Implementation Inquiry

A Report to Inform the Mid-term Review of the Healthy Waterways Strategy

Healthy Waterways Strategy 2018-2028

Port Phillip & Westernport, Victoria

Cite this report as:

Melbourne Water (2024), *Implementation Inquiry Report to inform the Mid-Term Review of the Healthy Waterways Strategy*, Melbourne Water, Docklands, Victoria, Australia.

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Acknowledgment of Traditional Owners

The rivers, wetlands and estuaries of the Port Phillip and Westernport region are part of Country belonging to the Bunurong, Gunaikurnai, Taungurung, Wadawurrung and Wurundjeri Woi-wurrung peoples. These Traditional Owners have lived in and been connected to the land, water, plants and animals of this area for many thousands of years, and we offer our respect to their Elders past and present.

About the Health Waterways Strategy

Our rivers, creeks, wetlands, floodplains, estuaries and bays are shared places of significance for Victoria's economic prosperity, Traditional Owners, local communities and biodiversity. These places make up our complex and interconnected regional waterway system and collectively are of immense value. This Healthy Waterways Strategy recognises and embraces the complexity of regional waterway systems and waterway management.

Healthy Waterways Strategy 2018-2028

50 YEAR VISION

Healthy and valued waterways are integrated with the broader landscape, and enhance life and liveability. Waterways connect diverse and thriving communities of plants and animals; provide amenity to urban and rural areas, and engage communities with their environment; and are managed sustainably to enhance environmental, economic, social and cultural values.

The Healthy Waterways Strategy was created in 2018, establishing a region-wide plan to protect and improve the health of rivers, wetlands and estuaries across the Port Phillip and Westernport catchment. It reflects the aspirations and expectations of communities and stakeholders and the desire to achieve long-term protection and enhancement of the region's waterways.

The Strategy was co-designed by over 600 people and 220 organisations involved in water management including state agencies and local governments, water corporations, developers and community groups. Together, a 50-year whole-of-region Vision was established, along with Catchment Programs for each of the five catchments in the region – Werribee, Maribyrnong, Yarra, Dandenong and Westernport.

The Catchment Programs include a vision, goals, ten-year performance objectives and long-term targets (10 to 50 years).

This Implementation Inquiry Report forms part of the Healthy Waterways Strategy mid-term review which assessed Strategy progress and identified areas for improvement. The review provides an opportunity to look at what has changed in the operating environment since 2018 and how these changes may impact the ability to meet 2028 Strategy targets.

Find out more about the Healthy Waterways Strategy 2018-2028 >>

Learn about the mid-term review >>

Foreword

The members of the Mid-term Evaluation Panel are pleased to support this Inquiry into the implementation of the Port Phillip and Westernport Healthy Waterways Strategy.

This Report builds on and complements the findings presented in the Science Inquiry which assessed the trajectory of key values and state of current threats.

The Evaluation Panel's role was to advise Melbourne Water's evaluation coordinators, Melbourne Water governance groups and the Region-wide Leadership Group on the evaluation process and findings.

The Panel guided the approach, evidence and findings from the evaluation of Performance Objectives conducted by Melbourne Water and the synthesis of findings as presented in the Inquiry Report. The Panel also provided high-level feedback to Melbourne Water on the evaluation of collaboration and co-delivery (conducted by external consultants Clear Horizon). The recommendations within the Report were developed by Melbourne Water and refined based on our feedback.

The Inquiry found there has been mixed progress to date with Strategy implementation. Whilst good progress has been made for several Performance Objective groups (*for example - Protect and Maintain Vegetation and Increasing Participation*) others are at high risk of not being achieved by the end of the Strategy including those for Stormwater, Water for the Environment, Establishing Vegetation and Increasing Access. The at-risk Performance Objectives are a major concern due to the increasing threats associated with urban development and declining water availability as highlighted in the Science Inquiry.

Multiple examples of successful co-delivery at the local scale were found. However, co-delivery has largely been opportunistic, without a clear framework and leadership to guide collaboration and confusion about who is responsible for leading co-delivery. There are complex challenges associated with the implementation of the Strategy including, but not limited to, a lack of policy and guidance for some issues (*for example - Stormwater, Protection of Wetlands*) and the need to build buy-in across partners to progress at-risk Performance Objectives.

