strategy

**Score key:**
- Very Low
- Low
- Moderate
- High
- Very High

For description of scores see metrics tables at end of document.
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Frogs score is very high since all, or almost all, species of frog were recorded. With appropriate management score should be maintained as very high.

Macroinvertebrates score is very high as much of the sub-catchment is forested. Monitoring and maintenance of vegetation are expected to ensure score remains very high in long term.

Platypus score is very low. It is unlikely these reaches would have supported a large platypus population due to low flows. Poor downstream habitat has also disconnected these reaches from the Yarra River population.

Vegetation is high as these upper reaches are largely forested. Threats including pest plants and animals and climate change are predicted to reduce the rating to moderate if not adequately addressed. There are 6 known listed water dependent flora species.

Amenity, which is based on level of satisfaction, is currently very high but likely to decline in long term if environmental values decline; target is to maintain as very high.

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Recreation, which is based on level of satisfaction, is currently high but likely to decline in long term if supply doesn’t keep up with population growth; target is to improve to very high.

Insufficient bird observation to establish a birds (riparian) score. Despite the effects of climate change adequate investment in targeted management such as riparian revegetation should ensure a riparian bird score of moderate. Significant species include the Powerful Owl.

Fish score is low, as can be partly expected for headwater streams, but habitat suitability is also impacted by low flows and barriers to fish movement downstream. Current trajectory is driven by habitat suitability for common and widespread species under climate change.

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Participation in waterway management creates and enhances a sense of community. Similarly, citizen science strengthens social capital by increasing knowledge of environmental / ecosystem services, skills and capacities, allowing people to meet and enhance social networks. The current state is high and the target is very high.
Stringybark Creek Sub-catchment

Stringybark Creek originates near Silvan and flows through Coldstream before joining Olinda Creek just upstream of the Yarra River. Tributaries of Stringybark Creek include Little Stringybark and Log creeks.

 Targets

<table>
<thead>
<tr>
<th>Waterway values targets</th>
<th>Waterway value targets are established to ensure goals are on track.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 - 50 years</td>
<td></td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Waterway conditions targets</th>
<th>Waterway management focuses on ensuring waterway conditions are appropriate to improve waterway values.</th>
</tr>
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<tbody>
<tr>
<td>10+ years</td>
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<tr>
<th>Performance objectives</th>
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</tr>
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<tbody>
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How to read the targets scores?
Current state - current score of waterway values and conditions
Current trajectory - long-term scores if current policies and effort continue
Potential trajectory - targets for the long-term scores to be achieved through implementing the Strategy

Score key: Very Low, Low, Moderate, High, Very High

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<td>1</td>
<td>Water for Environment</td>
<td>Identify opportunities to reduce the key threat of summer low flow stress by addressing causal factors such as farm dams, climate change, diversions or urbanisation.</td>
</tr>
<tr>
<td>2</td>
<td>Stormwater</td>
<td>Prevent decline in stormwater condition, treat urban development in the Stringybark Creek catchment, so directly connected imperviousness (DCI) remains below 0.5% at the confluence with the Yarra River, and throughout the catchment. For every hectare of new impervious area, this requires harvesting around 5.8 ML/y and infiltrating 2.2 ML/y, which is about 470 ML/y and 70 ML/y for full development to the urban growth boundary</td>
</tr>
<tr>
<td>3</td>
<td>Vegetation Extent</td>
<td>Establish a continuous riparian vegetated buffer (7 km) and maintain existing vegetation (13 km) along priority reaches (using EVC benchmarks to at least a level 3 vegetation quality).</td>
</tr>
<tr>
<td>4</td>
<td>Participation</td>
<td>Increase participation rates from moderate to very high; support community groups and build capacity of farmers and land owners through rural programs. Increase support for community/environment groups as population increases.</td>
</tr>
</tbody>
</table>
**Stringybark Creek Sub-catchment**

**MAP**

**How to read the targets scores?**

For description of scores see metrics tables at... Low    Low    Moderate    High    Very High        

**Current state**

**Current trajectory**

**Potential trajectory**

---

**Water Quality (Environmental)** indicates compliance with the State Environment Protection Policy (SEPP) Waters of Victoria environmental water quality objectives (EPA Water Quality Index) using the Yarra and Bay Report Card Scoring Method. The current state is moderate and the target is moderate.

**Water for environment** indicates compliance with flow requirements of freshwater river systems. These are identified through FLOWS method, or (where there is no flow study) Flow Stress Ranking (FSR), which indicates the level of threat to river health based on the level of water extractions by rural, urban and industry users. The current state is moderate and the target is moderate.

**Water Quality (Aesthetics)** is a strong indicator of stream health – clean waterways are healthy waterways and aesthetically pleasing. Litter detracts from the sense of naturalness and creates a perception that a place is uncared for. It also detracts from the enjoyment of active and passive recreation. The current state is high and the target is very high.

**Aesthetics (Litter)** is a strong indicator of stream health – clean waterways are healthy waterways and aesthetically pleasing. Litter detracts from the sense of naturalness and creates a perception that a place is uncared for. It also detracts from the enjoyment of active and passive recreation. The current state is high and the target is very high.

**Participation** in waterway management creates and enhances a sense of community. Similarly, citizen science strengthens social capital by increasing knowledge of environmental / ecosystem services, skills and capacities, allowing people to meet and enhance social networks. The current state is moderate and the target is very high.

**Vegetation Extent** denotes the percentage of reach that has continuous indigenous vegetation cover within 20 metres either side of the stream. The current state is low and the target is moderate.

**Instream Connectivity** is measured by the proportion of waterway length within the management unit that is free from barriers to fish movement. The current state is moderate and the target is high.

**Access to the waterway and riparian corridor** supports a range of on water, in water and beside water experiences and is an enabling condition for all three social values. The current state is very low and the target is low.

**Water Quality (Environmental)** indicates compliance with the State Environment Protection Policy (SEPP) Waters of Victoria environmental water quality objectives (EPA Water Quality Index) using the Yarra and Bay Report Card Scoring Method. The current state is moderate and the target is moderate.

**Vegetation Quality** is a description of quality of vegetation relative to Ecological Vegetation Classes (EVCs) and accounting for grassland or sparsely treed woodland communities which do not exhibit 100 per cent canopy cover. The current state is very low and the target is moderate.

**Macroinvertebrates** score is low due to poor riparian and instream habitat resulting from large scale land use changes and channel modification. Extensive improvements in riparian habitat and management of flows is predicted to increase score to high in long term.

**Vegetation score** is low from land use impacts that has modified the channel and fragmented the vegetation. Stock access, pest plants and animals and climate change will reduce score to very low unless mitigated. Enhancing vegetation and managing threats will increase score to moderate in long term.

**Physical form** is the degree of geomorphic naturalness combined with likelihood of erosion occurring along bed or banks of waterways. The current state is moderate and the target is moderate.

**Stormwater Condition** is measured by directly connected imperviousness (DCI), which is the proportion of the impervious surface in the catchment that is directly connected to a stream through a conventional drainage connection. The current state is high and the target is high.
Watsons Creek originates in the forested Kinglake National Park, flowing through cleared land at Christmas Hill and Kangaroo Ground before entering the Yarra River near Wonga Park. Tributaries of Watsons Creek include Long Gully, Five Mile, Sugarloaf and Stevenson creeks. Sugarloaf Reservoir is within this catchment.

Watsons Creek Sub-catchment

Watsons Creek Sub-catchment

WATERWAY VALUES TARGETS (10 - 50 YEARS)

Current state - current score of waterway values and conditions
Current trajectory - long-term scores if current policies and effort continue
Potential trajectory - targets for the long-term scores to be achieved through implementing the Strategy

How to read the targets scores?

Score key:

- Very Low
- Low
- Moderate
- High
- Very High

For description of scores see metrics tables at end of document

Performance Objectives

Guides activities and indicates progress towards improving the waterway conditions.

10 - 50 years

Waterway values targets

Waterway value targets are established to ensure goals are on track.

10+ years

Waterway conditions targets

Waterway management focuses on ensuring waterway conditions are appropriate to improve waterway values.

1 - 10 years

Performance objectives

Guide activities and indicate progress towards improving the waterway conditions.

PO-ID | Condition Supported | Performance Objectives
---|---|---
1 | Water for Environment | Identify opportunities to maintain or improve the flow regime in refuge reaches to support River Blackfish and platypus populations.
2 | Vegetation Quality | Maintain or achieve high and very high quality vegetation (Vegetation Quality data level 4 and 5 – currently 26 km) through effective monitoring and management of threats including protection of endangered EVCs in these reaches. Fill data gaps and ensure additional high quality reaches are also protected.
3 | Vegetation Extent | Establish a continuous riparian vegetated buffer (10 km) and maintain existing vegetation (55 km) along priority reaches (using EVC benchmarks to at least a level 3 vegetation quality).
4 | Water Quality - Environmental | Improve water quality for environmental values and Port Phillip Bay by reducing turbidity and nutrient run-off from rural and forest land. This may include establishment of vegetated buffers in headwater streams.
5 | Participation | Increase participation rates from moderate to very high; support community groups and build capacity of land owners through rural programs. Increase participation in citizen science through promotion of high value areas (e.g. Kinglake National Park).
**PERFORMANCE OBJECTIVES**

1. Increase participation rates from moderate to very high; support community groups and build capacity of land owners through rural programs. Increase participation (e.g. landowners, community groups) in waterway management initiatives.

2. Improve water quality for environmental values and Port Phillip Bay by reducing turbidity and nutrient run-off from rural and forest land. This may include establishment of vegetated buffers in headwater streams. Protecting the best and enhancing other areas will ensure current score is maintained in long term.

3. Christmas Hill and Kangaroo Ground before entering the Yarra River near Wonga Park. Tributaries of Watsons Creek include Long Gully, Five Mile, Sugarloaf and Stevenson creeks. Sugarloaf Reservoir is protected. Identify opportunities to maintain or improve the flow regime in refuge reaches to support River Blackfish and platypus populations. Water quality guidelines set water standards for primary and secondary contact. The current state is very high and the target is very high.

4. Access to the waterway and riparian corridor supports a range of on water, in water and beside water experiences and is an enabling condition for all three social values. The current state is very low and the target is low.

**WATERWAY VALUES TARGETS (10 - 50 YEARS)**

<table>
<thead>
<tr>
<th>Waterway Values</th>
<th>Current State</th>
<th>Current Trajectory</th>
<th>Potential Trajectory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birds (riparian)</td>
<td>Very High</td>
<td>Very High</td>
<td>Very High</td>
</tr>
<tr>
<td>Fish score</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Very High</td>
</tr>
<tr>
<td>Frogs score</td>
<td>Very High</td>
<td>Very High</td>
<td>Very High</td>
</tr>
<tr>
<td>Macroinvertebrates score</td>
<td>Very High as much of the waterway has good riparian and instream habitat. Monitoring and maintenance of vegetation and flows is expected to maintain the very high score in long term.</td>
<td>Very High</td>
<td>Very High</td>
</tr>
<tr>
<td>Platypus score</td>
<td>Very Low</td>
<td>Low</td>
<td>Very High</td>
</tr>
<tr>
<td>Vegetation score</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Very High</td>
</tr>
<tr>
<td>Amenity</td>
<td>Very High</td>
<td>Very High</td>
<td>Very High</td>
</tr>
<tr>
<td>Community connection</td>
<td>Very High</td>
<td>Very High</td>
<td>Very High</td>
</tr>
<tr>
<td>Recreation</td>
<td>Very High</td>
<td>Very High</td>
<td>Very High</td>
</tr>
<tr>
<td>Stormwater Condition</td>
<td>Measured by directly connected imperviousness (DCI), which is the proportion of the impervious surface in the catchment that is directly connected to a stream through a conventional drainage connection. The current state is very high and the target is very high.</td>
<td>Moderate</td>
<td>Very High</td>
</tr>
<tr>
<td>Physical form</td>
<td>High</td>
<td>High</td>
<td>Very High</td>
</tr>
<tr>
<td>Water for environment</td>
<td>Indicates compliance with flow requirements of freshwater river systems. These are identified through FLOWS method, or (where there is no flow study) Flow Stress Ranking (FSR), which indicates the level of threat to river health based on the level of water extractions by rural, urban and industry users. The current state is high and the target is moderate.</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Vegetation Quality</td>
<td>A description of quality of vegetation relative to Ecological Vegetation Classes (EVCs) and accounting for grassland or sparsely treed woodland communities which do not exhibit 100 per cent canopy cover. The current state is high and the target is high.</td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>Vegetation Extent</td>
<td>Denotes the percentage of reach that has continuous indigenous vegetation cover within 20 metres either side of the stream. The current state is very high and the target is very high.</td>
<td>Moderate</td>
<td>High</td>
</tr>
<tr>
<td>Instream Connectivity</td>
<td>Measured by the proportion of waterway length within the management unit that is free from barriers to fish movement. The current state is high and the target is high.</td>
<td>Moderate</td>
<td>High</td>
</tr>
<tr>
<td>Water Quality (Environmental)</td>
<td>Indicates compliance with the State Environment Protection Policy (SEPP) Waters of Victoria environmental water quality objectives (EPA Water Quality Index) using the Yarra and Bay Report Card Scoring Method. The current state is moderate and the target is moderate.</td>
<td>High</td>
<td>Moderate</td>
</tr>
<tr>
<td>Water Quality (Recreational)</td>
<td>Is critical to minimise human health risks. Exposure to pathogens (disease causing microorganisms) via primary (e.g. swimming) and/or secondary (e.g. boating) can lead to illness. Water quality guidelines set water standards for primary and secondary contact. The current state is very high and the target is very high.</td>
<td>High</td>
<td>Very High</td>
</tr>
<tr>
<td>Access to the waterway and riparian corridor</td>
<td>Supports a range of on water, in water and beside water experiences and is an enabling condition for all three social values. The current state is very low and the target is low.</td>
<td>Moderate</td>
<td>Very High</td>
</tr>
<tr>
<td>Aesthetics (Litter)</td>
<td>Is a strong indicator of stream health – clean waterways are healthy waterways and aesthetically pleasing. Litter detracts from the sense of naturalness and creates a perception that a place is uncared for. It also detracts from the enjoyment of active and passive recreation. The current state is high and the target is very high.</td>
<td>Moderate</td>
<td>Very High</td>
</tr>
<tr>
<td>Water Quality (Recreational)</td>
<td>Is critical to minimise human health risks. Exposure to pathogens (disease causing microorganisms) via primary (e.g. swimming) and/or secondary (e.g. boating) can lead to illness. Water quality guidelines set water standards for primary and secondary contact. The current state is very high and the target is very high.</td>
<td>High</td>
<td>Very High</td>
</tr>
<tr>
<td>Participation in waterway management</td>
<td>Creates and enhances a sense of community. Similarly, citizen science strengthens social capital by increasing knowledge of environmental / ecosystem services, skills and capacities, allowing people to meet and enhance social networks. The current state is moderate and the target is very high.</td>
<td>High</td>
<td>Very High</td>
</tr>
</tbody>
</table>
Watts River (Rural) Sub-catchment

Watts River rises in the Yarra Ranges National Park near Mount Donna Buang. The rural reaches of the Watts River extend downstream from the Maroondah Reservoir and through Healesville before joining the Yarra River below the Maroondah Highway. Major tributaries include Meyers, Chum and Grace Burn creeks. Piccaninny and Coranderrk creeks also lie nearby.

### Targets

<table>
<thead>
<tr>
<th>Waterway values targets</th>
<th>Waterway value targets are established to ensure goals are on track.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 - 50 years</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Waterway conditions targets</th>
<th>Waterway management focuses on ensuring waterway conditions are appropriate to improve waterway values.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10+ years</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Performance objectives</th>
<th>Guide activities and indicate progress towards improving the waterway conditions.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 10 years</td>
<td></td>
</tr>
</tbody>
</table>

#### How to read the targets scores?

- **Current state** - current score of waterway values and conditions
- **Current trajectory** - long term scores if current policies and effort continue
- **Potential trajectory** - targets for the long-term scores to be achieved through implementing the Strategy

#### Targets

**Waterway values targets**
- Waterway value targets are established to ensure goals are on track.

**Waterway conditions targets**
- Waterway management focuses on ensuring waterway conditions are appropriate to improve waterway values.

**Performance objectives**
- Guide activities and indicate progress towards improving the waterway conditions.

#### How to read the targets scores?

- **Current state** - current score of waterway values and conditions
- **Current trajectory** - long term scores if current policies and effort continue
- **Potential trajectory** - targets for the long-term scores to be achieved through implementing the Strategy

#### Score key:

- **Very Low**
- **Low**
- **Moderate**
- **High**
- **Very High**

For description of scores see metrics tables at end of document.

### PERFORMANCE OBJECTIVES

<table>
<thead>
<tr>
<th>PO-ID</th>
<th>Condition Supported</th>
<th>Performance Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Water for Environment</td>
<td>Identify opportunities to maintain or improve the flow regime in refuge reaches to support platypus populations.</td>
</tr>
<tr>
<td>2</td>
<td>Water Quality - Environmental</td>
<td>Improve water quality for environmental values and Port Phillip Bay by reducing turbidity impacts from rural land, urban growth and unsealed roads as well as nutrient inputs from rural land and septic tanks. This may include establishment of vegetated buffers in headwater streams.</td>
</tr>
<tr>
<td>3</td>
<td>Stormwater</td>
<td>Prevent decline in stormwater condition, treat urban development in the region of Healesville and Badger Creek, so directly connected imperviousness (DCI) remains below 0.6% at the confluence with the Yarra River, and throughout the catchment. For every hectare of new impervious area, this requires managing of threats including protection of endangered EVCs in these reaches. Fill data gaps and ensure additional high quality reaches are also protected.</td>
</tr>
<tr>
<td>4</td>
<td>Vegetation Extent</td>
<td>Establish a continuous riparian vegetated buffer (8 km) and maintain existing vegetation (42 km) along priority reaches (using EVC benchmarks to at least a level 3 vegetation quality).</td>
</tr>
<tr>
<td>5</td>
<td>Vegetation Quality</td>
<td>Maintain or achieve high and very high quality vegetation (Vegetation Quality data level 4 and 5 - currently 19 km) through effective monitoring and management of threats including protection of endangered EVCs in these reaches. Fill data gaps and ensure additional high quality reaches are also protected.</td>
</tr>
<tr>
<td>6</td>
<td>Participation</td>
<td>Increase participation rates from moderate to very high; support community groups and build capacity of land owners through rural programs. Increase participation in citizen science through promotion of high value areas (e.g. Yarra Ranges National Park).</td>
</tr>
</tbody>
</table>
1. Increase participation rates from moderate to very high; support community groups and build capacity of land owners through rural programs.

2. Improve water quality for environmental values and Port Phillip Bay by reducing turbidity impacts from rural land, urban growth and unsealed roads as well as nutrient inputs from rural land and septic tanks. This may include establishment of vegetated buffers in headwater streams.

3. Fill data gaps and ensure additional high quality reaches are also protected. Management of threats including protection of endangered EVCs in these reaches.

4. Establish a continuous riparian vegetated buffer (8 km) and maintain existing vegetation (42 km) along priority reaches (using EVC benchmarks to at least a score of Moderate). Significant species include the Powerful Owl and Eastern Great Egret.

Watts River (Rural) Sub-catchment

- **Water Quality (Recreational)** is critical to minimise human health risks. Exposure to pathogens (disease causing microorganisms) via primary (e.g. swimming) and/or secondary (e.g. boating) can lead to illness. Water quality guidelines set water standards for primary and secondary contact. The current state is high and the target is very high.

- **Water Quality (Environmental)** indicates compliance with the State Environment Protection Policy (SEPP) Waters of Victoria environmental water quality objectives (EPA Water Quality Index) using the Yarra and Bay Report Card Scoring Method. The current state is moderate and the target is high.

- **Vegetation Extent** denotes the percentage of reach that has continuous indigenous vegetation cover within 20 metres either side of the stream. The current state is high and the target is very high.

- **Vegetation Quality** is a description of quality of vegetation relative to Ecological Vegetation Classes (EVCs) and accounting for grassland or sparsely treed woodland communities which do not exhibit 100 per cent canopy cover. The current state is moderate and the target is moderate.

- **Stormwater Condition** is measured by directly connected imperviousness (DCI), which is the proportion of the impervious surface in the catchment that is directly connected to a stream through a conventional drainage connection. The current state is very high and the target is very high.

**WATERWAY CONDITIONS [10+ YEAR TARGETS]**

- **Physical form** is the degree of geomorphic naturalness combined with likelihood of erosion occurring along bed or banks of waterways. The current state is moderate and the target is moderate.

- **Water for environment** indicates compliance with flow requirements of freshwater river systems. These are identified through FLOWS method, or (where there is no flow study) Flow Stress Ranking (FSR), which indicates the level of threat to river health based on the level of water extractions by rural, urban and industry users. The current state is high and the target is high.

- **Vegetation score** is moderate with some high quality reaches in headwaters. Pest plants and animals and climate change impacts will reduce score to low unless mitigated. Protecting the best and enhancing other areas will ensure current score is maintained in long term.

- **Amenity** is based on level of satisfaction, is currently very high but likely to decline in long-term if environmental values decline. Target is to maintain as very high.

- **Community connection** is based on level of satisfaction, is currently very high but likely to decline in long-term if opportunities don't keep up with population growth. Target is to maintain as high.

- **Recreation** is based on level of satisfaction, is currently high but likely to decline in long-term if supply doesn't keep up with population growth. Target is to improve to very high.

- **Participation** in waterway management creates and enhances a sense of community. Similarly, citizen science strengthens social capital by increasing knowledge of environmental / ecosystem services, skills and capacities, allowing people to meet and enhance social networks. The current state is moderate and the target is very high.

- **Platypus** are currently rated as moderate, largely due to a lack of riparian and instream habitat, flow stress and disconnection from the upper reaches. Improving vegetation will enhance their habitat however managing flows will be critical to maintaining the current rating in the long term.

- **Insufficient bird observation to establish a birds (riparian) score. Despite the effects of climate change we believe adequate investment in targeted management such as riparian revegetation should ensure a riparian bird score of Moderate. Significant species include the Powerful Owl and Eastern Great Egret.**

**WATERWAY VALUES TARGETS [10- 50 YEARS]**

<table>
<thead>
<tr>
<th>TARGETS</th>
<th>Current state</th>
<th>Current trajectory</th>
<th>Potential trajectory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waterway values</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Physical form</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Water for environment</strong></td>
<td></td>
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<tr>
<td><strong>Vegetation</strong></td>
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<td></td>
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</tr>
<tr>
<td><strong>Amenity</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>Community connection</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Recreation</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Participation</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**How to read the targets scores?**

For description of scores see metrics tables at end of document.

- **Low**
- **Moderate**
- **High**
- **Very High**

**Current state**

- **Current trajectory**

- **Potential trajectory**
Watts River (Source) Sub-catchment

Watts River rises in the Yarra Ranges National Park near Mount Donna Buang. The Watts River source reaches and tributaries feed the Maroondah Reservoir upstream of Healesville. Major tributaries include Meyers, Chum and Grace Burn creeks. Picaninnie and Coranderk creeks also lie nearby. Most of this sub-catchment is a source of drinking water and access is prohibited.

Performance Objectives

<table>
<thead>
<tr>
<th>PO-ID</th>
<th>Condition Supported</th>
<th>Performance Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Water for Environment</td>
<td>Environmental water recovery targets are captured at lowest downstream subcatchment (Yarra River Lower), which reflects targets for whole catchment.</td>
</tr>
<tr>
<td>2</td>
<td>Water for Environment</td>
<td>Identify opportunities to maintain or improve the flow regime in refuge reaches to support platypus populations.</td>
</tr>
<tr>
<td>3</td>
<td>Instream Connectivity</td>
<td>Increase instream connectivity provide fish passage along Donnellys Creek from the confluence with the Watts River (remove barrier at Donnellys Weir)</td>
</tr>
<tr>
<td>4</td>
<td>Instream Connectivity</td>
<td>Increase instream connectivity provide fish passage along Graceburn Creek from the confluence with the Watts River (remove barrier at Graceburn Weir)</td>
</tr>
<tr>
<td>5</td>
<td>Vegetation Quality</td>
<td>Maintain or achieve high and very high quality vegetation (Vegetation Quality data level 4 and 5 - currently 58 km) through effective monitoring and management of threats including protection of endangered EVCs in these reaches. Fill data gaps and ensure additional high quality reaches are also protected.</td>
</tr>
</tbody>
</table>

For description of scores see metrics tables at end of document.
1. Identify opportunities to maintain or improve the flow regime in refuge reaches to support platypus populations.

2. Increase instream connectivity and provide fish passage along Donnellys Creek from the confluence with the Watts River (remove barrier at Donnellys Weir).

**Watts River (Source) Sub-catchment**

- **Water for Environment**
  - **Instream Connectivity**
  - **Vegetation Quality**
  - **Macroinvertebrates**
  - **Macroinvertebrates**
  - **Fish**
  - **Owl**
  - **Insufficient bird observation to establish a birds (riparian) score. Despite the effects of climate change, adequate investment in targeted management, such as protecting riparian vegetation, should ensure a riparian bird score of high. Significant species of riparian bird occurring in this sub-catchment include the Powerful Owl.**
  - **Macroinvertebrates**
  - **Fish**
  - **Owl**
  - **Insufficient bird observation to establish a birds (riparian) score. Despite the effects of climate change, adequate investment in targeted management, such as protecting riparian vegetation, should ensure a riparian bird score of high. Significant species of riparian bird occurring in this sub-catchment include the Powerful Owl.**

**WATERWAY VALUES TARGETS (10-50 YEARS)**

- **Waterway Conditions (10+ Year Targets)**
  - **Current State**
  - **Potential Trajectory**
  - **Targets**
  - **Scores**
  - **Insufficient data to assess frogs score. With appropriate management score is expected to be high in long term.**
  - **Macroinvertebrates**
  - **Fish**
  - **Owl**
  - **Insufficient bird observation to establish a birds (riparian) score. Despite the effects of climate change, adequate investment in targeted management, such as protecting riparian vegetation, should ensure a riparian bird score of high. Significant species of riparian bird occurring in this sub-catchment include the Powerful Owl.**

**TARGETS SCORES**
**Woori Yallock Creek Sub-catchment**

Woori Yallock Creek rises near Macclesfield in the Yarra Ranges and joins the Yarra River near Healesville. The Wandin Yallock Creek rises near the Silvan Reservoir and joins Woori Yallock Creek just upstream of the Yarra. Other tributaries of Woori Yallock Creek include Cockatoo, Shepherd and McCrae creeks.

**Targets**

<table>
<thead>
<tr>
<th>Waterway values targets</th>
<th>Waterway value targets are established to ensure goals are on track.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 - 50 years</td>
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<th>Waterway conditions targets</th>
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<table>
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<tr>
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<th>Guide activities and indicate progress towards improving the waterway conditions.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 10 years</td>
<td></td>
</tr>
</tbody>
</table>

**How to read the targets scores?**

- **Current state** - current score of waterway values and conditions
- **Current trajectory** - long-term scores if current policies and effort continue
- **Potential trajectory** - targets for the long-term scores to be achieved through implementing the Strategy

**Score key:**

- **Very Low**
- **Low**
- **Moderate**
- **High**
- **Very High**

*For description of scores see metrics tables at end of document*

**PERFORMANCE OBJECTIVES**

<table>
<thead>
<tr>
<th>PO-ID</th>
<th>Condition Supported</th>
<th>Performance Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Water for Environment</td>
<td>Identify opportunities to maintain or improve the flow regime in refuge reaches to support platypus populations.</td>
</tr>
<tr>
<td>2</td>
<td>Water for Environment</td>
<td>Identify opportunities to reduce the key threat of summer low flow stress by addressing causal factors such as farm dams, climate change, diversions or urbanisation.</td>
</tr>
<tr>
<td>3</td>
<td>Stormwater</td>
<td>Prevent decline in stormwater condition, treat urban development (e.g. from new developments in Cockatoo, Emerald and Seville), so directly connected imperviousness (DCI) remains below 0.3% at the confluence with the Yarra River, and at current levels along the stem of Woori Yallock Creek and Cockatoo Creek and tributaries. For every hectare of new impervious area, this requires harvesting around 6.3 ML/y and infiltrating 2.8 ML/y, which is about 0.7 GL/y and 0.3 GL/y for full development to the urban growth boundary.</td>
</tr>
<tr>
<td>4</td>
<td>Vegetation Extent</td>
<td>Establish a continuous riparian vegetated buffer (50 km) and maintain existing vegetation (197 km) along priority reaches (using EVC benchmarks to at least level 3 vegetation quality).</td>
</tr>
<tr>
<td>5</td>
<td>Vegetation Quality</td>
<td>Maintain or achieve high and very high quality vegetation (Vegetation Quality data level 4 and 5 - currently 84 km) through effective monitoring and management of threats including protection of endangered EVCs in these reaches. Fill data gaps and ensure additional high quality reaches are also protected.</td>
</tr>
<tr>
<td>6</td>
<td>Water Quality - Environmental</td>
<td>Improve water quality for environmental values and Port Phillip Bay by reducing sediment run-off from rural land, urban growth and unasealed roads as well as nutrient inputs from rural land and septic tanks. This may include establishment of vegetated buffers in headwater streams.</td>
</tr>
<tr>
<td>7</td>
<td>Water Quality - Environmental</td>
<td>Improve water quality for environmental values by reducing pesticide impacts from rural and urban land.</td>
</tr>
<tr>
<td>8</td>
<td>Water Quality - Environmental</td>
<td>Protect water quality for Port Phillip Bay and waterways by maintaining the current quality of discharges from sewage treatment plants (and reducing where possible) and ensuring they are released in a manner that supports environmental values in the waterway.</td>
</tr>
<tr>
<td>9</td>
<td>Physical form</td>
<td>Investigate and mitigate threats to physical form and other high values</td>
</tr>
<tr>
<td>10</td>
<td>Participation</td>
<td>Increase participation rates from moderate to very high, support community groups and build capacity of land owners through rural programs. Increase participation in citizen science through promotion of high value areas (e.g. Yellingbo Nature Conservation Reserve).</td>
</tr>
</tbody>
</table>
**Performance Objectives**

1. Improve water quality for environmental values by reducing pesticide impacts from rural and urban land.

2. Improve water quality for environmental values and Port Phillip Bay by reducing sediment run-off from rural land, urban growth and unsealed roads as well.

3. Investigate and mitigate threats to physical form and other high values.

4. Protect water quality for Port Phillip Bay and waterways by maintaining the current quality of discharges from sewage treatment plants (and reducing where possible).

5. Prevent decline in stormwater condition, treat urban development (e.g. from new developments in Cockatoo, Emerald and Seville), so directly connected waterways improve to very high.

6. Participation in waterway management creates and enhances a sense of community. Similarly, citizen science strengthens social capital by increasing knowledge of environmental / ecosystem services, skills and capacities, allowing people to meet and enhance social networks. The current state is moderate and the target is high.

### Targets Scores

<table>
<thead>
<tr>
<th>Waterway Values Targets (10 - 50 years)</th>
<th>Current state</th>
<th>Current trajectory</th>
<th>Potential trajectory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetation Extent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water Quality (Environmental)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vegetation Quality</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stormwater</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical form</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water for environment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instream Connectivity</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Water Quality (Environmental)</td>
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</tr>
<tr>
<td>Vegetation Quality</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access to the waterway</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aesthetics (Litter)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water Quality (Recreational)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participation</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**How to read the targets scores?**

For description of scores see metrics tables at the bottom of the page.

**Current state**
- Current state of each element.

**Current trajectory**
- Potential for improvement and change under current trajectory.

**Potential trajectory**
- Potential for improvement and change under a more optimistic trajectory.

- **Low**
- **Moderate**
- **High**
- **Very High**

- **Score key:**
  - 10 - 50 years

- **Vegetation Extent**
  - denotes the percentage of reach that has continuous indigenous vegetation cover within 20 metres either side of the stream. The current state is high and the target is very high.

- **Vegetation Quality**
  - is a description of quality of vegetation relative to Ecological Vegetation Classes (EVCs) and accounting for grassland or sparsely treed woodland communities which do not exhibit 100 per cent canopy cover. The current state is moderate and the target is moderate.

- **Instream Connectivity**
  - is measured by the proportion of waterway length within the management unit that is free from barriers to fish movement. The current state is moderate and the target is moderate.

- **Water Quality (Environmental)**
  - indicates compliance with the State Environment Protection Policy (SEPP) Waters of Victoria environmental water quality objectives (EPA Water Quality Index) using the Yarra and Bay Report Card Scoring Method. The current state is moderate and the target is moderate.

- **Access to the waterway**
  - and riparian corridor supports a range of on water, in water and beside water experiences and is an enabling condition for all three social values. The current state is very low and the target is low.

- **Aesthetics (Litter)**
  - is a strong indicator of stream health – clean waterways are healthy waterways and aesthetically pleasing. Litter detracts from the sense of naturalness and creates a perception that a place is uncared for. It also detracts from the enjoyment of active and passive recreation. The current state is moderate and the target is high.

- **Water Quality (Recreational)**
  - is critical to minimise human health risks. Exposure to pathogens (disease causing microorganisms) via primary (e.g. swimming) and/or secondary (e.g. boating) can lead to illness. Water quality guidelines set water standards for primary and secondary contact. The current state is high and the target is high.

- **Participation**
  - in waterway management creates and enhances a sense of community. Similarly, citizen science strengthens social capital by increasing knowledge of environmental / ecosystem services, skills and capacities, allowing people to meet and enhance social networks. The current state is moderate and the target is very high.
The middle and lower sections of the Yarra River lie downstream of Warrandyte. The middle section of the Yarra flows through the Warrandyte State Park and Yarra Valley Parklands. Tributaries in this area include Cherry Hill and Chirnside Park drains, and Jumping, Andersons, Harris Gully, Ruffeys and Salt creeks. Tributaries in the lower section include Merri and Gardiners creeks and the Plenty River.

<table>
<thead>
<tr>
<th>Targets</th>
<th>Waterway values targets</th>
<th>Waterway value targets are established to ensure goals are on track.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Waterway conditions targets</td>
<td>Waterway management focuses on ensuring waterway conditions are appropriate to improve waterway values.</td>
</tr>
<tr>
<td></td>
<td>Performance objectives</td>
<td>Guide activities and indicate progress towards improving the waterway conditions.</td>
</tr>
<tr>
<td></td>
<td>10 - 50 years</td>
<td>1 - 10 years</td>
</tr>
</tbody>
</table>

How to read the targets scores?
Current state - current score of waterway values and conditions
Current trajectory - long-term scores if current policies and effort continue
Potential trajectory - targets for the long-term scores to be achieved through implementing the Strategy

For description of scores see metrics tables at end of document

**PERFORMANCE OBJECTIVES**

<table>
<thead>
<tr>
<th>PO-ID</th>
<th>Condition Supported</th>
<th>Performance Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Water for Environment</td>
<td>Identify opportunities to increase environmental water reserve by 10 GL by 2028 to meet ecological watering objectives and cover projected shortfalls. Environmental water recovery targets captured at lowest downstream subcatchment reflect targets for whole catchment.</td>
</tr>
<tr>
<td>2</td>
<td>Water for Environment</td>
<td>Identify opportunities to maintain or improve the flow regime in refuge reaches to support platypus populations.</td>
</tr>
<tr>
<td>3</td>
<td>Instream Connectivity</td>
<td>Increase instream connectivity provide fish passage along the lower Yarra River (rectify Dights Falls fishway)</td>
</tr>
<tr>
<td>4</td>
<td>Vegetation Extent</td>
<td>Establish a continuous riparian vegetated buffer (34 km) and maintain existing vegetation (23 km) along priority reaches (using EVC benchmarks to at least a level 3 vegetation quality).</td>
</tr>
<tr>
<td>5</td>
<td>Access</td>
<td>Increase access along waterways from 74% to 77% (about 2 km of path) by filling gaps and improving connections with existing path network</td>
</tr>
<tr>
<td>6</td>
<td>Participation</td>
<td>Increase participation rates from low to high; support community groups and build capacity through citizen science and cultural engagement.</td>
</tr>
</tbody>
</table>
**Performance Objectives**

1. Increase participation rates from low to high; support community groups and build capacity through citizen science and cultural engagement.

2. Identify opportunities to maintain or improve the flow regime in refuge reaches to support platypus populations.

3. Establish a continuous riparian vegetated buffer (34 km) and maintain existing vegetation (23 km) along priority reaches (using EVC benchmarks to at least level 3 vegetation quality).

4. Increase access along waterways from 74% to 77% (about 2 km of path) by filling gaps and improving connections with existing path network.

5. Establish 10 GL in environmental water reserve by 2028 to meet ecological watering objectives and cover projected shortfalls.

---

### Waterway Values Targets (10 - 50 Years)

<table>
<thead>
<tr>
<th>Waterway Values</th>
<th>Current State</th>
<th>Current Trajectory</th>
<th>Potential Trajectory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetation Extent</td>
<td>Low</td>
<td>High</td>
<td>Very High</td>
</tr>
<tr>
<td>Access</td>
<td>Moderate</td>
<td>High</td>
<td>Very High</td>
</tr>
<tr>
<td>Participation</td>
<td>High</td>
<td>Moderate</td>
<td>Very High</td>
</tr>
<tr>
<td>Physical Form</td>
<td>High</td>
<td>Very High</td>
<td>Very High</td>
</tr>
<tr>
<td>Water Quality (Recreational)</td>
<td>High</td>
<td>Low</td>
<td>Very High</td>
</tr>
<tr>
<td>Water Quality (Environmental)</td>
<td>Moderate</td>
<td>Low</td>
<td>Very High</td>
</tr>
<tr>
<td>Stormwater Condition</td>
<td>Low</td>
<td>Moderate</td>
<td>Very High</td>
</tr>
<tr>
<td>Recreation</td>
<td>Moderate</td>
<td>Low</td>
<td>Very High</td>
</tr>
<tr>
<td>Amenity</td>
<td>High</td>
<td>Moderate</td>
<td>Very High</td>
</tr>
<tr>
<td>Water for Environment</td>
<td>Moderate</td>
<td>Low</td>
<td>Very High</td>
</tr>
</tbody>
</table>

---

### Waterway Conditions (10+ Year Targets)

<table>
<thead>
<tr>
<th>Waterway Conditions</th>
<th>Current State</th>
<th>Potential Trajectory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instream Connectivity</td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>Macropods</td>
<td>Moderate</td>
<td>Low</td>
</tr>
<tr>
<td>Frogs</td>
<td>Moderate</td>
<td>Low</td>
</tr>
<tr>
<td>Vegetation Quality</td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>Vegetation Extent</td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>Fish</td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>Birds (riparian)</td>
<td>Moderate</td>
<td>Low</td>
</tr>
<tr>
<td>Water Quality (Ecological)</td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>Water Quality (Recreational)</td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>Water Quality (Environmental)</td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>Access to Water</td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>Aesthetics</td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>Water Quality (Recreational)</td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>Participation</td>
<td>Low</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

---

**How to read the targets scores?**

- **Current State**: Describes the current state of waterway values and conditions.
- **Current Trajectory**: Describes if current policies and effort continue.
- **Potential Trajectory**: Long-term scores to be achieved through implementing the Strategy.

**Targets Scores**

- **Very Low**: Targets for the long-term scores to be achieved through ensuring goals are on track.
- **Low**: Targets are established to improve waterway values.
- **Moderate**: Targets are established to improve waterway values.
- **High**: Targets are established to improve waterway values.
- **Very High**: Targets are established to improve waterway values.

**Waterway Values**

- **Amenity**: Based on level of satisfaction, aimed to improve to very high.
- **Community Connection**: Based on level of satisfaction, likely to decline in long-term if opportunities don’t keep up with population growth.
- **Recreation**: Based on level of satisfaction, likely to decline in long-term if supply doesn’t keep up with population growth.

**Waterway Conditions**

- **Instream Connectivity**: Measured by the proportion of waterway length within the management unit that is free from barriers to fish movement.
- **Macropods**: Measured by the proportion of waterway length that is occupied by Macropods.
- **Frogs**: Measured by the proportion of waterway length that is occupied by frogs.
- **Vegetation Quality**: Measured by the proportion of waterway length that is occupied by vegetation.
- **Vegetation Extent**: Measured by the percentage of reach that has continuous indigenous vegetation cover within 20 metres either side of the stream.
- **Fish**: Measured by the proportion of waterway length that is occupied by fish.
- **Birds (riparian)**: Measured by the proportion of waterway length that is occupied by birds.
- **Water Quality (Recreational)**: Measured by the proportion of waterway length that is occupied by water quality guidelines.
- **Water Quality (Environmental)**: Measured by the proportion of waterway length that is occupied by water quality objectives.
- **Access to Water**: Measured by the proportion of waterway length that is occupied by access to water.
- **Aesthetics**: Measured by the proportion of waterway length that is occupied by aesthetics.