We urge Melbourne Water and its partners to get the Strategy back on track by redefining the co-delivery approach and accelerating the implementation of high-risk Performance Objectives in focus sub-catchments as informed by the Science and Implementation Inquiries.

The Implementation Inquiry Report provides a rich evidence base to support the formal response process. We strongly encourage delivery partners to explore and use these findings to drive change in the way the Strategy is delivered over the next five years.

Michelle Dickson (Chair)
Tamara Boyd
Leon Metzeling
Ian Rutherfurd

Executive Summary

About the Implementation Inquiry and Mid-term Review

The Implementation Inquiry is a critical part of the Healthy Waterways Strategy mid-term review, which is designed to help Melbourne Water, delivery partners and the Region-wide Leadership Group understand how implementation of the Strategy is progressing and what needs attention.

The mid-term review has been divided into three main parts:

- An **Implementation Inquiry** (this Report)
- A **Science Inquiry** to assess the trajectory of Key Values across the region and the state of current threats to Waterway Conditions, and
- A formal **'response'** developed in collaboration with delivery partners to outline next steps for co-delivering the *Healthy Waterways Strategy.*

Figure 1. Context of the Science Inquiry and Implementation Inquiry.

What the Implementation Inquiry Examined

The Implementation Inquiry focused on answering key evaluation questions to understand:

- How implementation is tracking and the likelihood of targets being met by the end of the Healthy Waterways Strategy in 2028,
- How collaboration and co-delivery is supporting implementation, and
- Which aspects of the Strategy require adaptive management.

A combination of quantitative and qualitative analysis was used to inform question responses. Criteria and standards for different levels of performance (rubrics) were developed or refined to guide assessments and ensure transparency in the evaluation findings. Insights on the implementation of the Strategy were also collated to identify challenges and opportunities to improve outcomes over the next five years.

This was combined with the findings from the Science Inquiry, which identified the sub-catchments with declining environmental values and increasing threats, to highlight where implementation efforts should be brought back on track as a priority.

The mid-term review provides insights into how the Strategy is progressing and what needs attention, It informs the actions of Melbourne Water and other waterway managers such as the Department of Energy, Environment and Climate Change Action, Environment Protection Authority, Parks Victoria and local government, along with community and other stakeholders.

The review process was supported by an Independent Evaluation Panel which included members with a strong background and experience in waterway management, policy, science and evaluation. The role of the Panel was to guide the evaluation by ensuring the information had sound reasoning, that the evidence used was credible and that any limitations or uncertainties were made explicit.

Implementation Inquiry Assessment and Limitations

Investment in monitoring and annual reporting through the Healthy Waterways Strategy website has enabled tracking implementation and evaluating the likelihood of meeting Performance Objectives across most of the Performance Objective groups by the end of the Strategy. This includes Water for the Environment, Stormwater, Water Quality, Vegetation and Pests, Habitat and Community.

However, there are gaps for some Performance Objectives. Information on the progress of the qualitative Sub-catchment Performance Objectives was difficult to evaluate without performance expectations in place describing what success looks like by the end of the Strategy in June 2028. Limited information on Estuary Performance Objective progress prevented an evaluation for estuaries.

An external evaluation of collaboration and co-delivery of Strategy implementation was conducted via an appreciative inquiry approach. This used a select sample of 46 interviewees from Melbourne Water and HWS co-delivery partners across specifically chosen Performance Objective groups – e.g. Stormwater, Pests (deer), Water for the Environment, Water Quality (Litter and Pollution), Vegetation, Community Places (Moonee Ponds Creek – Chain of Ponds).

While the results provide a good indication of the range of views within Melbourne Water and from delivery partners and some stakeholders, they do not represent the views of all Strategy stakeholders, nor do they necessarily reflect the level of collaboration and co-delivery across other HWS Performance Objective groups.

The Implementation Inquiry did not examine the progress of Traditional Owner related Regional Performance Objectives. Traditional Owners will complete this through a separate process that will involve reflecting on Strategy implementation at the project scale and considering changes in policy, notably the **Burndap Birrarung Burndap Umarkoo (Yarra Strategic Plan)** and Waterways of the West Action Plan. This process will develop a path forward as part of self-determination for the next five years of the Strategy and beyond.