---

**Waterway Values Targets (10 - 50 Years)**

- **Vegetation Extent**: Low resulting from large-scale land use impacts. Urban infill along the waterway, pest plants and animals and climate change will reduce score.
- **Access**: Moderate but will decline in long-term if supply doesn’t keep up with population growth.
- **Participation**: High but likely to decline if opportunities don’t keep up with population growth.

---

**Waterway Conditions (10+ Year Targets)**

- **Instream Connectivity**: Moderate, connected to a stream through a conventional drainage connection. The current state is low and the target is very high.
- **Macropods**: Moderate, target is to maintain as high.
- **Frogs**: Moderate, target should be maintained as moderate.
- **Vegetation Quality**: Very high, target is very high.
- **Vegetation Extent**: Moderate, target is very high.
- **Fish**: Low, target is low.
- **Birds (riparian)**: Moderate, target is very high.
- **Water Quality (Recreational)**: High, target is very high.
- **Water Quality (Environmental)**: High, target is very high.
- **Access to Water**: Low, target is moderate.
- **Aesthetics**: Low, target is moderate.
- **Water Quality (Recreational)**: Low, target is moderate.
- **Participation**: Low, target is moderate.
The middle and lower sections of the Yarra River lie downstream of Warrandyte. The middle section of the Yarra flows through the Warrandyte State Park and Yarra Valley Parklands. Tributaries in this area include Cherry Hill and Chirnside Park drains, and Jumping, Andersons, Harris Gully, Ruffeys and Salt creeks. Tributaries in the lower section include Merri and Gardiners creeks and the Plenty River.

**Performance Objectives**

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<th>Condition Supported</th>
<th>Performance Objectives</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Water for Environment</td>
<td>Prevent decline in stormwater condition, treat upstream urban development so directly connected imperviousness (DCI) remains below 6.7% at the downstream reach of this sub-catchment, and at current levels along the main stem of the Yarra River. For every hectare of new impervious area, this requires harvesting around 5.9 ML/y and infiltrating 2.4 ML/y, which is about 4.8 GL/y and 1.7 GL/y for full development out to urban growth boundary. (Note, this is inclusive of similar performance objectives in upstream sub-catchments.)</td>
</tr>
<tr>
<td>2</td>
<td>Stormwater</td>
<td>Establish a continuous riparian vegetated buffer (24 km) and maintain existing vegetation (34 km) along priority reaches (using EVC benchmarks to at least a level 3 vegetation quality).</td>
</tr>
<tr>
<td>3</td>
<td>Vegetation Extent</td>
<td>Maintain or achieve high and very high quality vegetation (Vegetation Quality data level 4 and 5 - currently 8 km) through effective monitoring and management of threats including protection of endangered EVCs in these reaches. Fill data gaps and ensure additional high quality reaches are also protected.</td>
</tr>
<tr>
<td>4</td>
<td>Vegetation Quality</td>
<td>Improve vegetation and capacity to retain nutrients and sediments in the floodplain from Millgrove to Yehring to protect and enhance biodiversity and protect Port Phillip Bay.</td>
</tr>
<tr>
<td>5</td>
<td>Water Quality - Environmental</td>
<td>Protect recreational water quality in the Yarra River to support existing recreational activities.</td>
</tr>
<tr>
<td>6</td>
<td>Water Quality – Recreational</td>
<td>Protect water quality for key recreation areas on the Yarra - characterise, communicate and mitigate sources of microbial risk.</td>
</tr>
<tr>
<td>7</td>
<td>Water Quality – Recreational</td>
<td>Increase access along waterways by improving connections with existing path network. And increase access to waterways for on-water activities by developing facilities identified in collaborative strategic plans (e.g. canoe launch at Homestead Road Reserve and Westerfolds Park)</td>
</tr>
<tr>
<td>8</td>
<td>Access</td>
<td>Increase participation rates from moderate to very high; support community groups and build capacity of land owners through rural programs. Increase participation though citizen science and promotion of high value areas (e.g. Warrandyte State Park).</td>
</tr>
<tr>
<td>9</td>
<td>Participation</td>
<td>Guide activities and indicate progress towards improving the waterway conditions.</td>
</tr>
</tbody>
</table>

**Targets**

| Waterway values targets | 10 - 50 years |
| Waterway conditions targets | 10+ years |
| Performance objectives | 1 - 10 years |

**How to read the targets score?**

<table>
<thead>
<tr>
<th>Score key</th>
<th>Very Low</th>
<th>Low</th>
<th>Moderate</th>
<th>High</th>
<th>Very High</th>
</tr>
</thead>
</table>

For description of scores see metrics tables at end of document.
### Waterway Values (Long-Term Targets)

**Current state** | **Potential trajectory**
---|---

**Aesthetics (Litter)**<br>Strengthen social capital by increasing knowledge of environmental / ecosystem services, skills and capacities, allowing people to meet and enhance social networks. The current state is moderate and the target is very high.

**Birds (riparian)**<br>Improve vegetation and capacity to retain nutrients and sediments in the floodplain from Millgrove to Yehring to protect and enhance biodiversity and the Powerful Owl and Eastern Great Egret.

**Fish**<br>While climate change is predicted to increase habitat suitability for common and widespread species, improvements to environmental conditions, particularly riparian vegetation, water quality, flows and ensuring Dights Falls fishway is effective, will increase score to high in long term.

**Frogs**<br>Restoration of suitable vegetation and riparian habitat. Urbanisation and climate change are future threats. Improving riparian vegetation and managing flows including stormwater will increase score to high in long term.

**Macroinvertebrates**<br>Establish a continuous riparian vegetated buffer (24 km) and maintain existing vegetation (34 km) along priority reaches (using EVC benchmarks to at least a very high).

**Platypus**<br>Improve flows particularly under climate change will be important to maintain the current population.

**Vegetation**<br>Improve waterway values. Stock access, pest plants and animals and climate change will reduce the rating to low unless adequately managed. Protecting the best and enhancing other areas will maintain moderate in the long term. There are 47 known listed water dependent species.

**Water Quality – Environmental**

**Water Quality – Recreational**

**Waterway Management**

**Waterway Conditions (10+ Year Targets)**

<table>
<thead>
<tr>
<th>Current state</th>
<th>Potential trajectory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>Moderate</td>
<td>High</td>
</tr>
<tr>
<td>High</td>
<td>Very High</td>
</tr>
</tbody>
</table>

#### Stormwater Condition

- Measured by directly connected imperviousness (DCI), which is the proportion of the impervious surface in the catchment that is directly connected to a stream through a conventional drainage connection. The current state is moderate and the target is moderate.

#### Physical Form

- Degree of geomorphic naturalness combined with likelihood of erosion occurring along bed or banks of waterways. The current state is high and the target is high.

#### Water for Environment

- Indicates compliance with flow requirements of fresh water river systems. These are identified through FLOWS method, or where there is no flow study Flow Stress Ranking (FSR), which indicates the level of threat to river health based on the level of water extractions by rural, urban and industry users. The current state is moderate and the target is very high.

#### Vegetation Quality

- A description of quality of vegetation relative to Ecological Vegetation Classes (EVCs) and accounting for grassland or sparsely treed woodland communities which do not exhibit 100 per cent canopy cover. The current state is low and the target is moderate.

#### Vegetation Extent

- Denotes the percentage of reach that has continuous indigenous vegetation cover within 20 metres either side of the stream. The current state is moderate and the target is very high.

#### Instream Connectivity

- Measured by the proportion of waterway length within the management unit that is free from barriers to fish movement. The current state is very high and the target is very high.

#### Water Quality (Environmental)

- Indicates compliance with the State Environment Protection Policy (SEPP) Waters of Victoria environmental water quality objectives (EPA Water Quality Index) using the Yarra and Bay Report Card Scoring Method. The current state is moderate and the target is moderate.

#### Access to the Waterway

- Supports a range of on water, in water and beside water experiences and is an enabling condition for all three social values. The current state is very low and the target is low.

#### Aesthetics (Litter)

- Is a strong indicator of stream health – clean waterways are healthy waterways and aesthetically pleasing. Litter detracts from the sense of naturalness and creates a perception that a place is un cared for. It also detracts from the enjoyment of active and passive recreation. The current state is moderate and the target is high.

#### Water Quality (Recreational)

- Critical to minimise human health risks. Exposure to pathogens (disease causing microorganisms) via primary (e.g. swimming) and/or secondary (e.g. boating) can lead to illness. Water quality guidelines set water standards for primary and secondary contact. The current state is high and the target is very high.

#### Participation in Waterway Management

- Creates and enhances a sense of community. Similarly, citizen science strengthens social capital by increasing knowledge of environmental / ecosystem services, skills and capacities, allowing people to meet and enhance social networks. The current state is moderate and the target is very high.
The rural sections of the upper Yarra River extend from the Upper Yarra Reservoir downstream to Yering Gorge. This area also includes the Don River, which rises in the Yarra Ranges National Park and joins the Yarra downstream of Yarra Junction. Between Woori Yallock and Yering Gorge, the floodplain of the Yarra includes numerous billabongs which are culturally and ecologically significant.

### Performance Objectives

<table>
<thead>
<tr>
<th>PO-ID</th>
<th>Condition Supported</th>
<th>Performance Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Water for Environment</td>
<td>Identify opportunities to reduce the key threat of summer high flow stress by addressing causal factors such as farm dams, climate change, diversions or urbanisation.</td>
</tr>
<tr>
<td>2</td>
<td>Water for Environment</td>
<td>Environmental water recovery targets are captured at lowest downstream subcatchment (Yarra River Lower), which reflects targets for whole catchment.</td>
</tr>
<tr>
<td>3</td>
<td>Water for Environment</td>
<td>Identify opportunities to maintain or improve the flow regime in refuge reaches to support platypus populations.</td>
</tr>
<tr>
<td>4</td>
<td>Stormwater</td>
<td>Prevent decline in stormwater condition, treat upstream urban development (including Healesville and Warburton), so directly connected imperviousness (DCI) remains below 0.3% at the downstream reach of this sub-catchment, and at current levels along the main stem of the Yarra River. For every hectare of new impervious area, this requires harvesting around 6.2 ML/ha and infiltrating 2.8 ML/ha, which is about to 1 GL/ha and 0.5 GL/ha for full development out to urban growth boundary.</td>
</tr>
<tr>
<td>5</td>
<td>Vegetation Extent</td>
<td>Establish a continuous riparian vegetated buffer (88 km) and maintain existing vegetation (302 km) along priority reaches (using EVC benchmarks to at least a level 3 vegetation quality).</td>
</tr>
<tr>
<td>6</td>
<td>Vegetation Quality</td>
<td>Maintain or achieve high and very high quality vegetation (Vegetation Quality data level 4 and 5 - currently 108 km) through effective monitoring and management of threats including protection of endangered EVCs in these reaches. Fill data gaps and ensure additional high quality reaches are also protected.</td>
</tr>
<tr>
<td>7</td>
<td>Water Quality - Environmental</td>
<td>Improve water quality for environmental values and Port Phillip Bay by reducing sediment run-off from rural land, urban growth and unsealed roads as well as nutrient inputs from rural land and septic tanks. This may include establishment of vegetated buffers in headwater streams.</td>
</tr>
<tr>
<td>8</td>
<td>Water Quality – Recreational</td>
<td>Protect water quality for key recreation areas on the Yarra, characterise, communicate and mitigate sources of microbial risk.</td>
</tr>
<tr>
<td>9</td>
<td>Participation</td>
<td>Increase participation rates from moderate to very high; support community groups and build capacity of land owners through rural programs. Increase participation though citizen science programs and promotion of high value areas (e.g. Yarra Ranges National Park).</td>
</tr>
</tbody>
</table>

### How to read the targets scores?

- **Current state** - current score of waterway values and conditions
- **Current trajectory** - long-term scores if current policies and effort continue
- **Potential trajectory** - targets for the long-term scores to be achieved through implementing the strategy

#### Score key:

- **Very Low**
- **Low**
- **Moderate**
- **High**
- **Very High**

For description of scores see metrics tables at end of document.
### Performance Objectives

10 Increase participation rates from moderate to very high; support community groups and build capacity of land owners through rural programs.

4 Increase Yarra River Upper (Rural) Sub-catchment Water Quality – Recreational Water for Environment Vegetation Quality

Vegetation Extent Part 2

- Participation in waterway management creates and enhances a sense of community. Similarly, citizen science strengthens social capital by increasing knowledge of environmental / ecosystem services, skills and capacities, allowing people to meet and enhance social networks. The current state is moderate and the target is very high.

- Access to the waterway and riparian corridor supports a range of on water, in water and beside water experiences and is an enabling condition for all three social values. The current state is very low and the target is low.

- Water Quality (Recreational) is critical to minimise human health risks. Exposure to pathogens (disease causing microorganisms) via primary (e.g. swimming) and/or secondary (e.g. boating) can lead to illness. Water quality guidelines set water standards for primary and secondary contact. The current state is high and the target is very high.

- Aesthetics (Litter) is a strong indicator of stream health – clean waterways are healthy waterways and aesthetically pleasing. Litter detracts from the sense of naturalness and creates a perception that a place is un cared for. It also detracts from the enjoyment of active and passive recreation. The current state is high and the target is very high.

- Vegetation Quality is a description of quality of vegetation relative to Ecological Vegetation Classes (EVCs) and accounting for grassland or sparsely treed woodland communities which do not exhibit 100 per cent canopy cover. The current state is moderate and the target is high.

- Community connection, which is based on level of satisfaction, is currently high but likely to decline in long-term if opportunities don’t keep up with population growth; target is to maintain as very high.

- Recreation, which is based on level of satisfaction, is currently high but likely to decline in long-term if supply doesn’t keep up with population growth; target is to improve to very high.

- Macroinvertebrates score is very high as much of the waterway has good riparian and instream habitat. Maintaining high quality vegetation, improving other reaches and protecting flows will ensure score remains very high in long-term.

- Platypus score is high based on good instream and riparian habitat. Improving vegetation will enhance their habitat and managing flows will be critical to mitigating the impacts of climate change.

- Vegetation is moderate with some high quality reaches along the forested tributaries. Stock access, pest plants and animals (particularly deer) and climate change will reduce the rating to low unless threats mitigated. Protecting the best and enhancing other areas will improve score to high in long-term. There are 26 known listed water dependent species.

- Amenity, which is based on level of satisfaction, is currently very high but likely to decline in long-term if environmental values decline; target is to maintain as very high.

- How to read the targets scores?

#### Waterway Conditions (10+ Year Targets)

- Current state is very low and the target is low.

- Water Quality (Environmental) indicates compliance with the State Environment Protection Policy (SEPP) Waters of Victoria environmental water quality objectives (EPA Water Quality Index) using the Yarra and Bay Report Card Scoring Method. The current state is high and the target is high.

- Waterway management focuses on ensuring waterway conditions are appropriate to listed water dependent species. Macroinvertebrates score is high as much of the waterway has good riparian and instream habitat. Maintaining high quality vegetation, improving other reaches and protecting flows will ensure score remains very high in long-term.

- Macropod and Currawong are threatened species. Various rehabilitation activities including planting of riparian vegetation and trees will ensure a high score.

- Access to the waterway and riparian corridor supports a range of on water, in water and beside water experiences and is an enabling condition for all three social values. The current state is very low and the target is low.

- Aesthetics (Litter) is a strong indicator of stream health – clean waterways are healthy waterways and aesthetically pleasing. Litter detracts from the sense of naturalness and creates a perception that a place is un cared for. It also detracts from the enjoyment of active and passive recreation. The current state is high and the target is very high.

- Water Quality (Recreational) is critical to minimise human health risks. Exposure to pathogens (disease causing microorganisms) via primary (e.g. swimming) and/or secondary (e.g. boating) can lead to illness. Water quality guidelines set water standards for primary and secondary contact. The current state is high and the target is very high.

- Participation in waterway management creates and enhances a sense of community. Similarly, citizen science strengthens social capital by increasing knowledge of environmental / ecosystem services, skills and capacities, allowing people to meet and enhance social networks. The current state is moderate and the target is very high.

#### Targets Scores

<table>
<thead>
<tr>
<th>WATERWAY VALUES TARGETS (10-50 YEARS)</th>
<th>Current State</th>
<th>Current Trajectory</th>
<th>Potential Trajectory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation</td>
<td>Moderate</td>
<td>Very High</td>
<td>High</td>
</tr>
<tr>
<td>Water Quality (Recreational)</td>
<td>High</td>
<td>High</td>
<td>Very High</td>
</tr>
<tr>
<td>Water Quality (Environmental)</td>
<td>High</td>
<td>High</td>
<td>Very High</td>
</tr>
<tr>
<td>Vegetation Quality</td>
<td>High</td>
<td>Very High</td>
<td>Very High</td>
</tr>
<tr>
<td>Vegetation Extent</td>
<td>High</td>
<td>Very High</td>
<td>Very High</td>
</tr>
<tr>
<td><strong>WATERWAY CONDITIONS (10+ YEAR TARGETS)</strong></td>
<td>Current State</td>
<td>Current Trajectory</td>
<td>Potential Trajectory</td>
</tr>
<tr>
<td>Stormwater Condition</td>
<td>Low</td>
<td>Moderate</td>
<td>High</td>
</tr>
<tr>
<td>Physical form</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Water for environment</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Vegetation Quality</td>
<td>Moderate</td>
<td>High</td>
<td>Very High</td>
</tr>
<tr>
<td>Vegetation Extent</td>
<td>High</td>
<td>High</td>
<td>Very High</td>
</tr>
<tr>
<td>Instream Connectivity</td>
<td>Low</td>
<td>Moderate</td>
<td>High</td>
</tr>
<tr>
<td>Water Quality (Environmental)</td>
<td>High</td>
<td>High</td>
<td>Very High</td>
</tr>
<tr>
<td>Access to the waterway</td>
<td>Low</td>
<td>Moderate</td>
<td>High</td>
</tr>
<tr>
<td>Aesthetics (Litter)</td>
<td>High</td>
<td>Very High</td>
<td>Very High</td>
</tr>
<tr>
<td>Water Quality (Recreational)</td>
<td>High</td>
<td>Very High</td>
<td>Very High</td>
</tr>
</tbody>
</table>

**PO-ID Condition Supported**

- Development Key Indicators
- Increase participation rates from moderate to very high; support community groups and build capacity of land owners through rural programs.
- Prevent decline in stormwater condition, treat upstream urban development (including Healesville and Warburton), so directly connected imperviousness (DCI) remains below 0.3% at the downstream reach of this sub-catchment, and at current levels along the main stem of the Yarra River.

**Vegetation Quality** as nutrient inputs from rural land and septic tanks. This may include establishment of vegetated buffers in headwater streams.
PERFORMANCE OBJECTIVES

<table>
<thead>
<tr>
<th>PO-ID</th>
<th>Condition Supported</th>
<th>Performance Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Water for Environment</td>
<td>Environmental water recovery targets are captured at lowest downstream subcatchment (Yarra River Lower), which reflects targets for whole catchment.</td>
</tr>
<tr>
<td>2</td>
<td>Water for Environment</td>
<td>Identify opportunities to maintain or improve the flow regime in refuge reaches to support platypus populations.</td>
</tr>
<tr>
<td>3</td>
<td>Instream Connectivity</td>
<td>Increase instream connectivity provide fish passage along Armstrong Creek from the confluence with the Yarra River (remove barrier at Armstrong Weir)</td>
</tr>
<tr>
<td>4</td>
<td>Instream Connectivity</td>
<td>Increase instream connectivity provide fish passage along McMahons Creek from the confluence with the Yarra River (remove barrier at McMahons Weir)</td>
</tr>
<tr>
<td>5</td>
<td>Vegetation Quality</td>
<td>Maintain or achieve high and very high quality vegetation (Vegetation Quality data level 4 and 5 - currently 206 km) through effective monitoring and management of threats including protection of endangered EVCs in these reaches. Fill data gaps and ensure additional high quality reaches are also protected.</td>
</tr>
<tr>
<td>6</td>
<td>Vegetation Quality</td>
<td>Improve understanding of the extent, composition and condition of high and very high quality vegetation, and effectively monitor and manage both values and threats</td>
</tr>
<tr>
<td>7</td>
<td>Water Quality – Recreational</td>
<td>Protect water quality for key recreation areas on the Yarra, characterise, communicate and mitigate sources of microbial risk.</td>
</tr>
</tbody>
</table>
**Yarra River Upper (Source) Sub-catchment**

**Instream Connectivity**
- Macroinvertebrates score is very high as the waterway is a forested protected water supply catchment. The Mount Donna Buang Stonefly has been recorded. Monitoring and maintenance of habitats in particular vegetation is expected to maintain the very high score in long term.
- Vegetation is high as the waterway is in a protected forested catchment. Threats including pest plants and animals (particularly deer) and climate change are predicted to reduce the rating to moderate if not adequately addressed. There are 18 known listed water dependent species.

**Fish**
- Fish score is low, which is partly expected for headwater streams but is also driven by barriers to fish movement, particularly water supply dams and weirs. Improvements to fish passage, such as along MacMahons and Armstrong Creek, is predicted to increase habitat suitability for species such as River Blackfish.

**Macroinvertebrates**
- Macroinvertebrates score is very high as the waterway is a forested protected water supply catchment. The Mount Donna Buang Stonefly has been recorded. Monitoring and maintenance of habitats in particular vegetation is expected to maintain the very high score in long term.

**Vegetation**
- Vegetation is high as the waterway is in a protected forested catchment. Threats including pest plants and animals (particularly deer) and climate change are predicted to reduce the rating to moderate if not adequately addressed. There are 18 known listed water dependent species.

**As this is a closed catchment for water supply, there has been no assessment or setting of targets for social values.**

---

**WATERWAY VALUES TARGETS (10+ YEAR TARGETS)**

<table>
<thead>
<tr>
<th>Current state</th>
<th>Current trajectory</th>
<th>Potential trajectory</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Very High</td>
<td>Very High</td>
</tr>
<tr>
<td>Low</td>
<td>Low</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

**WATERWAY CONDITIONS (10+ YEAR TARGETS)**

- Stormwater Condition is measured by directly connected imperviousness (DCI), which is the proportion of the impervious surface in the catchment that is directly connected to a stream through a conventional drainage connection. The current state is very high and the target is very high.
- Physical form is the degree of geomorphic naturalness combined with likelihood of erosion occurring along bed or banks of waterways. The current state is very high and the target is very high.
- Water quality indicates compliance with flow requirements of freshwater river systems. These are identified through FLOWS method, or (where there is no flow study) Flow Stress Ranking (FSR), which indicates the level of threat to river health based on the level of water extractions by rural, urban and industry users. The current state is very high and the target is very high.
- Vegetation Quality is a description of quality of vegetation relative to Ecological Vegetation Classes (EVCs) and accounting for grassland or sparsely treed woodland communities which do not exhibit 100 per cent canopy cover. The current state is very high and the target is very high.
- Vegetation Extent denotes the percentage of reach that has continuous indigenous vegetation cover within 20 metres either side of the stream. The current state is very high and the target is very high.
- Instream Connectivity is measured by the proportion of waterway length within the management unit that is free from barriers to fish movement. The current state is moderate and the target is moderate.
- Water Quality (Environmental) indicates compliance with the State Environment Protection Policy (SEPP) Waters of Victoria environmental water quality objectives (EPA Water Quality Index) using the Yarra and Bay Report Card Scoring Method. The current state is very high and the target is very high.

**As this is a closed catchment for water supply, there has been no assessment or setting of targets for social values.**
Wetlands

Donnybrook Road Lake
Hearnes Swamp
Kalkallo Creek Wetland
Growling Grass Frog reserve wetlands
Ringwood Lake
Lillydale Lake
Stormwater wetlands
Domain Chandon Billabongs
Cockatoo Swamp
Annulus Billabong, Yarra Flats

Banyule Flats Billabong
Bolin Bolin Billabong
Burke Road Billabong
Hays Paddock Billabong
Westgate Park Wetlands
Willsmere Billabong
Anderson Creek East RB
Spadonis Billabong
Yarra Bridge Stream Side Reserve
Yering Backswamp, Yarra River
Wetlands

## Wetland value targets

<table>
<thead>
<tr>
<th>Wetlands</th>
<th>Birds</th>
<th>Fish</th>
<th>Frogs</th>
<th>Vegetation</th>
<th>Amenity</th>
<th>Community connection</th>
<th>Recreation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential trajectory</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>The draft targets developed through collaborative actions</td>
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<td></td>
</tr>
<tr>
<td>Current state</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Of Waterways Values</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Current trajectory</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>The likely outcome if current policies and effort continue</td>
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<td></td>
</tr>
</tbody>
</table>

- Very High
- High
- Moderate
- Low
- Very Low
- No data

## Wetland condition targets

<table>
<thead>
<tr>
<th>Wetlands</th>
<th>Water regime</th>
<th>Habitat</th>
<th>Wetland buffer condition</th>
<th>Vegetation condition</th>
<th>Wetland water quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential trajectory</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>The draft targets developed through collaborative actions</td>
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</tr>
<tr>
<td>Current state</td>
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</tr>
<tr>
<td>Of Waterways Values</td>
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<tr>
<td>The likely outcome if current policies and effort continue</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

- Moderate
- Low
- Very Low

## Performance objectives

- Improve the continuity of wetland buffers on key wetlands.
- Reduce the threat of invasive plant species.
- Deliver environmental water to key billabongs on the Yarra floodplain.
- Investigate opportunities to re-engage natural floodplain wetlands in key locations to meet ecological watering objectives, improve ecosystem services, cultural and social values.
- Implement key actions in site management plans for significant wetlands and planning for climate change adaptation and resilience.
- Reduce the threat of invasive animals such as dogs, cats and foxes to protect key wetland bird habitats.
Donnybrook Road Lake, in Donnybrook, is a seasonal ephemeral wetland on the basalt plains. It was listed as a Biosite by DELWP in 2001 herbaceous wetland of the coastal temperate vegetation. It is a seasonal wetland, which is protected under the EPBC Act.

### Targets

**Waterway values targets**

- Waterway value targets are established to ensure goals are on track.

**Waterway conditions targets**

- Waterway management focuses on ensuring waterway conditions are appropriate to improve waterway values.

**Performance objectives**

- Guide activities and indicate progress towards improving the waterway conditions.

### How to read the targets scores?

**Current state** - current score of waterway values and conditions

**Current trajectory** - long-term scores if current policies and effort continue

**Potential trajectory** - targets for the long-term scores to be achieved through implementing the Strategy

<table>
<thead>
<tr>
<th>Score key:</th>
<th>Very Low</th>
<th>Low</th>
<th>Moderate</th>
<th>High</th>
<th>Very High</th>
</tr>
</thead>
</table>

For description of scores see metrics tables at end of document

---

### Performance Objectives

<table>
<thead>
<tr>
<th>PO-ID</th>
<th>Condition Supported</th>
<th>Performance Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Water regime</td>
<td>Investigate opportunities to improve wetland water regime to meet ecological watering objectives, improve ecosystem services, cultural and social value.</td>
</tr>
<tr>
<td>2</td>
<td>Buffer</td>
<td>Improve wetland buffer to 50 per cent of the wetland perimeter</td>
</tr>
<tr>
<td>3</td>
<td>Bird (value)</td>
<td>Reduce threat from cats, dogs and foxes to moderate</td>
</tr>
</tbody>
</table>
Wetland bird score is currently very low. It is not formally recognised as significant bird habitat and its vegetation condition is low. Score is expected to remain very low.

Very little data exists for wetland fish and a metric for wetland fish in this catchment will be developed through the strategy implementation.

Frog score is currently very high with significant species present. Maintenance of the wetland water regime is expected to maintain score at very high. Site specific survey will further inform long-term targets.

Wetland vegetation score is low with a predicted decline to very low due to predicted drying associated with climate change. Maintaining the wetland water regime is predicted to maintain score at low.

Amenity, which is based on level of satisfaction, is currently high but likely to decline in long-term if environmental values decline; target is to maintain as very high.

Community connection, which is based on level of satisfaction, is currently high but likely to decline in long-term if opportunities don’t keep up with population growth; target is high.

Recreation, which is based on level of satisfaction, is currently high but likely to decline in long-term if supply doesn’t keep up with population growth; target is to improve to very high.

Water regime is associated with changes to the flow regime such as interference with natural connectivity. The current state is very high and the target is very high.

Wetland habitat form considers the extent that the wetland area has been reduced through levee, diversions etc. The current state is low and the target is low.

Wetland buffer condition is the native vegetation above the maximum inundation extent. The current state is very low and the target is low.

Vegetation condition refers to the extent of ‘natural’ wetland vegetation intact. The current state is low and the target is low.

Wetland water quality considers the changed water properties within the wetland. The current state is moderate and the target is low.
Hearnes Swamp

Hearnes Swamp near Wallan is a freshwater meadow and is also a nationally listed Seasonally Herbaceous Wetland. Before being drained the swamp would have been an extensive shallow freshwater marsh.

Targets

<table>
<thead>
<tr>
<th>Waterway values targets</th>
<th>Waterway management focuses on ensuring waterway conditions are appropriate to improve waterway values.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 - 50 years</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Waterway conditions targets</th>
<th>Guide activities and indicate progress towards improving the waterway conditions.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10+ years</td>
<td></td>
</tr>
</tbody>
</table>

Performance objectives

1 - 10 years

How to read the targets scores?

Current state - current score of waterway values and conditions

Current trajectory - long-term scores if current policies and effort continue

Potential trajectory - targets for the long-term scores to be achieved through implementing the Strategy

Score key: Very Low Low Moderate High Very High

For description of scores see metrics tables at end of document

PERFORMANCE OBJECTIVES

<table>
<thead>
<tr>
<th>PO-ID</th>
<th>Condition Supported</th>
<th>Performance Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Water regime</td>
<td>Investigate opportunities to further re-engage the natural wetlands in this area and to improve wetland water regime to meet ecological watering objectives, improve ecosystem services, cultural and social value</td>
</tr>
<tr>
<td>2</td>
<td>Habitat form</td>
<td>Identify opportunities to improve the wetland habitat</td>
</tr>
<tr>
<td>3</td>
<td>Buffer</td>
<td>Improve wetland buffer to 50 per cent of the wetland perimeter</td>
</tr>
</tbody>
</table>
Wetland water quality considers the changed water properties within the wetland. The current state is moderate and the target is moderate.

Wetland buffer condition is the native vegetation above the maximum inundation extent. The current state is very low and the target is moderate.

Habitat form

Vegetation condition refers to the extent of ‘natural’ wetland vegetation intact. The current state is very low and the target is moderate.

Water regime

PO-ID Condition Supported Performance Objectives

Investigate opportunities to further re-engage the natural wetlands in this area and to improve wetland water regime to meet ecological watering objectives, improve ecosystem services, cultural and social value.

WETLAND VALUES TARGETS (10+ YEAR TARGETS)

Wetland vegetation score is very low due to the very low wetland vegetation condition. Reducing risks of poor wetland vegetation, wetland buffer, wetland habitat form and water regime is predicted to protect the EPBC listed Seasonal Herbaceous wetland vegetation community and improve score to moderate.

Amenity, which is based on level of satisfaction, is currently very high but likely to decline in long-term if environmental values decline; target is to maintain as very high.

Community connection, which is based on level of satisfaction, is currently high but likely to decline in long-term if opportunities don’t keep up with population growth; target is to maintain as high.

Recreation, which is based on level of satisfaction, is currently high but likely to decline in long-term if supply doesn’t keep up with population growth; target is to improve to very high.

Water regime is associated with changes to the flow regime such as interference with natural connectivity. The current state is very low and the target is moderate.

Wetland habitat form considers the extent that the wetland area has been reduced through levee, diversions etc. The current state is moderate and the target is high.

Wetland buffer condition is the native vegetation above the maximum inundation extent. The current state is very low and the target is moderate.

Vegetation condition refers to the extent of ‘natural’ wetland vegetation intact. The current state is very low and the target is moderate.

Wetland water quality considers the changed water properties within the wetland. The current state is moderate and the target is moderate.

TARGETS SCORES

<table>
<thead>
<tr>
<th>Current</th>
<th>Current trajectory</th>
<th>Potential trajectory</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Wetland bird score is currently very low. It is not formally recognised as significant bird habitat and its vegetation condition is very low. Score is expected to remain very low.

Very little data exists for wetland fish and a metric for wetland fish in this catchment will be developed through the strategy implementation.

The moderate Merri Creek (Rural and Forested) frog value score has been applied to Hearnes Swamp. The score is expected to decline to very low. However, reducing threats at this site is expected to maintain score at moderate. Site specific survey will further inform long-term targets.

Wetland vegetation score is very low due to the very low wetland vegetation condition. Reducing risks of poor wetland vegetation, wetland buffer, wetland habitat form and water regime is predicted to protect the EPBC listed Seasonal Herbaceous wetland vegetation community and improve score to moderate.

Amenity, which is based on level of satisfaction, is currently very high but likely to decline in long-term if environmental values decline; target is to maintain as very high.

Community connection, which is based on level of satisfaction, is currently high but likely to decline in long-term if opportunities don’t keep up with population growth; target is to maintain as high.

Recreation, which is based on level of satisfaction, is currently high but likely to decline in long-term if supply doesn’t keep up with population growth; target is to improve to very high.

Water regime is associated with changes to the flow regime such as interference with natural connectivity. The current state is very low and the target is moderate.

Wetland habitat form considers the extent that the wetland area has been reduced through levee, diversions etc. The current state is moderate and the target is high.

Wetland buffer condition is the native vegetation above the maximum inundation extent. The current state is very low and the target is moderate.

Vegetation condition refers to the extent of ‘natural’ wetland vegetation intact. The current state is very low and the target is moderate.

Wetland water quality considers the changed water properties within the wetland. The current state is moderate and the target is moderate.

WATERWAY VALUES TARGETS (10 - 50 YEARS)

Waterway value targets are established to ensure goals are on track.

Current state - current score of waterway values and conditions

Current trajectory - long-term scores if current policies and effort continue

Potential trajectory - targets for the long-term scores to be achieved through implementing the Strategy

Score key:
- Very Low
- Low
- Moderate
- High
- Very High

Hearnes Swamp near Wallan is a freshwater meadow and is also a nationally listed Seasonally Herbaceous Wetland. Before being drained the swamp would have been an extensive shallow freshwater marsh.
Kalkallo Creek is a nationally listed Seasonally Herbaceous Wetland.

### Targets

<table>
<thead>
<tr>
<th>Waterway values targets</th>
<th>Waterway management focuses on ensuring waterway conditions are appropriate to improve waterway values.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 - 50 years</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Waterway conditions targets</th>
<th>Guide activities and indicate progress towards improving the waterway conditions.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10+ years</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Performance objectives</th>
<th>Guide activities and indicate progress towards improving the waterway conditions.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 10 years</td>
<td></td>
</tr>
</tbody>
</table>

### How to read the targets scores?

- **Current state**: current score of waterway values and conditions
- **Current trajectory**: long-term scores if current policies and effort continue
- **Potential trajectory**: targets for the long-term scores to be achieved through implementing the Strategy

### Score Key:

- **Very Low**
- **Low**
- **Moderate**
- **High**
- **Very High**

### Performance Objectives

<table>
<thead>
<tr>
<th>PO-ID</th>
<th>Condition Supported</th>
<th>Performance Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Water</td>
<td>Investigate opportunities to further re-engage the natural wetlands in this area and to improve wetland water regime to meet ecological watering objectives, improve ecosystem services, cultural and social value</td>
</tr>
<tr>
<td>2</td>
<td>Buffer</td>
<td>Improve wetland buffer to 50 per cent of the wetland perimeter</td>
</tr>
</tbody>
</table>

For description of scores see metrics tables at end of document.
**Kalkallo Creek Wetland**

**How to read the targets scores?**
For description of scores see metrics tables at end of document.

<table>
<thead>
<tr>
<th>Current State</th>
<th>Current Trajectory</th>
<th>Potential Trajectory</th>
</tr>
</thead>
</table>

**Wetland water quality** considers the changed water properties within the wetland. The current state is moderate and the target is moderate.

**Wetland buffer condition** is the native vegetation above the maximum inundation extent. The current state is very low and the target is moderate.

**Vegetation condition** refers to the extent of ‘natural’ wetland vegetation intact. The current state is very low and the target is moderate.

**Wetland habitat form** considers the extent that the wetland area has been reduced through levee, diversions etc. The current state is very low and the target is moderate.

**Water regime** is associated with changes to the flow regime such as interference with natural connectivity. The current state is moderate and the target is moderate.

Very little data exists for wetland fish and a metric for wetland fish in this catchment will be developed through the strategy implementation.

The moderate Merri Creek (Rural and Forested) frog value score has been applied to Kalkallo Creek wetland. The frog score is expected to decline to very low. However, reducing threats at this site is expected to maintain score at moderate. Site specific survey will further inform long-term targets.

Wetland vegetation score is currently very low due to the very low wetland vegetation condition. Reducing risks of poor wetland vegetation condition, wetland buffer, wetland habitat form and water regime is predicted to protect the EPBC listed Seasonal Herbaceous wetland vegetation community and improve score to moderate.

Amenity, which is based on level of satisfaction, is currently high but likely to decline in long-term if environmental values decline; target is to maintain as high.

Community connection, which is based on level of satisfaction, is currently high but likely to decline in long-term if opportunities don’t keep up with population growth; target is to maintain as high.

Recreation, which is based on level of satisfaction, is currently high but likely to decline in long-term if supply doesn’t keep up with population growth; target is to improve to very high.

Wetland bird score is currently very low. It is not formally recognised as significant bird habitat and its vegetation condition is very low. Score is expected to remain very low.

Targets
The moderate Merri Creek (Rural and Forested) frog value score has been applied to Kalkallo Creek wetland. The frog score is expected to decline to very low. However, reducing threats at this site is expected to maintain score at moderate. Site specific survey will further inform long-term targets.

Kalkallo Creek wetland is a nationally listed Seasonally Herbaceous Wetland.
The Growling Grass Frog reserve wetlands are conservation ponds, specifically built to offset Growling Grass Frog habitat loss and contribute to the conservation of the species.

**Targets**

<table>
<thead>
<tr>
<th>Waterway values targets</th>
<th>Waterway value targets are established to ensure goals are on track.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 - 50 years</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Waterway conditions targets</th>
<th>Waterway management focuses on ensuring waterway conditions are appropriate to improve waterway values.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10+ years</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Performance objectives</th>
<th>Guide activities and indicate progress towards improving the waterway conditions.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 10 years</td>
<td></td>
</tr>
</tbody>
</table>

**How to read the targets scores?**

- **Current state** - current score of waterway values and conditions
- **Current trajectory** - long-term scores if current policies and effort continue
- **Potential trajectory** - targets for the long-term scores to be achieved through implementing the Strategy

**Score key:**

- Very Low
- Low
- Moderate
- High
- Very High

For description of scores see metrics tables at end of document

**PERFORMANCE OBJECTIVES**

<table>
<thead>
<tr>
<th>PO-ID</th>
<th>Condition Supported</th>
<th>Performance Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Water quality</td>
<td>Implement urban stormwater treatment measures in the catchment to reduce the threat of poor water quality in the Growling Grass Frog Reserve wetlands</td>
</tr>
<tr>
<td>2</td>
<td>Buffer</td>
<td>Improve wetland buffer to 50 per cent of the wetland perimeter</td>
</tr>
</tbody>
</table>
### Waterway Conditions (10-50 Years)

<table>
<thead>
<tr>
<th>Wetland Water Quality</th>
<th>Current State</th>
<th>Current Trajectory</th>
<th>Potential Trajectory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland water quality considers the changed water properties within the wetland. The current state is moderate and the target is moderate.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wetland Buffer Condition</th>
<th>Current State</th>
<th>Current Trajectory</th>
<th>Potential Trajectory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland buffer condition is the native vegetation above the maximum inundation extent. The current state is very low and the target is very high.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vegetation Condition</th>
<th>Current State</th>
<th>Current Trajectory</th>
<th>Potential Trajectory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetation condition refers to the extent of ‘natural’ wetland vegetation intact. The current state is very low and the target is moderate.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wetland Habitat Form</th>
<th>Current State</th>
<th>Current Trajectory</th>
<th>Potential Trajectory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland habitat form considers the extent that the wetland area has been reduced through levee, diversions etc. The current state is very low and the target is very low.</td>
<td></td>
<td></td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Water Regime</th>
<th>Current State</th>
<th>Current Trajectory</th>
<th>Potential Trajectory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water regime is associated with changes to the flow regime such as interference with natural connectivity. The current state is very high and the target is very high.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Waterway Values Targets (10-50 Years)

<table>
<thead>
<tr>
<th>Waterway Values</th>
<th>Current State</th>
<th>Current Trajectory</th>
<th>Potential Trajectory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recreation, which is based on level of satisfaction, is currently high but likely to decline in long term if supply doesn’t keep up with population growth; target is to improve to very high.</td>
<td></td>
<td></td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Waterway Values</th>
<th>Current State</th>
<th>Current Trajectory</th>
<th>Potential Trajectory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amenity, which is based on level of satisfaction, is currently very high but likely to decline in long term if environmental values decline; target is to maintain as very high.</td>
<td></td>
<td></td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Waterway Values</th>
<th>Current State</th>
<th>Current Trajectory</th>
<th>Potential Trajectory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community connection, which is based on level of satisfaction, is currently high but likely to decline in long term if opportunities don’t keep up with population growth; target is to maintain as high.</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Waterway Values</th>
<th>Current State</th>
<th>Current Trajectory</th>
<th>Potential Trajectory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland Bird Score</td>
<td>Very Low</td>
<td>Very Low</td>
<td>Very Low</td>
</tr>
<tr>
<td>Wetland Bird Score is very low. It is not formally recognised as significant bird habitat and its vegetation condition is very low. Score is expected to remain very low.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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**Metrics Tables:**

- For description of scores see metrics tables at end of document.
Ringwood Lake

How to read the targets scores?
For description of scores see metrics tables at end of document

Wetland water quality considers the changed water properties within the wetland. The current state is very low and the target is low.