What the Implementation Inquiry Found

Whole of Strategy Outcomes

The Healthy Waterways Strategy is making good progress on a number of targets and there is evidence of collective action in some areas to support environmental, social and cultural outcomes (Figure 2). Regional and Sub-catchment Performance Objectives outcomes reported via the Healthy Waterways Strategy website have also allowed partners to share progress.

Figure 2. Snapshot of progress made.

The evaluation focused on answering the question, *'To what extent is Strategy delivery on track to achieve the Performance Objective targets by 2028?'.* The evaluation found that progress is mixed and there is a need to refocus efforts.

Regional Performance Objectives

The evaluation of Regional Performance Objective status at mid-term identified that 22 of the 45 Regional Performance Objectives are meeting performance expectations at this point of implementation (Figure 3).

The majority of Regional Performance Objectives that are on-track represent established programs/initiatives or are linked to research programs. Two Regional Performance Objectives have already been achieved and represent foundational outputs related to the HWS Monitoring Evaluation Response and Improvement (MERI) program.

Many of the slightly off-track or significantly off-track Regional Performance Objectives represent issues that are *wicked problems* that require multi-agency coordination or represent the application of research findings into policy and delivery (e.g. Stormwater).

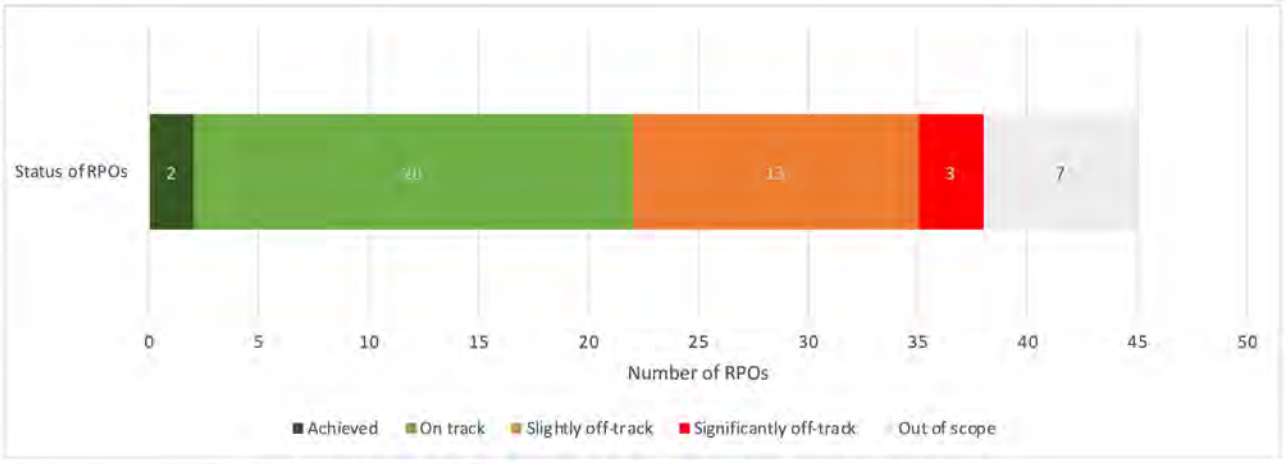


Figure 3. Evaluation results of Regional Performance Objectives.

Sub-catchment Performance Objectives

The evaluation of quantitative Sub-catchment Performance Objectives for rivers highlighted that there has been good progress for the Maintain Vegetation, Maintain Sewage Treatment Plant (STP) loads and Community Participation Performance Objectives (Figure 4), with some sub-catchments found to be almost certain to meet the 10-year target.

Conversely, the majority of the Sub-catchment Performance Objectives in the Water for Environment and Stormwater groups are unlikely to meet the 10-year target under the current operating environment and this represents a potential issue for the trajectory of environmental values such as macroinvertebrates, platypus and birds, as outlined in the Science Inquiry.

There is a degree of uncertainty as to whether the Performance Objectives will be met for a proportion of sub-catchments for the Vegetation Establishment, Participation and Waterway Access targets. These fall into the 'possible' category.