Wetland buffer condition is the native vegetation above the maximum inundation extent. The current state is very low and the target is low.

Vegetation condition refers to the extent of ‘natural’ wetland vegetation intact. The current state is very low and the target is low.

Wetland habitat form considers the extent that the wetland area has been reduced through levee, diversions etc. The current state is very low and the target is very low.

Water regime

Implement urban stormwater treatment measures in the catchment to reduce the threat of poor water quality in Ringwood Lake

Water regime is associated with changes to the flow regime such as interference with natural connectivity. The current state is very low and the target is low.

PO-ID Condition Supported Performance Objectives

1 Water regime Investigate opportunities to improve water regime to meet ecological watering objectives, improve ecosystem services, cultural and social value

2 Water quality Implement urban stormwater treatment measures in the catchment to reduce the threat of poor water quality in Ringwood Lake

Performance objectives

Guide activities and indicate progress towards improving the waterway conditions.

CURRENT STATE - current waterway values and conditions

CURRENT TRAJECTORY - long-term scores if current policies and effort continue

POTENTIAL TRAJECTORY - targets for the long-term scores to be achieved through implementing the Strategy

CURRENT STATE - current waterway values and conditions

CURRENT TRAJECTORY - long-term scores if current policies and effort continue

POTENTIAL TRAJECTORY - targets for the long-term scores to be achieved through implementing the Strategy

Score key:

Very Low Low Moderate High Very High

For description of scores see metrics tables at end of document
### Ringwood Lake

#### How to read the targets scores?

For description of scores see metrics tables at end of document.

<table>
<thead>
<tr>
<th>Waterway Conditions (10+ year targets)</th>
<th>Targets Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current state</strong></td>
<td><strong>Current trajectory</strong></td>
</tr>
<tr>
<td>Wetland bird score is currently very low. It is not formally recognised as significant bird habitat and its vegetation condition is very low. Score is expected to remain very low.</td>
<td></td>
</tr>
<tr>
<td>Very little data exists for wetland fish and a metric for wetland fish in this catchment will be developed through the strategy implementation.</td>
<td></td>
</tr>
<tr>
<td>The moderate Mullum Mullum Creek frog score has been applied to Ringwood Lake. Score is expected to decline to low.</td>
<td></td>
</tr>
<tr>
<td>Wetland vegetation value is currently very low, due to the vegetation condition. Target is to improve to low.</td>
<td></td>
</tr>
<tr>
<td>Amenity, which is based on level of satisfaction, is currently very high but likely to decline in long-term if environmental values decline; target is to maintain as very high.</td>
<td></td>
</tr>
<tr>
<td>Community connection, which is based on level of satisfaction, is currently high but likely to decline in long-term if opportunities don’t keep up with population growth; target is to maintain as high.</td>
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<tr>
<td>Recreation, which is based on level of satisfaction, is currently high but likely to decline in long-term if supply doesn’t keep up with population growth; target is to improve to very high.</td>
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</tr>
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<td>Water regime is associated with changes to the flow regime such as interference with natural connectivity. The current state is very low and the target is low.</td>
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</tr>
<tr>
<td>Wetland habitat form considers the extent that the wetland area has been reduced through levee, diversions etc. The current state is very low and the target is low.</td>
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<td>Wetland buffer condition is the native vegetation above the maximum inundation extent. The current state is very low and the target is low.</td>
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</tr>
<tr>
<td>Vegetation condition refers to the extent of ‘natural’ wetland vegetation intact. The current state is very low and the target is low.</td>
<td></td>
</tr>
<tr>
<td>Wetland water quality considers the changed water properties within the wetland. The current state is very low and the target is low.</td>
<td></td>
</tr>
</tbody>
</table>

#### Waterway Values Targets (10-50 years)

Waterway value targets are established to ensure goals are on track.

<table>
<thead>
<tr>
<th>Waterway values</th>
<th>Current state</th>
<th>Current trajectory</th>
<th>Potential trajectory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recreation, which is based on level of satisfaction, is currently high but likely to decline in long-term if supply doesn’t keep up with population growth; target is to improve to very high.</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Amenity, which is based on level of satisfaction, is currently very high but likely to decline in long-term if environmental values decline; target is to maintain as very high.</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Community connection, which is based on level of satisfaction, is currently high but likely to decline in long-term if opportunities don’t keep up with population growth; target is to maintain as high.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Targets

The moderate Mullum Mullum Creek frog score has been applied to Ringwood Lake. Score is expected to decline to low.

Ringwood Lake in Ringwood was created in 1926 by damming the Sandy Creek, which flowed north-westerly to Mullum Mullum Creek. It was an area of mud, fallen logs and grasses that now provides alternative habitat for wildlife as well as passive recreational opportunities. The 8.5 hectare park surrounding the lake is enjoyed by many locals and visitors. The paths around the lake are sealed making the park popular for running and walking, and there are picnic facilities, accessible toilets and shade.
Lillydale Lake is an artificial lake and wetlands area created in Lillydale. Following floods in September 1984, construction of the lake was proposed to prevent future flooding and provide recreational facilities.

PERFORMANCE OBJECTIVES

<table>
<thead>
<tr>
<th>PO-ID</th>
<th>Condition Supported</th>
<th>Performance Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Habitat form</td>
<td>Ensure flood mitigation design intent of lake is retained, whilst considering site biodiversity values including significant vegetation communities identified in site management plan</td>
</tr>
<tr>
<td>2</td>
<td>Water quality</td>
<td>Implement urban stormwater treatment measures in the catchment to reduce the threat of poor water quality in Lillydale Lake</td>
</tr>
</tbody>
</table>

How to read the targets scores?

- **Current state**: current score of waterway values and conditions
- **Current trajectory**: long-term scores if current policies and effort continue
- **Potential trajectory**: targets for the long-term scores to be achieved through implementing the Strategy

**Score key:**
- Very Low
- Low
- Moderate
- High
- Very High

For description of scores see metrics tables at end of document.
Wetland bird score is very low. It is not formally recognised as significant bird habitat and its vegetation condition is very low. Score is expected to remain very low.

Very little data exists for wetland fish and a metric for wetland fish in this catchment will be developed through the strategy implementation.

The very low frog value in the Olinda Creek subcatchment has been applied to Lilydale Lake. Score is expected to improve to low in long-term.

Wetland vegetation value is currently very low, due to the vegetation condition. Target is to improve to low.

Amenity, which is based on level of satisfaction, is currently very high but likely to decline in long-term if environmental values decline; target is to maintain as very high.

Community connection, which is based on level of satisfaction, is currently high but likely to decline in long-term if opportunities don’t keep up with population growth; target is to maintain as high.

Recreation, which is based on level of satisfaction, is currently high but likely to decline in long-term if supply doesn’t keep up with population growth; target is to improve to very high.

Water regime is associated with changes to the flow regime such as interference with natural connectivity. The current state is very low and the target is low.

Wetland habitat form considers the extent that the wetland area has been reduced through levee, diversions etc. The current state is very low and the target is low.

Wetland buffer condition is the native vegetation above the maximum inundation extent. The current state is very low and the target is low.

Vegetation condition refers to the extent of 'natural' wetland vegetation intact. The current state is very low and the target is low.

Wetland water quality considers the changed water properties within the wetland. The current state is very low and the target is low.
The Galada Tamboore and Dunnetts Road Stormwater Treatment Wetlands and other stormwater treatment wetlands in the Yarra catchment are designed to capture nutrients and sediment from urban stormwater before it enters the waterways. There is also a semi-natural shallow freshwater marsh at Dunnetts Road.

<table>
<thead>
<tr>
<th>PO-ID</th>
<th>Condition Supported</th>
<th>Performance Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Water quality</td>
<td>Maintain the design intent of stormwater wetlands in the Yarra catchment, to ensure that nutrients and sediment are captured, whilst considering significant biodiversity values at the site</td>
</tr>
</tbody>
</table>
### Waterway Conditions (10+ Year Targets)

<table>
<thead>
<tr>
<th>Waterway Conditions</th>
<th>Current State</th>
<th>Current Trajectory</th>
<th>Potential Trajectory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland bird score</td>
<td>Very Low</td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>Frogs score</td>
<td>Moderate</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Wetland vegetation value</td>
<td>Current</td>
<td>Low</td>
<td>Very Low</td>
</tr>
<tr>
<td>Amenity</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Community connection</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Recreation</td>
<td>Very High</td>
<td>Very High</td>
<td>Very High</td>
</tr>
</tbody>
</table>

### Targets Scores

<table>
<thead>
<tr>
<th>Current State</th>
<th>Current Trajectory</th>
<th>Potential Trajectory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current state</td>
<td>Current trajectory</td>
<td>Potential trajectory</td>
</tr>
</tbody>
</table>

- **Wetland score**: Currently very low for the stormwater wetlands. It is not formally recognised as significant bird habitat and its vegetation condition is very low. Score is expected to remain very low.

- **Frogs score**: Moderate, however scores will vary between stormwater treatment wetlands. Overall prediction is for decline due to urbanisation and climate change. With appropriate management stormwater wetlands will remain moderate due to reductions in threats of poor water quality, wetland buffers and vegetation condition.

- **Wetland vegetation value**: Currently low and it is expected to decline to very low. With improvements to water quality as a result of improving stormwater and maintenance of wetland habitat form at moderate the wetland vegetation condition may improve to moderate (noting stormwater wetlands are managed primarily for their water quality treatment function).

- **Amenity**: Based on level of satisfaction, is currently high but likely to decline in long-term if environmental values decline; target is very high.

- **Community connection**: Based on level of satisfaction, is currently high but likely to decline in long-term if opportunities don’t keep up with population growth; target is to maintain as high.

- **Recreation**: Based on level of satisfaction, is currently high but likely to decline in long-term if supply doesn’t keep up with population growth; target is to improve to very high.

- **Water regime**: Associated with changes to the flow regime such as interference with natural connectivity. The current state is very low and the target is low.

- **Wetland habitat form**: Considers the extent that the wetland area has been reduced through levee, diversions etc. The current state is moderate and the target is moderate.

- **Wetland buffer condition**: Native vegetation above the maximum inundation extent. The current state is very low and the target is low.

- **Vegetation condition**: Refers to the extent of ‘natural’ wetland vegetation intact. The current state is low and the target is low.

- **Wetland water quality**: Considers the changed water properties within the wetland. The current state is very low and the target is moderate.
## Domain Chandon Billabongs

The Domain Chandon Billabongs are located on the Yarra floodplain at Coldstream.

### Targets

<table>
<thead>
<tr>
<th>PO-ID</th>
<th>Condition Supported</th>
<th>Performance Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Water regime</td>
<td>Water regime implemented to meet ecological watering objectives, improve ecosystem services, cultural and social value. And investigate opportunities to further re-engage the natural wetlands in this area</td>
</tr>
<tr>
<td>2</td>
<td>Habitat form</td>
<td>Identify opportunities to improve the wetland habitat</td>
</tr>
<tr>
<td>3</td>
<td>Buffer</td>
<td>Improve wetland buffer to 50 per cent of the wetland perimeter</td>
</tr>
<tr>
<td>4</td>
<td>Vegetation (condition)</td>
<td>Reduce weed threat to low</td>
</tr>
<tr>
<td>5</td>
<td>Fish (value)</td>
<td>Maintain threat from Carp at low following watering events</td>
</tr>
<tr>
<td>6</td>
<td>Water quality</td>
<td>Implement urban stormwater improvements upstream to reduce water quality threat to wetland</td>
</tr>
</tbody>
</table>

### How to read the targets scores?

- **Current state**: current score of waterway values and conditions
- **Current trajectory**: long-term scores if current policies and effort continue
- **Potential trajectory**: targets for the long-term scores to be achieved through implementing the Strategy

<table>
<thead>
<tr>
<th>Score key</th>
<th>Very Low</th>
<th>Low</th>
<th>Moderate</th>
<th>High</th>
<th>Very High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current state</td>
<td>current score of waterway values and conditions</td>
<td>Long-term scores if current policies and effort continue</td>
<td>Targets to be achieved through implementing the Strategy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potential trajectory</td>
<td>Long-term scores if current policies and effort continue</td>
<td>Targets to be achieved through implementing the Strategy</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For description of scores see metrics tables at end of document.
Domain Chandon Billabongs have a wetland bird score of low, with a currently and potential trajectory of improvement to moderate as a result of planned environmental watering. The wetlands are not formally recognised as bird habitat.

Fish score is very low with a current and potential trajectory of high. Planned improvements to water regime, along with improvements to wetland habitat form, wetland buffer condition and vegetation condition will support opportunistic use of floodplain billabongs by native fish.

Frog score is very low with a current and potential trajectory of high. Planned improvements to the water regime, along with long-term improvements to the wetland habitat form, wetland buffer condition and vegetation condition will improve score.

Domain Chandon Billabongs score is moderate with a current trajectory of decline to low. Reductions in key threats to vegetation are predicted to improve score to high.

Amenity, which is based on level of satisfaction, is currently very high but likely to decline in long-term if environmental values decline; target is to maintain as very high.

Community connection, which is based on level of satisfaction, is currently high but likely to decline in long-term if opportunities don't keep up with population growth; target is to maintain as high.

Recreation, which is based on level of satisfaction, is currently high but likely to decline in long-term if supply doesn't keep up with population growth; target is to improve to very high.

Water regime is associated with changes to the flow regime such as interference with natural connectivity. The current state is very low and the target is very high.

Wetland habitat form considers the extent that the wetland area has been reduced through levee, diversions etc. The current state is moderate and the target is high.

Wetland buffer condition is the native vegetation above the maximum inundation extent. The current state is very low and the target is very high.

Vegetation condition refers to the extent of ‘natural’ wetland vegetation intact. The current state is moderate and the target is very high.

Wetland water quality considers the changed water properties within the wetland. The current state is moderate and the target is moderate.
Cockatoo Swamp is located adjacent to Cockatoo Creek in the Yellingbo Conservation Area. This area provides habitat for the nationally-listed Mountain Swamp Gum, Growling Grass Frog, Helmeted Honeyeater, Grey-headed Flying-fox and Leadbeater’s Possum (also state-listed); and state-listed White-bellied Sea-Eagle, Swamp Skink and Square-tailed Kite.

Performance Objectives

<table>
<thead>
<tr>
<th>PO-ID</th>
<th>Condition Supported</th>
<th>Performance Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Water regime</td>
<td>Water regime implemented (incorporating understanding of groundwater contributions) to meet ecological watering objectives, improve ecosystem services, cultural and social value</td>
</tr>
<tr>
<td>2</td>
<td>Vegetation (condition)</td>
<td>Reduce threat of deer and other invasive fauna to moderate, and reduce weed threat to low</td>
</tr>
<tr>
<td>3</td>
<td>Water quality</td>
<td>Reduce nutrient threat through improved rural land management</td>
</tr>
</tbody>
</table>
## WATERWAY CONDITIONS (10+ YEAR TARGETS)

<table>
<thead>
<tr>
<th>Waterway Conditions</th>
<th>Current State</th>
<th>Current Trajectory</th>
<th>Potential Trajectory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland water quality</td>
<td>Very Low</td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>Wetland buffer condition</td>
<td>Very High</td>
<td>High</td>
<td>Very High</td>
</tr>
<tr>
<td>Vegetation (condition)</td>
<td>Very High</td>
<td>High</td>
<td>Very High</td>
</tr>
<tr>
<td>Wetland habitat form</td>
<td>High</td>
<td>Very High</td>
<td>Very High</td>
</tr>
<tr>
<td>Water regime</td>
<td>Very Low</td>
<td>Low</td>
<td>High</td>
</tr>
</tbody>
</table>

- **Cockatoo Swamp** has a bird value score of high. High current vegetation condition, along with the presence of significant bird species and acknowledgement of wetland as part of a drought refuge support the score. The score will remain high through improvements to water regime, habitat form, protection of the wetland buffer vegetation and vegetation condition.

- Very little data exists for wetland fish and a metric for wetland fish in this catchment will be developed through the strategy implementation.

- Vegetation score is high and predicted to improve to very high in long-term. Cockatoo Swamp supports significant vegetation communities and species including Nationally listed Mountain Swamp Gum. Improvements to wetland water regime, wetland habitat form, wetland buffer and vegetation condition will improve already high vegetation score.

- Water regime is associated with changes to the flow regime such as interference with natural connectivity. The current state is very low and the target is high.

- Wetland habitat form considers the extent that the wetland area has been reduced through levee, diversions etc. The current state is high and the target is very high.

- Wetland buffer condition is the native vegetation above the maximum inundation extent. The current state is high and the target is very high.

- Vegetation condition refers to the extent of ‘natural’ wetland vegetation intact. The current state is high and the target is very high.

- Wetland water quality considers the changed water properties within the wetland. The current state is very low and the target is moderate.
Wetland water quality considers the changed water properties within the wetland. The current state is very low and the target is moderate.

Wetland buffer condition is the native vegetation above the maximum inundation extent. The current state is moderate and the target is very high.

Vegetation condition refers to the extent of ‘natural’ wetland vegetation intact. The current state is moderate and the target is moderate.

Wetland habitat form considers the extent that the wetland area has been reduced through levee, diversions etc. The current state is low and the target is low.

Water regime is associated with changes to the flow regime such as interference with natural connectivity. The current state is very low and the target is very high.

PO-ID Condition Supported Performance Objectives

1 Investigate opportunities to improve wetland water regime to meet ecological watering objectives, improve ecosystem services, cultural and social value.

2 Reduce weed threat to low

Wetland bird score is very low with potential trajectory of improvement to moderate as a result of planned environmental watering. The wetland is not formally recognised as bird habitat.

Very little data exists for wetland fish and a metric for wetland fish in this catchment will be developed through the strategy implementation.

Targets

<table>
<thead>
<tr>
<th>Waterway values targets</th>
<th>Waterway management focuses on ensuring waterway conditions are appropriate to improve waterway values.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 - 50 years</td>
<td>Guide activities and indicate progress towards improving the waterway conditions.</td>
</tr>
</tbody>
</table>

How to read the targets scores?

Current state - current score of waterway values and conditions

Current trajectory - long-term scores if current policies and effort continue

Potential trajectory - targets for the long-term scores to be achieved through implementing the Strategy

Score key: Very Low Low Moderate High Very High

For description of scores see metrics tables at end of document

Performance Objectives

<table>
<thead>
<tr>
<th>PO-ID</th>
<th>Condition Supported</th>
<th>Performance Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Water regime</td>
<td>Investigate opportunities to improve wetland water regime to meet ecological watering objectives, improve ecosystem services, cultural and social value.</td>
</tr>
<tr>
<td>2</td>
<td>Vegetation (condition)</td>
<td>Reduce weed threat to low</td>
</tr>
</tbody>
</table>
Wetland bird score is very low with potential trajectory of improvement to moderate as a result of planned environmental watering. The wetland is not formally recognised as bird habitat.

Very little data exists for wetland fish and a metric for wetland fish in this catchment will be developed through the strategy implementation.

Yarra River Lower sub catchment frog score of moderate was used for Annulus Billabong. The score is expected to increase to high in response to reduction in threats, most significantly changed wetland water regime.

Wetland vegetation score is currently moderate with a current trajectory of decline to low. Improving the wetland water regime, wetland buffer condition and maintaining the wetland vegetation condition will maintain score at moderate.