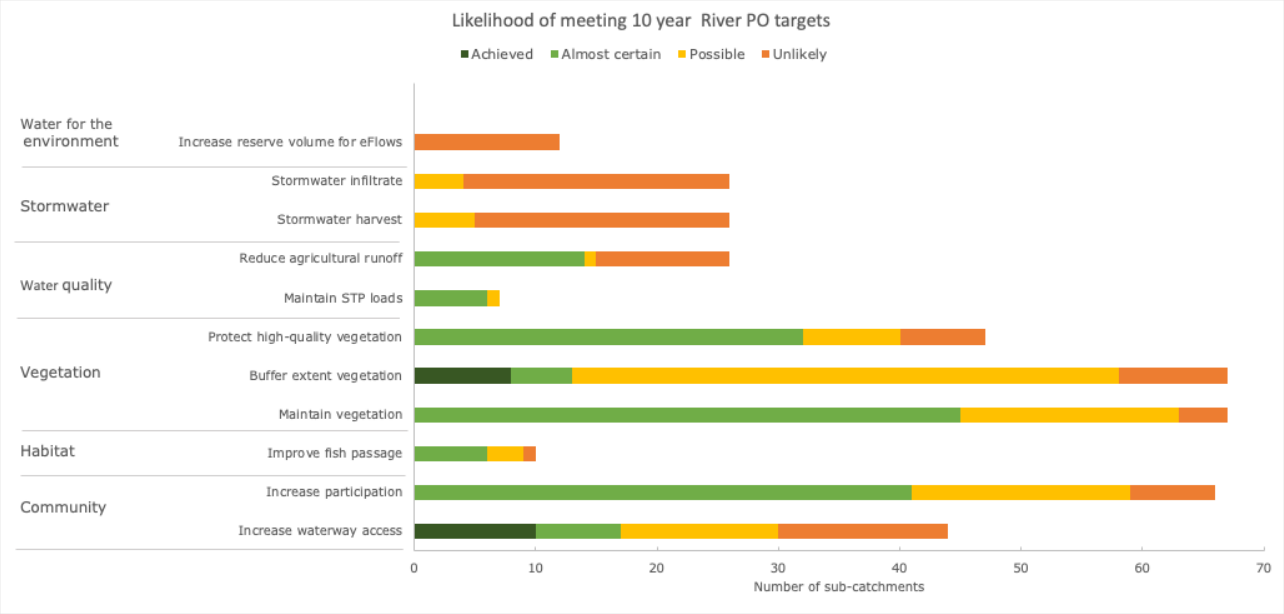


Figure 4. Summary of evaluation of the likelihood of meeting 10-year River Performance Objective targets. STP = sewage treatment plant.

The evaluation of Wetland Performance Objectives (e.g. Buffer Vegetation and Water for Environment) found that many are off-track and therefore unlikely to meet Performance Objective targets by the end of the Strategy in most catchments. Furthermore, as highlighted in the Science Inquiry, four natural wetlands have been lost due to urban development since the beginning of the Strategy, while 14 are now at risk of being removed or permanently damaged.

Evaluation of Estuary Performance Objectives was not possible due to insufficient data, and this has been highlighted as a major gap in the Inquiry.

Collaboration

A key assumption underpinning the development of Regional Performance Objectives and Sub-catchment Performance Objectives was that they would be co-delivered by HWS agency and community partners based on their existing roles, responsibilities or interests. This new approach originated from the co-design process where there was shared recognition that the challenges facing our waterways are more than any one individual, group or organisation could tackle.

This assumption was tested in the evaluation through the question, '*To what extent has collaboration and co-delivery contributed to achieving the Performance Objective targets?*'.

The mid-term review found that the appetite for co-delivery and support for the Strategy's vision, targets and underpinning science remains generally strong at Melbourne Water and among core partners. Multiple waterway collaborative projects are also underway and have generated significant lessons on how and when to collaborate. There are, for example, several successful place-based partnerships including the Chain of Ponds (Moonee Ponds) Creek collaboration and Lower Dandenong Creek Litter Collaboration.

These projects, however, do not collectively demonstrate a 'step-change' in co-delivery since 2018. There is limited evidence of co-delivery being implemented in a co-ordinated way across catchments, and the Catchment Implementation Forums were not delivered as intended, leaving a critical gap in coordination and planning at the program level. There is also some confusion about who is responsible for leading the delivery of the Strategy, which has led to highly variable progress in co-delivery.

The lack of agreed definitions for co-delivery and collaboration and context-specific guidance has made it difficult for stakeholders to determine which approaches should be applied under what circumstances, and whether they amount to co-delivery of the Strategy.

The evaluation found that the Strategy is not being co-delivered to the extent intended and there is limited evidence of a significant step-change in collaboration occurring at the whole-of-Strategy scale.

Significant opportunities for effective collaboration and co-delivery have been identified in the areas of:

- Visibility of the Strategy, as a strategic driver for co-delivery
- Coordination and planning (particularly at the catchment level)
- Role clarity and authorising environment to embed co-delivery (both within Melbourne Water and among co-delivery partners)
- Guidance for decision-making on how and when to collaborate, and
- Resourcing, systems, processes and mindset to support collaborative delivery of the Strategy and associated projects.

Performance Objective Group Outcomes

Key findings surfaced by the evaluation for each Performance Objective group were:

Water for the Environment

- Targets to increase reserve volumes are all significantly off-track and unlikely to meet the targets by 2028, with only small volume purchased for Werribee catchment. Targets to maintain and improve flow regime in unregulated waterways are also unlikely to meet the targets but are more challenging to track progress.
- Updated climate change projections included in habitat suitability modelling predict significant future impacts tokey values due to declining water availability.
- While the Central and Gippsland Regional Sustainable Water Strategy aligns with the Strategy targets, there is some uncertainty regarding when and how outcomes will be delivered.
- Conflicting objectives and functions of different agencies and organisations makes collaboration challenging.

Stormwater

- Performance Objectives for both Harvest and Infiltrate are currently significantly off-track and are unlikely to be met by end-of-strategy targets.
- Since 2018, unmitigated urban development has increased Direct Connected Imperviousness (up to 2.5%) and our modelling predicts declines in macroinvertebrates in at least 12 sub-catchments. There has been an estimated 1,700 ha of additional impervious surfaces created since 2018, which is over half of what we expect by 2028 (~ 3,000 ha).
- Achieving the stormwater targets calls for a step change in planning and regulation to deliver the required outcomes. This also requires a paradigm shift from managing water quality to also managing stormwater volumes which is challenging against a backdrop of fast-paced urban development.
- There are several barriers to achieving on-ground action on stormwater. These include lack of policy and guidance mandating flow targets or protecting headwater streams and wetlands, and uncertainty about roles, responsibilities and mechanisms for progressing the flow targets.
- The loss of natural wetlands and headwater streams from urban development in the past five years is concerning and while work has been progressing to improve their protection, urgent efforts are required to prevent further loss.

Water Quality

- While Stormwater targets will achieve water quality objectives in many cases, industrial areas need different approaches. There is limited evidence for effective management of industrial and construction areas despite new guidance released under the General Environment Duty.
- A number of emerging contaminants within urban areas affecting waterways such as insecticides (e.g. chlorantraniliprole and pesticides). Of critical concern is the emerging risk to waterway health of bifenthrin application for termite control in housing estates requires attention.
- Despite some alignment between agencies on the issue of litter and the development of a litter monitoring method and a litter action plan, it has been difficult to obtain agreement on the action plan and pursue initiatives.
- Four sites in the Yarra and Maribyrnong catchment do not meet standards for swimming and are off-track, predominately due to stormwater runoff.
- While activities to reduce agricultural run-off are currently on-track in all catchments, except for Westernport, resourcing constraints are limiting the future ability to fully implement the Rural Land Program to meet the 10-year targets.
- Performance Objectives relating to water quality in estuaries are on track but there is currently limited capacity to track activities more broadly across the region for these important aquatic ecosystems.