Amenity, which is based on level of satisfaction, is currently high but likely to decline in long-term if environmental values decline; target is to improve to very high.

Community connection, which is based on level of satisfaction, is currently high but likely to decline in long-term if opportunities don’t keep up with population growth; target is to maintain as high.

Recreation, which is based on level of satisfaction, is currently high but likely to decline in long-term if supply doesn’t keep up with population growth; target is to improve to very high.

Water regime is associated with changes to the flow regime such as interference with natural connectivity. The current state is very low and the target is very high.

Wetland habitat form considers the extent that the wetland area has been reduced through levee, diversions etc. The current state is low and the target is low.

Wetland buffer condition is the native vegetation above the maximum inundation extent. The current state is moderate and the target is very high.

Vegetation condition refers to the extent of ‘natural’ wetland vegetation intact. The current state is moderate and the target is moderate.

Wetland water quality considers the changed water properties within the wetland. The current state is very low and the target is moderate.
Banyule Flats Billabong

How to read the targets scores?

For description of scores see metrics tables at end of document

<table>
<thead>
<tr>
<th>Targets</th>
<th>Score key:</th>
<th>Very Low</th>
<th>Low</th>
<th>Moderate</th>
<th>High</th>
<th>Very High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waterway values targets</td>
<td>Current state - current score of waterway values and conditions</td>
<td>Current trajectory - long-term scores if current policies and effort continue</td>
<td>Potential trajectory - targets for the long-term scores to be achieved through implementing the Strategy</td>
<td>Score key:</td>
<td>Very Low</td>
<td>Low</td>
</tr>
<tr>
<td>Waterway conditions targets</td>
<td>10 - 50 years</td>
<td>Waterway management focuses on ensuring waterway conditions are appropriate to improve waterway values.</td>
<td></td>
<td>1 - 10 years</td>
<td>Guide activities and indicate progress towards improving the waterway conditions.</td>
<td></td>
</tr>
</tbody>
</table>

Performance objectives

Guide activities and indicate progress towards improving the waterway conditions.

Performance Objectives

1 Water regime

Water regime implemented to meet ecological watering objectives, improve ecosystem services, cultural and social value

2 Fish [value]

Maintain threat from Carp at low following watering events

3 Buffer

Improve wetland buffer to 50 per cent of the wetland perimeter

4 Vegetation [condition]

Reduce weed threat to low

Banyule Flats Billabong is located at Viewbank with the Banyule Flats Reserve. A total of 153 bird species have been sighted within the reserve, with some species rare or threatened in Victoria, while others are significant migrants. Significant community lead conservation work has been undertaken over many years.
### Waterway Values Targets (10+ Year Targets)

<table>
<thead>
<tr>
<th>Waterway Values</th>
<th>Current State</th>
<th>Current Trajectory</th>
<th>Potential Trajectory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recreation, which is based on level of satisfaction, is currently high but likely to decline in long-term if supply doesn’t keep up with population growth; target is to improve to very high.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amenity, which is based on level of satisfaction, is currently high but likely to decline in long-term if environmental values decline; target is to improve to very high.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community connection, which is based on level of satisfaction, is currently high but likely to decline in long-term if opportunities don’t keep up with population growth; target is to maintain as high.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Banyule Flats Billabong has a low bird score which is predicted to remain low. The wetland is not formally recognised as bird habitat.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fish score is very low with a current and potential trajectory of moderate. Planned improvements to water regime, along with long-term improvements to the wetland habitat form, wetland buffer condition and vegetation condition will support opportunistic use of floodplain billabongs by native fish.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frog score is very high with significant species present. Maintenance of the wetland water regime is expected to maintain score at very high.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water regime is associated with changes to the flow regime such as interference with natural connectivity. The current state is very low and the target is very high.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wetland habitat form considers the extent that the wetland area has been reduced through levee, diversions etc. The current state is very low and the target is moderate.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wetland buffer condition is the native vegetation above the maximum inundation extent. The current state is very low and the target is very high.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vegetation condition refers to the extent of ‘natural’ wetland vegetation intact. The current state is moderate and the target is very high.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wetland water quality considers the changed water properties within the wetland. The current state is very low and the target is moderate.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Performance Objectives

- **Guides activities and indicate progress towards improving the waterway conditions.**
- **Community connection, which is based on level of satisfaction, is currently high but likely to decline in long-term if opportunities don’t keep up with population growth; target is to maintain as high.**
- **Amenity, which is based on level of satisfaction, is currently high but likely to decline in long-term if environmental values decline; target is to improve to very high.**
- **Recreation, which is based on level of satisfaction, is currently high but likely to decline in long-term if supply doesn’t keep up with population growth; target is to improve to very high.**
Bolin Bolin Billabong is located next to the Yarra River in Bulleen, the billabong is one of the few remaining in urban Melbourne and has high ecological and cultural significance.

**TARGETS SCORES**

**WATERWAY VALUES TARGETS (10 - 50 YEARS)**

<table>
<thead>
<tr>
<th>Waterway values targets</th>
<th>Waterway value targets are established to ensure goals are on track.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 - 50 years</td>
<td></td>
</tr>
</tbody>
</table>

**WATERWAY CONDITIONS TARGETS**

<table>
<thead>
<tr>
<th>Waterway conditions targets</th>
<th>Waterway management focuses on ensuring waterway conditions are appropriate to improve waterway values.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10+ years</td>
<td></td>
</tr>
</tbody>
</table>

**Performance objectives**

<table>
<thead>
<tr>
<th>Performance objectives</th>
<th>Guide activities and indicate progress towards improving the waterway conditions.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 10 years</td>
<td></td>
</tr>
</tbody>
</table>

**How to read the targets scores?**

- **Current state** - current score of waterway values and conditions
- **Current trajectory** - long-term scores if current policies and effort continue
- **Potential trajectory** - targets for the long-term scores to be achieved through implementing the Strategy

**Score key:**

- Very Low
- Low
- Moderate
- High
- Very High

For description of scores see metrics tables at end of document

**PERFORMANCE OBJECTIVES**

<table>
<thead>
<tr>
<th>PO-ID</th>
<th>Condition Supported</th>
<th>Performance Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fish (value)</td>
<td>Maintain threat from Carp at low following watering events</td>
</tr>
<tr>
<td>2</td>
<td>Buffer</td>
<td>Improve wetland buffer to 50 per cent of the wetland perimeter</td>
</tr>
<tr>
<td>3</td>
<td>Water regime</td>
<td>Water regime implemented to meet ecological watering objectives, improve ecosystem services, cultural and social value</td>
</tr>
</tbody>
</table>
Bolin Bolin Billabong is located next to the Yarra River in Bulleen, the billabong is one of the few remaining in urban Melbourne and has high ecological and cultural significance.

How to read the targets scores?
For description of scores see metrics tables at end of document.

<table>
<thead>
<tr>
<th>PERFORMANCE OBJECTIVES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waterway conditions targets</td>
</tr>
</tbody>
</table>

Waterway management focuses on ensuring waterway conditions are appropriate to improve waterway values.

**WATERWAY VALUES TARGETS (10 + YEAR TARGETS)**

- Recreation, which is based on level of satisfaction, is currently high but likely to decline in long-term if supply doesn’t keep up with population growth; target is to improve to very high.
- Amenity, which is based on level of satisfaction, is currently high but likely to decline in long-term if environmental values decline; target is to improve to very high.
- Community connection, which is based on level of satisfaction, is currently high but likely to decline in long-term if opportunities don’t keep up with population growth; target is to maintain as high.

**TARGETS SCORES**

<table>
<thead>
<tr>
<th>Current state</th>
<th>Current trajectory</th>
<th>Potential trajectory</th>
</tr>
</thead>
</table>

- Wetland bird score is currently low with potential trajectory of improvement to moderate as a result of planned environmental watering. The wetland is not formally recognised as bird habitat and bird habitat is limited by current vegetation condition.
- Fish score is very low with potential trajectory of moderate. Planned improvements to water regime, along with improvements to wetland habitat form, wetland buffer condition and vegetation condition will support opportunistic use of floodplain billabongs by native fish.
- Frog score is very high with significant species present. Maintenance of the wetland water regime is expected to maintain score at very high.
- Wetland vegetation score is moderate. Reduction to the threats of changed water regime, poor wetland buffer and degraded wetland vegetation condition is predicted to improve score to high.
- Community connection, which is based on level of satisfaction, is currently high but likely to decline in long-term if opportunities don’t keep up with population growth; target is to maintain as high.
- Recreation, which is based on level of satisfaction, is currently high but likely to decline in long-term if supply doesn’t keep up with population growth; target is to improve to very high.

- Water regime is associated with changes to the flow regime such as interference with natural connectivity. The current state is very low and the target is very high.
- Wetland habitat form considers the extent that the wetland area has been reduced through levees, diversions etc. The current state is very low and the target is moderate.
- Wetland buffer condition is the native vegetation above the maximum inundation extent. The current state is very low and the target is very high.
- Vegetation condition refers to the extent of ‘natural’ wetland vegetation intact. The current state is moderate and the target is very high.
- Wetland water quality considers the changed water properties within the wetland. The current state is moderate and the target is moderate.
Burke Road Billabong is located in Kew next to the Yarra River. It has been the subject of significant conservation works lead by local community members.

**Targets**

<table>
<thead>
<tr>
<th>Waterway values targets</th>
<th>Waterway value targets are established to ensure goals are on track.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 - 50 years</td>
<td></td>
</tr>
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<table>
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<tr>
<th>Waterway conditions targets</th>
<th>Waterway management focuses on ensuring waterway conditions are appropriate to improve waterway values.</th>
</tr>
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<tbody>
<tr>
<td>10+ years</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Performance objectives</th>
<th>Guide activities and indicate progress towards improving the waterway conditions.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 10 years</td>
<td></td>
</tr>
</tbody>
</table>

**How to read the targets scores?**

Current state - current score of waterway values and conditions

Current trajectory - long-term scores if current policies and effort continue

Potential trajectory - targets for the long-term scores to be achieved through implementing the Strategy

<table>
<thead>
<tr>
<th>Score key:</th>
<th>Very Low</th>
<th>Low</th>
<th>Moderate</th>
<th>High</th>
<th>Very High</th>
</tr>
</thead>
</table>

For description of scores see metrics tables at end of document

**PERFORMANCE OBJECTIVES**

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<tr>
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<th>Condition Supported</th>
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<tbody>
<tr>
<td>1</td>
<td>Water regime</td>
<td>Water regime implemented to meet ecological watering objectives, improve ecosystem services, cultural and social value</td>
</tr>
<tr>
<td>2</td>
<td>Fish [value]</td>
<td>Maintain threat from Carp at low following watering events</td>
</tr>
<tr>
<td>3</td>
<td>Vegetation [condition]</td>
<td>Reduce weed threat to low</td>
</tr>
<tr>
<td>4</td>
<td>Buffer</td>
<td>Improve wetland buffer to 50 per cent of the wetland perimeter</td>
</tr>
</tbody>
</table>
### Targets Scores

<table>
<thead>
<tr>
<th>Current state</th>
<th>Current trajectory</th>
<th>Potential trajectory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Low</td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>Moderate</td>
<td>High</td>
<td>Very High</td>
</tr>
</tbody>
</table>

**Wetland Bird**

Score is very low with potential trajectory of improvement to moderate as a result of planned environmental watering. The wetland is not formally recognised as bird habitat.

**Fish**

Score is very low with potential trajectory of moderate. Planned improvements to water regime, along with long-term improvements to the wetland habitat form, wetland buffer condition and vegetation condition will support opportunistic use of floodplain billabongs by native fish.

**Yarra River Lower sub catchment frog**

Score of moderate was used for Burke Road Billabong. It is expected to increase to high in response to reduction in threats, most significantly changed wetland water regime.

**Burke Road Billabong vegetation**

Score is moderate. Reduction to the threats of changed water regime, poor wetland buffer and degraded wetland vegetation condition is predicted to improve score to high.

**Amenity**

Which is based on level of satisfaction, is currently high but likely to decline in long-term if environmental values decline; target is to improve to very high.

**Community connection**

Which is based on level of satisfaction, is currently high but likely to decline in long-term if opportunities don’t keep up with population growth; target is to maintain as high.

**Recreation**

Which is based on level of satisfaction, is currently high but likely to decline in long-term if supply doesn’t keep up with population growth; target is to improve to very high.

**Water regime**

Is associated with changes to the flow regime such as interference with natural connectivity. The current state is very low and the target is very high.

**Wetland habitat form**

Considers the extent that the wetland area has been reduced through levee, diversions etc. The current state is very low and the target is moderate.

**Wetland buffer condition**

Is the native vegetation above the maximum inundation extent. The current state is low and the target is very high.

**Vegetation condition**

Refers to the extent of ‘natural’ wetland vegetation intact. The current state is moderate and the target is very high.

**Wetland water quality**

Considers the changed water properties within the wetland. The current state is very low and the target is moderate.
Hays Paddock Billabong is located within the Willsmere-Chandler Park on the Yarra River floodplain at Kew.

**Targets**

<table>
<thead>
<tr>
<th>Performance Objectives</th>
<th>1 - 10 years</th>
<th>10 - 50 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investigate opportunities to improve wetland water regime to meet ecological watering objectives, improve ecosystem services, cultural and social value.</td>
<td>Waterway management focuses on ensuring waterway conditions are appropriate to improve waterway values.</td>
<td>Waterway value targets are established to ensure goals are on track.</td>
</tr>
<tr>
<td>Maintain threat from Carp at low following watering events.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduce weed threat to low.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**How to read the targets scores?**

Current state - current score of waterway values and conditions

Current trajectory - long-term scores if current policies and effort continue

Potential trajectory - targets for the long-term scores to be achieved through implementing the Strategy

Score key:  
- Very Low  
- Low  
- Moderate  
- High  
- Very High

For description of scores see metrics tables at end of document
### Waterway Conditions (10+ Year Targets)

<table>
<thead>
<tr>
<th>Waterway Conditions</th>
<th>Current State</th>
<th>Current Trajectory</th>
<th>Potential Trajectory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland Habitat Form</td>
<td>Very Low</td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>Wetland Buffer Condition</td>
<td>Very Low</td>
<td>Low</td>
<td>Very High</td>
</tr>
<tr>
<td>Wetland Water Quality</td>
<td>Very Low</td>
<td>Low</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

### Waterway Values Targets (10-50 Years)

<table>
<thead>
<tr>
<th>Waterway Values</th>
<th>Current State</th>
<th>Current Trajectory</th>
<th>Potential Trajectory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amenity</td>
<td>Current High</td>
<td>Likely to decline in long-term if environmental values decline</td>
<td>Target to improve to very high</td>
</tr>
<tr>
<td>Community Connection</td>
<td>Current High</td>
<td>Likely to decline in long-term if opportunities don't keep up with population growth</td>
<td>Target to maintain as high</td>
</tr>
<tr>
<td>Recreation</td>
<td>Current High</td>
<td>Likely to decline in long-term if supply doesn't keep up with population growth</td>
<td>Target to improve to very high</td>
</tr>
</tbody>
</table>

### Targets Scores

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Low</td>
<td>Considered the lowest possible score</td>
</tr>
<tr>
<td>Low</td>
<td>Below average</td>
</tr>
<tr>
<td>Moderate</td>
<td>Average performance</td>
</tr>
<tr>
<td>High</td>
<td>Considered the highest possible score</td>
</tr>
<tr>
<td>Very High</td>
<td>Highly effective or successful</td>
</tr>
</tbody>
</table>

Hays Paddock Billabong is located within the Willsmere-Chandler Park on the Yarra River floodplain at Kew.

**Wetland Bird Score**

- **Score**: Very low
- **Current Condition**: Very low
- **Potential Trajectory**: Improvement to moderate

The wetland is not formally recognised as bird habitat.

**Frog Score**

- **Score**: Current moderate
- **Improvements**: Predicted to improve score to high

**Vegetation Score**

- **Score**: Very low
- **Current Condition**: Very low
- **Score Prediction**: Improvement to moderate with significant vegetation communities protected by improving vegetation condition and water regime.

**Wetland Water Quality**

- **Current State**: Very low
- **Target**: Moderate

**Wetland Habitat Form**

- **Current State**: Very low
- **Target**: Moderate

**Water Regime**

- **Maintain threat from Carp**
- **Current State**: Very low
- **Target**: Very high

**Wetland Buffer Condition**

- **Current State**: Very low
- **Target**: Very high

**Waterway Management**

- **Goal**: Ensure waterway conditions are appropriate to improve waterway values.
Two wetlands are located within Westgate Park. Quarrying for sand resulted in the two wetlands in the park – the larger fresh water lake having a large and diverse bird population but the smaller lake is highly saline, polluted with heavy metals and organics and often coloured pink by algae. Significant environmental projects have increased the environmental and social values of the wetlands.

<table>
<thead>
<tr>
<th>PO-ID</th>
<th>Condition Supported</th>
<th>Performance Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Buffer</td>
<td>Improve wetland buffer to 50 per cent of the wetland perimeter</td>
</tr>
<tr>
<td>2</td>
<td>Water quality</td>
<td>Implement urban stormwater improvements upstream to reduce water quality threat to wetland</td>
</tr>
<tr>
<td>3</td>
<td>Vegetation (condition)</td>
<td>Reduce weed threat to low</td>
</tr>
</tbody>
</table>
The bird value at Westgate Park wetlands is currently low and is predicted to remain low. The site is not formally recognised as bird habitat. In the long-term moderate vegetation condition will continue to provide bird habitat.

Very little data exists for wetland fish and a metric for wetland fish in this catchment will be developed through the strategy implementation.

The frog score is currently very high with significant species present. Maintenance of the wetland water regime is expected to maintain the frog value at very high.

Wetland vegetation value is currently very low, although significant vegetation communities are present. Very low wetland vegetation condition will be improved through reduction of weed threats and improvement of wetland buffer vegetation improving the value to moderate.

Amenity, which is based on level of satisfaction, is currently high but likely to decline in long-term if environmental values decline; target is to improve to very high.

Community connection, which is based on level of satisfaction, is currently high but likely to decline in long-term if opportunities don’t keep up with population growth; target is to maintain as high.

Recreation, which is based on level of satisfaction, is currently high but likely to decline in long-term if supply doesn’t keep up with population growth; target is to improve to very high.

Water regime is associated with changes to the flow regime such as interference with natural connectivity. The current state is moderate and the target is moderate.

Wetland habitat form considers the extent that the wetland area has been reduced through levee, diversions etc. The current state is very low and the target is very low.

Wetland buffer condition is the native vegetation above the maximum inundation extent. The current state is very low and the target is low.

Vegetation condition refers to the extent of ‘natural’ wetland vegetation intact. The current state is very low and the target is low.

Wetland water quality considers the changed water properties within the wetland. The current state is very low and the target is low.
**Willsmere Billabong**

Willsmere Billabong is located within the Willsmere-Chandler Park on the Yarra River floodplain at Kew.

<table>
<thead>
<tr>
<th>Targets</th>
<th>Waterway values targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waterway conditions targets</td>
<td>Waterway value targets are established to ensure goals are on track.</td>
</tr>
<tr>
<td>10 - 50 years</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Performance objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guide activities and indicate progress towards improving the waterway conditions.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1 - 10 years</th>
</tr>
</thead>
</table>

**How to read the targets scores?**

Current state - current score of waterway values and conditions

Current trajectory - long-term scores if current policies and effort continue

Potential trajectory - targets for the long-term scores to be achieved through implementing the Strategy

**Score key:**

- Very Low
- Low
- Moderate
- High
- Very High

For description of scores see metrics tables at end of document

### PERFORMANCE OBJECTIVES

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<thead>
<tr>
<th>PO-ID</th>
<th>Condition Supported</th>
<th>Performance Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Water regime</td>
<td>Water regime implemented to meet ecological watering objectives, improve ecosystem services, cultural and social value</td>
</tr>
<tr>
<td>2</td>
<td>Water quality</td>
<td>Implement urban stormwater improvements upstream to reduce water quality threat to wetland</td>
</tr>
<tr>
<td>3</td>
<td>Fish (value)</td>
<td>Maintain threat from Carp at low following watering events</td>
</tr>
<tr>
<td>4</td>
<td>Buffer</td>
<td>Improve wetland buffer to 50 per cent of the wetland perimeter</td>
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<tr>
<td>5</td>
<td>Vegetation (condition)</td>
<td>Reduce weed threat to low</td>
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</table>
Willsmere Billabong

How to read the targets scores?
For description of scores see metrics tables at end of document

<table>
<thead>
<tr>
<th>Current state</th>
<th>Current trajectory</th>
<th>Potential trajectory</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Wetland score is currently very low with a potential trajectory of improvement to moderate as a result of planned environmental watering. The wetland is not formally recognised as bird habitat.

Fish score is high with potential trajectory of moderate. Planned improvements to the water regime, along with long-term improvements to the wetland habitat form, wetland buffer condition and vegetation condition will support opportunistic use of floodplain billabongs by native fish.

Yarra River Lower sub catchment frog score moderate was used for Burke Road Billabong. It is expected to increase to high in response to reduction in threats, most significantly changed wetland water regime.

Vegetation score is moderate. Reduction to the threats of changed water regime, poor wetland buffer and degraded wetland vegetation condition is predicted to improve score to high.

Amenity, which is based on level of satisfaction, is currently high but likely to decline in long-term if environmental values decline; target is to improve to very high.

Community connection, which is based on level of satisfaction, is currently high but likely to decline in long-term if opportunities don’t keep up with population growth; target is to maintain as high.

Recreation, which is based on level of satisfaction, is currently high but likely to decline in long-term if supply doesn’t keep up with population growth; target is to improve to very high.

Water regime is associated with changes to the flow regime such as interference with natural connectivity. The current state is very low and the target is very high.

Wetland habitat form considers the extent that the wetland area has been reduced through levee, diversions etc. The current state is very low and the target is low.

Wetland buffer condition is the native vegetation above the maximum inundation extent. The current state is very low and the target is very high.

Vegetation condition refers to the extent of ‘natural’ wetland vegetation intact. The current state is moderate and the target is very high.

Wetland water quality considers the changed water properties within the wetland. The current state is very low and the target is moderate.
Andersons Creek East Retarding Basin and the Cardigan Road Retarding Basins are designed to hold back stormwater to reduce flood risk to local homes and businesses. They also contain some biodiversity and social values.

### Targets

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<th>Waterway values targets</th>
<th>Performance objectives</th>
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<tbody>
<tr>
<td>10 - 50 years</td>
<td>Guide activities and indicate progress towards improving the waterway conditions.</td>
</tr>
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### How to read the targets scores?

- **Current state** - current score of waterway values and conditions
- **Current trajectory** - long-term scores if current policies and effort continue
- **Potential trajectory** - targets for the long-term scores to be achieved through implementing the Strategy

#### Score key:

- **Very Low**
- **Low**
- **Moderate**
- **High**
- **Very High**

For description of scores see metrics tables at end of document

### PERFORMANCE OBJECTIVES

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<tr>
<th>PO-ID</th>
<th>Condition Supported</th>
<th>Performance Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Habitat form</td>
<td>Ensure that the flood mitigation design intent of wetland flood retarding basin sites is retained, whilst considering site biodiversity values identified in the site management plans.</td>
</tr>
</tbody>
</table>
**WATERWAY CONDITIONS (10+ YEAR TARGETS)**

<table>
<thead>
<tr>
<th>Current</th>
<th>Current trajectory</th>
<th>Potential trajectory</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Low</td>
<td>Wetland bird score is very low for the retarding basins with biodiversity values. Score is expected to remain very low, as the basins are primarily managed for flood protection. However, retarding basins listed by Melbourne Water as Sites of Biodiversity Significance have management regimes in place to protect values.</td>
</tr>
<tr>
<td>Low</td>
<td>Very little data exists for wetland fish and a metric for wetland fish in this catchment will be developed through the strategy implementation.</td>
</tr>
<tr>
<td>Moderate</td>
<td>Moderate frog score for Yarra River Middle sub-catchment has been applied to the retarding basins with biodiversity values. Some retarding basins in the Yarra catchment will have a higher frog score.</td>
</tr>
<tr>
<td>High</td>
<td>Wetland vegetation value is very low. Implementation of actions to protect significant biodiversity values will improve score to low.</td>
</tr>
<tr>
<td>Very High</td>
<td>Amenity, which is based on level of satisfaction, is currently very high but likely to decline in long-term if environmental values decline; target is to maintain as very high.</td>
</tr>
<tr>
<td></td>
<td>Community connection, which is based on level of satisfaction, is currently high but likely to decline in long-term if opportunities don't keep up with population growth; target is to maintain as high.</td>
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<tr>
<td></td>
<td>Recreation, which is based on level of satisfaction, is currently high but likely to decline in long-term if supply doesn't keep up with population growth; target is to improve to very high.</td>
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</tbody>
</table>

**WATERWAY VALUES TARGETS (10 - 50 YEARS)**

<table>
<thead>
<tr>
<th>Waterway values</th>
<th>Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waterway management</td>
<td>focuses on ensuring waterway conditions are appropriate to improve waterway values.</td>
</tr>
</tbody>
</table>

**Score key:**
- Very Low
- Low
- Moderate
- High
- Very High

**Current state**
**Current trajectory**
**Potential trajectory**
Spadonis Billabong

Spadonis Billabong is a billabong located on the Yarra River floodplain at Yering, with the Spadonis Natura Conservation Reserve.

PO-ID | Condition Supported | Performance Objectives
--- | --- | ---
1 | Water regime | Water regime implemented to meet ecological watering objectives, improve ecosystem services, cultural and social value
2 | Water quality | Implement urban stormwater and rural land management improvements upstream to reduce water quality threat to wetland
3 | Buffer | Improve wetland buffer to 50 per cent of the wetland perimeter
4 | Vegetation (condition) | Reduce weed threat to low

How to read the targets scores?
Current state - current score of waterway values and conditions
Current trajectory - long-term scores if current policies and effort continue
Potential trajectory - targets for the long-term scores to be achieved through implementing the Strategy

For description of scores see metrics tables at end of document
Spadonis Billabong is listed in the Directory of Important Wetlands and is a known drought refuge. The current score is low due to moderate vegetation condition. The current and potential trajectory is an improvement to moderate as a result of the delivery of environmental water, improving vegetation condition, wetland habitat form and maintaining water quality in the long-term.

Fish score is very high with significant native fish species having been previously found in the wetland. In the long-term the fish value is expected to be maintained.

Low frog score from the Yarra River Upper (Rural) sub catchment has been applied. It is predicted to improve to high as the threats of changed water regime, moderate vegetation condition and habitat form are reduced and these conditions improved.

Vegetation value at Spadonis is currently moderate with a current and potential trajectory of high. Environmental watering objectives focussing on vegetation needs with drive an improvement in vegetation condition and other aspects of the wetland habitat values.

Amenity, which is based on level of satisfaction, is currently very high but likely to decline in long-term if environmental values decline; target is to maintain as very high.

Community connection, which is based on level of satisfaction, is currently high but likely to decline in long-term if opportunities don’t keep up with population growth; target is to maintain as high.

Recreation, which is based on level of satisfaction, is currently high but likely to decline in long-term if supply doesn’t keep up with population growth; target is to improve to very high.

Water regime is associated with changes to the flow regime such as interference with natural connectivity. The current state is very low and the target is very high.

Wetland habitat form considers the extent that the wetland area has been reduced through levee, diversions etc. The current state is low and the target is moderate.

Wetland buffer condition is the native vegetation above the maximum inundation extent. The current state is very low and the target is moderate.

Vegetation condition refers to the extent of ‘natural’ wetland vegetation intact. The current state is moderate and the target is very high.

Wetland water quality considers the changed water properties within the wetland. The current state is moderate and the target is moderate.
Yarra Bridge Stream Side Reserve

How to read the targets scores?
For description of scores see metrics tables at end of document

Yarra Bridge Stream Reserve Billabong is located on the Yarra River floodplain at Launching Place

Targets

<table>
<thead>
<tr>
<th>Waterway values targets</th>
<th>Waterway value targets are established to ensure goals are on track.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 - 50 years</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Waterway conditions targets</th>
<th>Waterway management focuses on ensuring waterway conditions are appropriate to improve waterway values.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10+ years</td>
<td></td>
</tr>
</tbody>
</table>

Performance objectives
Guide activities and indicate progress towards improving the waterway conditions.

<table>
<thead>
<tr>
<th>Performance objectives</th>
<th>Guide activities and indicate progress towards improving the waterway conditions.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 10 years</td>
<td></td>
</tr>
</tbody>
</table>

How to read the targets scores?
Current state - current score of waterway values and conditions
Current trajectory - long-term scores if current policies and effort continue
Potential trajectory - targets for the long-term scores to be achieved through implementing the Strategy

Score key: | Very Low | Low | Moderate | High | Very High

For description of scores see metrics tables at end of document

PERFORMANCE OBJECTIVES

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<tbody>
<tr>
<td>1</td>
<td>Water regime</td>
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<td>Water quality</td>
<td>Implement urban stormwater and rural land management improvements upstream to reduce water quality threat to wetland</td>
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<td>Buffer</td>
<td>Improve wetland buffer to 50 per cent of the wetland perimeter</td>
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<td>5</td>
<td>Vegetation (condition)</td>
<td>Reduce weed threat to low</td>
</tr>
</tbody>
</table>
Bird score at Yarra Bridge Streamside Reserve wetland is very low. Improvements to wetland water regime and vegetation condition is likely to improve to low. Yarra Bridge Streamside Reserve is listed in the Directory of Important Wetlands.

Fish score is moderate with a predicted trajectory of high. Improved wetland vegetation condition, water regime and maintenance of water quality is predicted to improve the score.

Yarra Bridge Stream Side Reserve frog value is predicted to be low from the Yarra River Upper (Rural) sub catchment score. It is predicted to improve to high as the threats of changed water regime, moderate vegetation condition and habitat form are reduced and these conditions improved.

Wetland vegetation is low. Improvements to wetland vegetation condition and water regime will improve the score to high.

Amenity, which is based on level of satisfaction, is currently very high but likely to decline in long-term if environmental values decline; target is to maintain as very high.

Community connection, which is based on level of satisfaction, is currently high but likely to decline in long-term if opportunities don't keep up with population growth; target is to maintain as high.

Recreation, which is based on level of satisfaction, is currently high but likely to decline in long-term if supply doesn't keep up with population growth; target is to improve to very high.

Water regime is associated with changes to the flow regime such as interference with natural connectivity. The current state is very low and the target is very high.

Wetland habitat form considers the extent that the wetland area has been reduced through levees, diversions etc. The current state is very low and the target is very high.

Wetland buffer condition is the native vegetation above the maximum inundation extent. The current state is low and the target is very high.

Vegetation condition refers to the extent of ‘natural’ wetland vegetation intact. The current state is moderate and the target is very high.

Wetland water quality considers the changed water properties within the wetland. The current state is moderate and the target is moderate.
Yering Backswamp, Yarra River

Yering Backswamp is a site of biological significance located 5km southwest of Yarra Glen. This 4.8ha site contains a rare collection of threatened vegetation, including the Swamp Water-starwort, Slender Bittercress and Australian Basket-grass. It is also a habitat for the threatened Peron’s Tree Frog and River Blackfish.

**How to read the targets scores?**

For description of scores see metrics tables at end of document

**Performance Objectives**

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<tr>
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<th>Performance Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Water regime</td>
<td>Water regime managed to meet ecological watering objectives, improve ecosystem services, cultural and social value</td>
</tr>
<tr>
<td>2</td>
<td>Buffer</td>
<td>Improve wetland buffer to 50 per cent of the wetland perimeter</td>
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**Targets**

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**Waterway conditions targets**

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<tbody>
<tr>
<td>10+ years</td>
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</table>

**Performance objectives**

<table>
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<tr>
<th>Guide activities and indicate progress towards improving the waterway conditions.</th>
</tr>
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<tbody>
<tr>
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</table>

**Score key:**

- [ ] Very Low
- [ ] Low
- [ ] Moderate
- [ ] High
- [ ] Very High

For description of scores see metrics tables at end of document
Wetland water quality considers the changed water properties within the wetland. The current state is very low and the target is moderate.

Wetland buffer condition is the native vegetation above the maximum inundation extent. The current state is low and the target is very high.

Vegetation condition refers to the extent of ‘natural’ wetland vegetation intact. The current state is moderate and the target is very high.

Wetland habitat form considers the extent that the wetland area has been reduced through levee, diversions etc. The current state is very low and the target is moderate.

Water regime is associated with changes to the flow regime such as interference with natural connectivity. The current state is moderate and the target is very high.

Wetland vegetation score is high. Improvements to wetland vegetation condition and water regime will maintain score as high.

Frog score is currently very high with significant species present. Maintenance of the wetland water regime is expected to maintain score at very high.

Amenity, which is based on level of satisfaction, is currently very high but likely to decline in long-term if environmental values decline; target is to maintain as very high.

Community connection, which is based on level of satisfaction, is currently high but likely to decline in long-term if opportunities don’t keep up with population growth; target is to maintain as high.

Recreation, which is based on level of satisfaction, is currently high but likely to decline in long-term if supply doesn’t keep up with population growth; target is to improve to very high.

Yerring Backswamp currently has a low bird score. Improvements to wetland vegetation condition should maintain score at low.

Very little data exists for wetland fish and a metric for wetland fish in this catchment will be developed through the strategy implementation.
Estuaries

Yarra River Estuary
Estuaries

Estuary value targets

Potential trajectory
The draft targets developed through collaborative actions

Current state
Of Waterways Values

Current trajectory
The likely outcome if current policies and effort continue

Estuary condition targets

Flow regime
Exchange
Longitudinal extent
Water quality
Estuarine vegetation
Estuarine wetland connectivity

Performance objective

- Enhance estuarine vegetation condition and reduce threat of invasive plant species to significant estuarine vegetation communities.
- Investigate opportunities to improve access for on-water activities, and improve connections with existing path networks.
Yarra River estuary extends about 22 km from Dights Falls to Newport, north of Hobsons Bay. It has high ecological, social, aesthetic and recreational values as it flows through the city and eastern suburbs of Melbourne to Port Phillip Bay. It is a 'salt-wedge' estuary, where the mixing of salt and freshwater is influenced by freshwater inflows over Dights Falls.

Yarra River Estuary Map

How to read the targets scores?
For description of scores see metrics tables at end of document

<table>
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<td>Waterway values targets</td>
<td>Waterway value targets are established to ensure goals are on track.</td>
<td>Waterway management focuses on ensuring waterway conditions are appropriate to improve waterway values.</td>
</tr>
<tr>
<td>Performance objectives</td>
<td>Guide activities and indicate progress towards improving the waterway conditions.</td>
<td></td>
</tr>
</tbody>
</table>

Current state - current score of waterway values and conditions
Current trajectory - long-term scores if current policies and effort continue
Potential trajectory - targets for the long-term scores to be achieved through implementing the Strategy

Score key:
- Very Low
- Low
- Moderate
- High
- Very High

Yarra estuary bird score is currently rated very low with a predicted long-term score of very low. Very low condition ratings for estuarine vegetation and estuarine wetland connectivity limit the value of the estuary as bird habitat.

Estuarine fish score is very high. A good diversity of estuarine dependent species inhabit the estuary and the Listed Australian Grayling has been recorded. The score is predicted to be maintained at very high.

Estuarine vegetation score is very low and is predicted to remain very low. The estuary is surrounded by intensive urban and industrial infrastructure limiting the vegetation value into the future.

**PERFORMANCE OBJECTIVES**

<table>
<thead>
<tr>
<th>PO-ID</th>
<th>Condition Supported</th>
<th>Performance Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Vegetation Quality</td>
<td>Enhance estuarine vegetation condition and reduce threat of invasive plant species</td>
</tr>
</tbody>
</table>

2 Access
Investigate opportunities to improve access for on-water activities, and improve connections with existing path networks.
### Targets Scores

<table>
<thead>
<tr>
<th>Current State</th>
<th>Current Trajectory</th>
<th>Potential Trajectory</th>
</tr>
</thead>
</table>

Yarra estuary bird score is currently rated very low with a predicted long-term score of very low. Very low condition ratings for estuarine vegetation and estuarine wetland connectivity limit the value of the estuary as bird habitat.

Estuarine fish score is very high. A good diversity of estuarine dependent species inhabit the estuary and the Listed Australian Grayling has been recorded. The score is predicted to be maintained at very high.

Estuarine vegetation score is very low and is predicted to remain very low. The estuary is surrounded by intensive urban and industrial infrastructure limiting the vegetation value into the future.

Amenity, which is based on level of satisfaction, is currently high but likely to decline in long-term if environmental values decline; target is to improve to very high.

Community connection, which is based on level of satisfaction, is currently high but likely to decline in long-term if opportunities don’t keep up with population growth; target is to maintain as high.

Recreation, which is based on level of satisfaction, is currently high but likely to decline in long-term if supply doesn’t keep up with population growth; target is to improve to very high.

### Waterway Conditions (10+ Year Targets)

Flow regime relates to the degree of change from ‘natural conditions’. The current state is very low and the target is high.

Tidal exchange is associated with sea water and freshwater to mix in the estuarine environment. The current state is very high and the target is very high.

Longitudinal extent is associated with barriers that interfere with the movement of water. The current state is very high and the target is very high.

Water Quality incorporates compliance with the EPA Victoria’s water quality guidelines for estuaries. The current state is very low and the target is low.

Estuarine vegetation is associated with the extent to which estuarine vegetation extent and condition is modified. The current state is very low and the target is low.