Vegetation and Pests

- Most sub-catchments are progressing well against the targets for Managing Existing Vegetation which includes weed removal.
- However, the targets for Protecting High-quality vegetation Performance Objectives are at high risk of falling short by 2028 in 15 out of 47 sub-catchments, of which the majority are in the Yarra and Werribee catchments.
- There is uncertainty about the likelihood of meeting the Establish Vegetation Buffer targets due to the progress to date (seven sub-catchments at risk) and the size of some of the targets (e.g. Lang Lang (768 ha) and Upper Deep Creek sub-catchments (575 ha)).
- Key factors inhibiting vegetation management include time to develop relationships with private landowners in priority areas and health and safety issues relating to working in remote access.
- Deer is a key threat for vegetation that is increasing, especially in the Yarra and Westernport catchments.
- Improvement to vegetation data is required to resolve missing data sources and include new information identified in the Science Inquiry on additional high-quality areas to protect.
- The development of quantitative targets for wetlands and estuary vegetation is required to improve the assessment of the progress of Performance Objectives.

Habitat

- Seven fishways have been constructed since the beginning of the Strategy, significantly increasing the habitat area for fish species. However, there has been significant delays in delivering the more complex and expensive fishways.
- The progress of physical form Performance Objectives were difficult to evaluate due to limited information and performance expectations.
- There is a lack of guidance of specific habitat requirements for some species (e.g. Southern and Brown toadlet frog species) which, along with platypus, are increasingly vulnerable to the threats of urban development, decreased water availability and pests.

Community Places

- Whilst participation rates are currently on track, the challenge is to continue to meet the targets over the next five years.
- Participation via community groups involved in accessing incentive funding has declined in recent years due to COVID and changes in grant application processes.

- While Waterway access has been increased or improved by 80 km since the beginning of the Strategy, the 10-year targets are unlikely to be met in some catchments due to slower than expected greenfield development.
- While good waterways access is improving outcomes are occurring on the ground in many areas, this is not driven by Strategy targets, and there needs to be more co-ordination is needed between Melbourne Water and Local Government Authorities.

Sub-catchment Priority Focus Areas

Given the large number of targets that are off-track, there is a need to prioritise efforts for the remainder of Strategy implementation. Increased effort should be considered for 'high-risk' Performance Objectives within the focus sub-catchments identified in the Science Inquiry. These focus sub-catchments are important because they represent areas where multiple key values are increasingly vulnerable to current and future threats that will impact multiple key values. In a constrained environment, getting implementation back on track in these areas is important.

The suite of focus sub-catchments is presented in Figure 5 and have been determined for rivers (environmental values), community places (waterway social values) and wetlands. These areas need to be agreed upon through the formal response process and changes or additional areas should be based on a set of clear principles. It is assumed that achieving all targets is desirable and the response should consider the feasibility of this for all sub-catchments.

Within the focus sub-catchments, three tiers have been developed for rivers to highlight level of urgency. For wetlands, those at risk from urban development have been highlighted.