Estuarine wetland connectivity relates to the proportion of the estuary that is connected to its fringing wetlands. The current state is very low and the target is low.
<table>
<thead>
<tr>
<th>Waterway Value</th>
<th>Description</th>
<th>Score</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Macroinvertebrates</td>
<td>Summed reporting rate of riparian bird species expected in that sub-catchment (from minimum of 40 appropriate surveys)</td>
<td>Very High</td>
<td>Almost all expected species are frequently recorded</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High</td>
<td>Many expected species are recorded often</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate</td>
<td>Most expected species occur but some of these are only infrequently recorded</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>Few of the expected riparian bird species are recorded</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Very Low</td>
<td>Very few of the expected species are recorded and these in only low numbers</td>
</tr>
<tr>
<td>Fish</td>
<td>Based on habitat suitability models for native freshwater species and survey data</td>
<td>Very High</td>
<td>All or almost all native freshwater species recorded in catchment likely to be present</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High</td>
<td>Most native freshwater species recorded in catchment likely to be present</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate</td>
<td>About half the native freshwater species recorded in catchment likely to be present</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>Few freshwater native species recorded in catchment likely to be present</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Very Low</td>
<td>Very few or no native freshwater species recorded in catchment likely to be present</td>
</tr>
<tr>
<td>Frogs</td>
<td>Species richness (observed to expected) modified to reflect survey effort</td>
<td>Very High</td>
<td>All, or most, of the expected species of frog are found</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High</td>
<td>Many of the expected species of frog are found</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate</td>
<td>Not many of the expected species of frog are found</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>Few of the expected species of frog are found</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Very Low</td>
<td>Very few of the expected species of frog are found</td>
</tr>
<tr>
<td>Macroinvertebrates</td>
<td>Land Use Macroinvertebrate Response (LUMaR) index is an observed: expected index, that weights the observations of macroinvertebrate families by their sensitivity to forest loss and urbanisation</td>
<td>Very High</td>
<td>All or almost all macroinvertebrate families are predicted to be present, indicating very good stream health</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High</td>
<td>Most macroinvertebrate families are predicted to be present, indicating good stream health</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate</td>
<td>Some macroinvertebrate families are predicted to be present indicating moderate stream health</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>Low number of macroinvertebrate families are predicted to be present, indicating poor stream health</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Very Low</td>
<td>Very low likelihood of sensitive aquatic macroinvertebrate families being found</td>
</tr>
<tr>
<td>Platypus</td>
<td>Based on habitat suitability models that indicate likelihood that waterways will support platypus</td>
<td>Very High</td>
<td>Very high likelihood that waterways will support platypus</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High</td>
<td>High likelihood that waterways will support platypus</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate</td>
<td>Moderate likelihood that waterways will support platypus</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>Low likelihood that waterways will support platypus</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Very Low</td>
<td>Very low likelihood that waterways will support platypus</td>
</tr>
<tr>
<td>Vegetation</td>
<td>Based on vegetation quality and uniqueness derived from available surveys</td>
<td>Very High</td>
<td>Very high naturalness and high or very high uniqueness</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High</td>
<td>Very high naturalness with very low to medium uniqueness or high naturalness and medium to high uniqueness</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate</td>
<td>Medium to high naturalness and very low to medium uniqueness, or medium naturalness and medium to high uniqueness, or very low naturalness and medium uniqueness</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>Low naturalness and very low to medium uniqueness</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Very Low</td>
<td>Very low naturalness and very low uniqueness</td>
</tr>
<tr>
<td>Amenity</td>
<td>Based on data from Melbourne Water community perceptions of waterways research on 'satisfaction with waterways' in relation to amenity related activities</td>
<td>Very High</td>
<td>Very high level of satisfaction that waterways provide amenity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High</td>
<td>High level of satisfaction that waterways provide amenity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate</td>
<td>Moderate level of satisfaction that waterways provide amenity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>Low level of satisfaction that waterways provide amenity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Very Low</td>
<td>Very low level of satisfaction that waterways provide amenity</td>
</tr>
<tr>
<td>Community Connection</td>
<td>Based on data from Melbourne Water community perceptions of waterways research on 'satisfaction with waterways' in relation to community connection activities</td>
<td>Very High</td>
<td>Very high level of satisfaction that waterways support community connection</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High</td>
<td>High level of satisfaction that waterways support community connection</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate</td>
<td>Moderate level of satisfaction that waterways support community connection</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>Low level of satisfaction that waterways support community connection</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Very Low</td>
<td>Very low level of satisfaction that waterways support community connection</td>
</tr>
<tr>
<td>Recreation</td>
<td>Based on data from Melbourne Water community perceptions of waterways research on 'satisfaction with waterways' in relation to recreation activities</td>
<td>Very High</td>
<td>Very high level of satisfaction that waterways support recreation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High</td>
<td>High level of satisfaction that waterways support recreation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate</td>
<td>Moderate level of satisfaction that waterways support recreation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>Low level of satisfaction that waterways support recreation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Very Low</td>
<td>Very low level of satisfaction that waterways support recreation</td>
</tr>
<tr>
<td>Key Value</td>
<td>Description</td>
<td>Score</td>
<td>Explanation</td>
</tr>
<tr>
<td>---------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>---------------</td>
<td>----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Stormwater condition</td>
<td>Directly connected imperviousness (DCI) is the proportion of the impervious surface that is directly connected to a stream through a conventional drainage connection</td>
<td>Very High</td>
<td>DCI &lt;0.5% minimal or no threat from stormwater</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High</td>
<td>DCI 0.5-2% minor impact to stream health from stormwater</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate</td>
<td>DCI 2-5% stream health is impacted from stormwater</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>DCI 5-10% stream health is significantly impacted from stormwater</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Very Low</td>
<td>DCI &gt;10% stream health is severely impacted from stormwater</td>
</tr>
<tr>
<td>Water for environment</td>
<td>Compliance with environmental flow components identified through FLOWS method. The FLOWS method is a state based approach for assessing flow requirements of freshwater river systems</td>
<td>Very High</td>
<td>Flow recommendations frequently achieved across all climate years, overall hydrological condition is considered excellent (81-100%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High</td>
<td>Flow recommendations often achieved across all climate years, overall hydrological condition is considered good (61-80%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate</td>
<td>Flow recommendations often achieved in wet and average climate years and occasionally achieved in dry climate years. Overall hydrological condition is considered moderate (41-60%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>Flow recommendations occasionally achieved, mostly in wet and average climate years but not in dry climate years. Overall hydrological condition is considered poor (21-40%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Very Low</td>
<td>Flow recommendations rarely achieved, overall hydrological condition is considered very poor (&lt;20%)</td>
</tr>
<tr>
<td>Vegetation quality</td>
<td>Description of quality of vegetation relative to Ecological Vegetation Classes (EVCs)</td>
<td>Very High</td>
<td>Riparian vegetation is intact with all structural components present and very high connectivity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High</td>
<td>Riparian vegetation is relatively intact with structural elements present with high connectivity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate</td>
<td>Riparian zone consists of fragmented relevant EVC vegetation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>Riparian vegetation is highly modified, fragmented</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Very Low</td>
<td>Riparian vegetation is highly modified, predominantly comprising exotic species</td>
</tr>
<tr>
<td>Physical Form</td>
<td>Potential of channels to erode (deepen and/or widen). Score is an 'on average' assessment across the sub-catchment</td>
<td>Very High</td>
<td>Very low erosion potential - geomorphically 'intact' channels, bedrock control or no known triggers for instability. Primarily source headwater streams.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High</td>
<td>Low erosive potential - waterways with no known active deepening, some minor impacts from landuse, local disturbance etc. Also includes waterways that have been substantially modified.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate</td>
<td>Moderate erosion potential - waterways with no known active deepening, however susceptible to widening and bank erosion due to local landuse and disturbance.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>High erosion potential - waterways with known active deepening and widening, and will continue to be susceptible to erosion processes.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Very Low</td>
<td>Very high erosion potential - waterways with known active deepening and widening, in highly erodible soils, ongoing disturbance from adjacent landuse and susceptible to erosion processes.</td>
</tr>
<tr>
<td>Water quality - environmental</td>
<td>Compliance with SEPP Waters of Victoria environmental water quality objectives. EPA Water Quality Index</td>
<td>Very High</td>
<td>Near natural – high quality waterways. Meets SEPP water quality standards</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High</td>
<td>Meets SEPP water quality standards</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate</td>
<td>Some evidence of water quality stress.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>Under considerable stress</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Very Low</td>
<td>Under severe stress</td>
</tr>
<tr>
<td>Water quality - recreational</td>
<td>Compliance with SEPP Waters of Victoria recreational water quality objectives (swimming is considered as primary contact)</td>
<td>Very High</td>
<td>Meets primary contact objectives (good)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High</td>
<td>Meets secondary contact objectives (fair)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>Does not meet secondary contact objectives (poor)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Very Low</td>
<td>NA</td>
</tr>
<tr>
<td>Litter absence</td>
<td>Clean Communities Assessment Tool (CCAT) methodology provides a systematic assessment of littering behaviour, litter and key features of public places, including waterfronts</td>
<td>Very High</td>
<td>Very high proportion of waterways have an absence of litter. very unusual for people to do the wrong thing with litter</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High</td>
<td>High proportion of waterways have an absence of litter, majority of people do the right thing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate</td>
<td>Moderate proportion of waterways impacted by litter, but normally people do the right thing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>Some waterways impacted by litter, low expectation for people to do the right thing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Very Low</td>
<td>Most waterways highly littered, no expectation for people to do the right thing</td>
</tr>
</tbody>
</table>

### Vegetation extent

<table>
<thead>
<tr>
<th>Key Value</th>
<th>Description</th>
<th>Score</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very High</td>
<td>80-100%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>60-80%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td>40-60%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>20-40%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very Low</td>
<td>0-20%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Instream connectivity

<table>
<thead>
<tr>
<th>Key Value</th>
<th>Description</th>
<th>Score</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very High</td>
<td>80-100%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>60-80%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td>40-60%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>20-40%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very Low</td>
<td>0-20%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Access

<table>
<thead>
<tr>
<th>Key Value</th>
<th>Description</th>
<th>Score</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very High</td>
<td>80-100%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>60-80%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td>40-60%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>20-40%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very Low</td>
<td>0-20%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Participation

<table>
<thead>
<tr>
<th>Key Value</th>
<th>Description</th>
<th>Score</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very High</td>
<td>&gt; 2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>1-2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td>0.5-1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>0.1-0.5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very Low</td>
<td>&lt; 0.1%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Wetlands Values Metrics

<table>
<thead>
<tr>
<th>Waterway Value</th>
<th>Description</th>
<th>Score</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birds</td>
<td>Incorporates formally recognised significance as bird habitat, presence of significant species and condition of vegetation Ramsar Site = Yes/Listed East Asian-Australasian Flyway Site = Yes/Listed Nationally Important Wetlands (DIWA) = Yes/Listed Supports Significant fauna birds = 5 Important Bird Area = 5 Wetland vegetation condition – adjusts score up or down</td>
<td>Very High</td>
<td>If 5 metrics meet criteria</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High</td>
<td>If 4 metrics meet criteria</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate</td>
<td>If 2 or 3 metrics meet criteria</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>If one metric meets criteria</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Very Low</td>
<td>If vegetation condition is very poor or poor.</td>
</tr>
<tr>
<td>Fish</td>
<td>Fish community metric TBC</td>
<td>Very High</td>
<td>Listed species present</td>
</tr>
<tr>
<td></td>
<td>Significant fish = 5</td>
<td>High</td>
<td>TBC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate</td>
<td>TBC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>TBC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Very Low</td>
<td>TBC</td>
</tr>
<tr>
<td>Frogs</td>
<td>Key value status of the sub-catchment unit applied and adjusted for significant amphibians score</td>
<td>Very High</td>
<td>Supports significant amphibian species</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High</td>
<td>As per sub-catchment score</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate</td>
<td>As per sub-catchment score</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>As per sub-catchment score</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Very Low</td>
<td>As per sub-catchment score</td>
</tr>
<tr>
<td>Vegetation</td>
<td>Based on vegetation quality and uniqueness derived from available surveys</td>
<td>Very High</td>
<td>If all 3 metrics meet criteria (Score 5)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High</td>
<td>If condition = 5 and one other metric meets criteria</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate</td>
<td>If Condition = 3 and one other metric meets criteria or condition is 5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>If condition = 3 (moderate) and meets one significance metric</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Very Low</td>
<td>If condition = 1 (Very poor or poor)</td>
</tr>
</tbody>
</table>

## Wetlands Condition Metrics

<table>
<thead>
<tr>
<th>Key Value</th>
<th>Description</th>
<th>Score</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow regime</td>
<td>Simplified AVIRA threat metric – Changed water regime</td>
<td>Very High</td>
<td>Minimal or no threat Minor or change</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate</td>
<td>Moderate change</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Very Low</td>
<td>Significant change</td>
</tr>
<tr>
<td>Wetlands habitat form</td>
<td>AVIRA threat metric – Reduced wetland area and altered wetland form</td>
<td>Very High</td>
<td>&gt;5% reduction in wetland area</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High</td>
<td>&gt;5 to 25% reduction in wetland area</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate</td>
<td>&gt;25 to 50% reduction in wetland area</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>&gt;50 to 75% reduction in wetland area</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Very Low</td>
<td>&gt;75% reduction in wetland area</td>
</tr>
<tr>
<td>Wetland buffer condition</td>
<td>AVIRA threat metric – Degraded buffer vegetation</td>
<td>Very High</td>
<td>IWC Wetland Buffer Assessment Score: &gt;17 - 20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High</td>
<td>IWC Wetland Buffer Assessment Score: &gt;13 - 17</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>IWC Wetland Buffer Assessment Score: &gt;5 - 9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Very Low</td>
<td>IWC Wetland Buffer Assessment Score: 0 - 5</td>
</tr>
<tr>
<td>Vegetation condition</td>
<td>AVIRA value metric – Wetland vegetation condition</td>
<td>Very High</td>
<td>EVCs present intact, site near reference condition (veg condition excellent)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High</td>
<td>EVCs present show some displacement, site moderately modified (veg condition mod - good)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>EVCs present completely displaced and site highly modified/ no EVCs mapped</td>
</tr>
<tr>
<td>Wetland water quality</td>
<td>Wetland threat metrics – Changed water properties salinity, Changed water properties nutrients and disturbance of acid sulfate soils</td>
<td>Very High</td>
<td>No change, Low to Very low land use intensity class, adjacent land does not contain Coastal Acid Sulfate Soils or inland waterway is not at high risk from acid sulfate soils</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High</td>
<td>Medium land use intensity class</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Very Low</td>
<td>Changed salinity of wetland, high to Very high land use intensity class, adjacent land has the potential to contain Coastal Acid Sulfate Soils or inland waterway is at high risk from acid sulfate soils</td>
</tr>
<tr>
<td>Waterway Value</td>
<td>Description</td>
<td>Score</td>
<td>Explanation</td>
</tr>
<tr>
<td>---------------</td>
<td>------------------------------------------------------------------------------</td>
<td>------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Birds</td>
<td>Incorporates formally recognised significance as bird habitat, presence of</td>
<td>Very High</td>
<td>If 5 metrics meet criteria</td>
</tr>
<tr>
<td></td>
<td>significant species and condition of vegetation</td>
<td>High</td>
<td>If 4 metrics meet criteria</td>
</tr>
<tr>
<td></td>
<td>Ramsar Site = Yes/Listed</td>
<td>Moderate</td>
<td>If 2 or 3 metrics meet criteria</td>
</tr>
<tr>
<td></td>
<td>East Asian-Australasian Flyway Site = Yes/Listed</td>
<td>Low</td>
<td>If one metric meets criteria</td>
</tr>
<tr>
<td></td>
<td>Nationally Important Wetlands (DIWA) = Yes/Listed</td>
<td>Very Low</td>
<td>If vegetation condition is very poor or poor.</td>
</tr>
<tr>
<td></td>
<td>Supports Significant fauna birds =5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Important Bird Area =5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wetland vegetation condition – adjusts score up or down</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fish</td>
<td>Incorporates significant fish, drought refuge and the Estuary Entrance</td>
<td>Very High</td>
<td>Records include listed fish species</td>
</tr>
<tr>
<td></td>
<td>Management Support System for Fish Asset Score</td>
<td>High</td>
<td>Records include estuarine dependent (Seasonal facultative and seasonal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate</td>
<td>obligate) species</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>Records of only non-estuarine dependent fish (marine or freshwater)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vegetation</td>
<td>Incorporates condition and rarity data</td>
<td>Very High</td>
<td>If all 3 metrics meet criteria (Score 5)</td>
</tr>
<tr>
<td></td>
<td>Significant flora = 5</td>
<td>High</td>
<td>If condition = 5 and one other metric meets criteria</td>
</tr>
<tr>
<td></td>
<td>Significant EVC = 5</td>
<td>Moderate</td>
<td>If Condition = 3 and one other metric meets criteria</td>
</tr>
<tr>
<td></td>
<td>Vegetation condition</td>
<td>Low</td>
<td>If condition = 3 (moderate) and meets one significance metric</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Very Low</td>
<td>If condition = 1 (Very poor or poor)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Value</th>
<th>Description</th>
<th>Score</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow regime</td>
<td>AVIRA threat metric: based on level of alteration to flow regimes –</td>
<td>Very High</td>
<td>Index score 8-10</td>
</tr>
<tr>
<td></td>
<td>magnitude and monthly and seasonal variability</td>
<td>High</td>
<td>Index score 6-8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate</td>
<td>Index score 4-6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>2-4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Very Low</td>
<td>Index score 0-2</td>
</tr>
<tr>
<td>Tidal exchange</td>
<td>AVIRA threat metric: based on characteristics of estuary opening,</td>
<td>Very High</td>
<td>No artificial openings or regular dredging or training walls</td>
</tr>
<tr>
<td></td>
<td>manipulation, potential impact on ecology</td>
<td>High</td>
<td>&lt; 25% artificial openings or regular dredging or training walls</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>25-50% artificial openings or regular dredging or training walls</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Very Low</td>
<td>&gt; 50% artificial openings or regular dredging or training walls</td>
</tr>
<tr>
<td>Longitudinal</td>
<td>AVIRA threat metric: based on presence/absence of a barrier and distance</td>
<td>Very High</td>
<td>No artificial barriers exist</td>
</tr>
<tr>
<td>extent</td>
<td>of barrier downstream from the ‘natural’ head of the estuary</td>
<td>High</td>
<td>0-5% of estuary affected by artificial barrier</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate</td>
<td>25-50% of estuary affected by artificial barrier</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>&gt; 50% of estuary affected by artificial barrier</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Very Low</td>
<td>Artificial barrier can completely block movement of water</td>
</tr>
<tr>
<td>Water quality</td>
<td>AVIRA threat metric: EPA water quality guidelines for estuaries, frequency</td>
<td>Very High</td>
<td>Very high level water quality - minimal stress</td>
</tr>
<tr>
<td></td>
<td>of algal blooms and excessive macrophyte growth</td>
<td>High</td>
<td>High level of water quality - some stress</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate</td>
<td>Moderate level of water quality and stress</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>Poor water quality</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Very Low</td>
<td></td>
</tr>
<tr>
<td>Estuarine</td>
<td>AVIRA threat metric: based on condition of fringing vegetation and extent</td>
<td>Very High</td>
<td>Vegetation is intact with all structural component present and high</td>
</tr>
<tr>
<td>vegetation</td>
<td>of invasive plants</td>
<td>High</td>
<td>connectivity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate</td>
<td>Vegetation is relatively intact, most structural component present and high</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>vegetation consists of fragmented relevant EVCs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Very Low</td>
<td>Vegetation is highly modified, predominantly comprising invasive species</td>
</tr>
<tr>
<td>Estuarine</td>
<td>AVIRA threat metric: based on level of restriction for estuarine biota that</td>
<td>Very High</td>
<td>No restrictions - very high level of naturalness</td>
</tr>
<tr>
<td>wetland</td>
<td>require connection with adjacent wetlands and floodplains</td>
<td>High</td>
<td>Minimal level of restriction - high level of naturalness</td>
</tr>
<tr>
<td>connectivity</td>
<td></td>
<td>Moderate</td>
<td>Moderate level of restriction</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Very Low</td>
<td>Significant level of restriction - very low level of naturalness</td>
</tr>
</tbody>
</table>
Getting involved

Waterways are community assets – and this draft Strategy seeks to put the community at the centre of waterways management. It proposes systems to share knowledge and information between communities and stakeholders, and to empower participation and influence waterways management through capacity building and citizen science.

Becoming a committed partner

Caring for our waterways involves community, Traditional Owners, councils, developers, land owners and other government agencies. It is only by working together that we can achieve healthy waterways into the future.

People play a major part in ensuring that the Yarra catchment remains a place of natural beauty and somewhere that people can enjoy.

For this Strategy to be effective, it needs collective action. Working together, we can realise the full value of the Yarra’s waterways – economic, cultural, social and environmental.

Anyone can get involved by joining Friends, Landcare or other volunteer groups and becoming part of our committed catchment community. To sign-up yourself or organisation as a partner to this Strategy visit: yoursay.melbournewater.com.au/healthy-waterways

Next steps

As the Healthy Waterways Strategy moves towards being finalised, we are holding workshops in each catchment to explore what’s next.

Community input to the draft Healthy Waterways Strategy has been invaluable in creating collective targets and performance objectives that we all share and want to achieve. Check www.yoursay.melbournewater.com.au/healthy-waterways for ways to participate.

We look forward to seeing those interested in celebrating the work achieved to date, and outlining how the feedback we received informed the writing of the draft Strategy.

We will also discuss how we can continue to work together to achieve the targets and performance objectives we’ve set ourselves for healthier waterways in the Yarra catchment.
Yarra: Our partners

Our collaborators in the development of the draft Healthy Waterways Strategy for the Yarra catchment have been:

Aquatic Systems Management
Banyule City Council
Ben Carr Enterprises
Bend of Islands Conservation Association
Birdlife Australia
Boroondara City Council
Bunurong Land Council Aboriginal Corporation
Candlebark Community Nursery
Canoeing Victoria
Chum Creek Landcare
City West Water
Clearwater
Clovefly Pastoral
Creative Suburbs / Teal Collaborative
Damper Creek Bushland Reserve
Darebin City Council
Darebin Creek Management Committee
DELWP
Epworth Hospital
Fairfield Canoe Club
Friends of Banyule
Friends of Cockatoo Creek
Friends of Damper Creek
Friends of Helmeted Honeyeater
Friends of Leadbeater’s Possum
Friends of Merri Creek
Friends of Mt Evelyn Aqueduct
Friends of Plenty River
Friends of Sassafras Creek
Friends of Water Race and Quinn Reserve
Friends of Yarra Valley Parks
Hume City Council
Indigenous Design
La Trobe University
Latrobe Golf Club
Lilydale Community Food Gardeners
Macclesfield Landcare Group
Manningham City Council
Maroondah City Council
Melbourne City Council
Melbourne Water
Merri Creek Management Committee
Monash University
Moreland City Council
Mt Evelyn History Group
Mt Evelyn Township Group

Native Fish Australia
Nillumbik Shire Council
Office of the Commissioner for Environmental Sustainability
Parks Victoria
Parliament Victoria
Port Phillip and Westerport CMA
Port Phillip City Council
Port Phillip Ecocentre
Resilience Project Services
Rose Hill Lowline Stud
Stonnington City Council
Swinburne University of Technology
University of Melbourne
VicRoads
Victoria University
Warringal Conservation Society
Whitehorse City Council
Whittlesea City Council
Wurundjeri Tribe Land and Compensation Cultural Heritage Council
Y4L
Yarra City Council
Yarra Ranges Council
Yarra Ranges Heritage Network
Yarra Ranges Landcare Network
Yarra Riverkeeper Association
Yarra Valley Water
Yellingbo Conservation Area Co-ordinating Committee