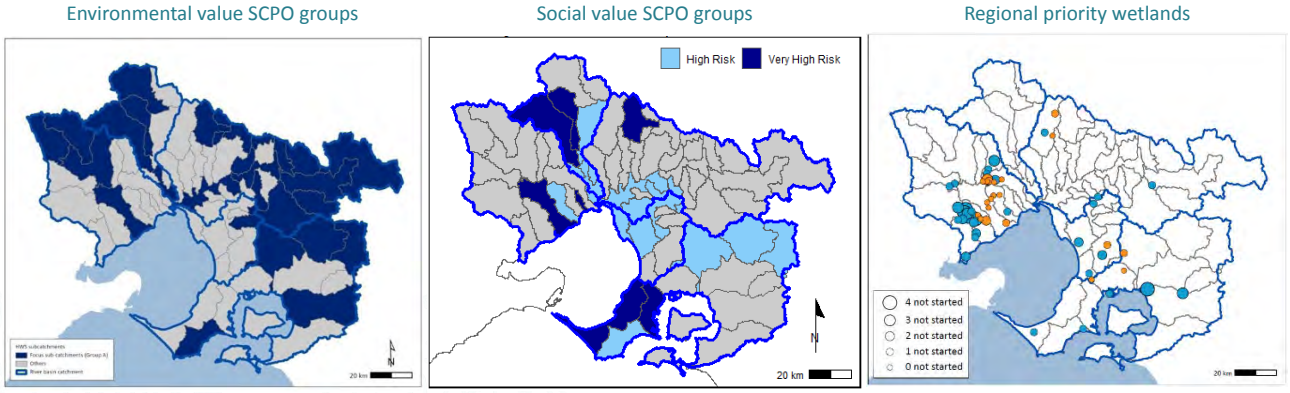


Figure 6. Dark blue is the most urgent (Tier 1), followed by light blue (Tier 2). Wetlands at risk from urban development are depicted in orange. SCPO = Sub-catchment Performance Objective.

Lessons and Recommendations

Several key lessons emerged during the Implementation Inquiry. Firstly, while good progress has been made, Stormwater, Water for the Environment and Vegetation (establishment and protection) are the top three Performance Objective groups that must be prioritised to get back on track for waterway health.

Common lessons across these Performance Objective groups and others for consideration in the next five years of implementation and formal response are:

- The role of partnerships and co-delivery for Strategy implementation needs to be clarified, especially for key cross agency areas (e.g. Stormwater and Waterway Access).
- Effective co-delivery relies on relationships, alignment, leadership and resources for coordination. More effort is needed to maximise co-delivery opportunities.
- The large number of Performance Objectives is challenging to evaluate and the absence of performance expectations (e.g. what success looks like in 10 years) limits the ability to track and evaluate progress for qualitative Performance Objectives.
- It is possible we may not meet some 10-year targets in some areas due to the rapid pace of development, incorrect assumptions about timing and collaboration maturity, and an increasingly constrained funding environment.

- The HWS Annual report via the Healthy Waterways website has been a solid basis for the mid-term review in identifying opportunities for improvements in implementation. The continual improvement in this process will be an important part of communicating implementation progress over the next five years.
- Involving HWS delivery partners in end-of-strategy evaluation will be critical to sharing learnings and preparing for the next strategy.

Parts A and B of this Report identified opportunities for improvement which informed development of the recommendations below. These align to the recommendations in the Science Inquiry, recognising some recommendations are unique to each Inquiry.

Recommendations

The recommendations identified by the Implementation Inquiry include:

1. Recommendation | Refocus Effort

The mid-term review found that the intent of current Performance Objectives is sound. However, the implementation of many Performance Objectives is significantly off-track and requires urgent refocused effort. Recognising that there are constraints and limitations to delivering all outcomes across the region, focus sub-catchments have been identified. These are intended to guide effort and investment over the next five years. As presented in the Science Inquiry, we are facing a warming and drying climate with rapid urbanisation that is leading to stream degradation and loss of wetlands. Based on this, Stormwater, Water for the Environment and Vegetation are the most critical Performance Objective groups in the Strategy that require focus Recommendations to refocus effort include:

I- 1.1 Accelerate on-ground outcomes in focus sub-catchments and wetlands identified through the mid-term review to ensure 10-year targets are achieved.

I- 1.2 Concerted effort is required at all levels of management to overcome barriers to the challenging but critical, areas of Stormwater (including natural wetland protection), Water for the Environment and Vegetation.

I- 1.3 Prioritise interventions that have immediate outcomes such as fishways for Lang Lang River and Lower Werribee River and stormwater infiltration measures.

I- 1.4 Investigate options and implications of providing flexibility in target contribution that reflect the intent of the Performance Objectives (e.g. establishing vegetation outside of priority areas).

I- 1.5 Ensure Melbourne Water and other delivery partners where appropriate update guidelines (e.g. managing vegetation) to improve on-ground outcomes (e.g. latest knowledge on how to improve resilience under new climate change projections).

2. Recommendation | Reinvigorate Co-delivery

Reinvigorate and improve co-delivery of the Strategy. Melbourne Water to strengthen its role as the Strategy lead – working with the Region-wide Leadership Group to deliver targeted collaboration initiatives focused on engagement, co-planning and co-delivery with HWS partners. This includes:

I- 2.1 Identify and leverage opportunities to build appetite and alignment of issues and priorities across HWS partners, including links with the Port Phillip and Westernport Regional Catchment Strategy.

I- 2.2 Melbourne Water to clarify accountabilities with partners to progress critical Performance Objectives groups such as water for the environment and stormwater.

I- 2.3 Work with HWS delivery partners including agencies and the community to co-plan and co-deliver at multiple scales:

- Enable local, catchment and regional co-delivery particularly in focus sub-catchments
- Increase the sharing of data, knowledge, research and evaluation initiatives, and
- Use the proposed principles of collaboration (see Appendix 7) to ensure the learnings from the mid-term review are applied.

I- 2.4 Target at-risk Performance Objectives and complex region-wide issues specifically (but not limited to):

- Stormwater harvesting and infiltration

- Environmental water
- Riparian buffers and protection of high-quality vegetation, and
- Social values (e.g. improving community access to and along waterways).

I- 2.5 Recognise and celebrate local leaders in waterway management, including promoting achievements and encouraging the uptake of community incentives.

I- 2.6 Continue to build and embed a culture of knowledge sharing, collaboration and learning within Melbourne Water and with delivery partners.

I- 2.7 Improve and streamlining systems, processes and approaches to aid in more effective and efficient co-delivery (e.g. easier grant application processes).

3. Recommendation | Traditional Owners

I- 3.0 Engage Traditional Owner Groups to understand their aspirations and expectations for involvement in future evaluation (e.g. cultural POs, cultural indicators) and implementation of the HWS in line with Water is Life.

4. Recommendation | Water for the Environment

Managing competing water needs is complex, especially in a drying climate. While many initiatives (such as General Environment Duty, Central and Gippsland Region Sustainable Water Strategy (CGRSWS), the Catchment Scale Integrated Water Management (IWM) plans and the Water for Life strategy) are underway to protect waterways and support increased water for the environment, there is a need for a new commitment to protecting and improving flows in our waterways across both regulated and unregulated system. These initiatives present an opportunity to collaborate and increase efficiencies in delivering on-ground outcomes. The focus on the use of manufactured water in the CGRSWS is a significant policy shift that could deliver water for the environment and achieve stormwater targets at the same time. There is an urgent need to progress water recovery and improve outcomes in regulated and unregulated systems as outlined below.

Regulated systems (environmental water entitlements) Werribee, Jacksons/Maribyrnong, Yarra and Tarago

I- 4.1 Prioritise creating an environmental water entitlement for the Maribyrnong catchment to protect the values in Jacksons Creek. Potential water sources could include the Sunbury IWM scheme and smaller existing reservoirs in the catchment.

I- 4.2 Improve efficiency and outcomes by ensuring environmental water representatives are involved in water resource planning.

I- 4.3 Melbourne Water and partners to continue to actively participate, collaborate and advocate for environmental water recovery through the IWM forums and seek to influence state-level strategies and policies.

I- 4.4 Progress outcomes for environmental water in regulated systems by focusing collaboration across agencies on key actions outlined in the CGRSWS including:

- ***Action 8-11****: increase the effectiveness of environmental water releases and address constraints to their delivery by exploring options to: upgrade Rosslynne Reservoir outlet to allow larger releases of environmental water*
- ***Action 4-1****: Investigate options to return water to the environment and Traditional Owners as manufactured water sources are planned for Greater Melbourne and Geelong*
- ***Action 4-2****: Commitment to consider how river entitlements can be reduced via water efficiency, IWM and substitution with manufactured water sources, and*
- ***Action 4-11****: Investigating optimisation of Yarra system passing flow arrangements*
- ***Action 8-10****: Improve fish passage in the Wirribi Yaluk (Werribee River).*

Unregulated systems (farm dams and diversions)

I- 4.5 Relevant delivery partners including, Melbourne Water, Southern Rural Water, Water Authorities and DEECA to work together in unregulated focus sub-catchments to progress improvements to environmental water management.

I- 4.6 Increase the protection of flow regimes through consistent application of available instruments and guidance (e.g. GED, SFMPs, metering, Bans and Rosters, compliance) are being applied consistently and adequately across the region.

I- 4.7 Explore new approaches and mechanisms to address flow stressed waterways especially in light of climate change.

I- 4.8 Progress outcomes for environmental water in unregulated systems by focusing collaboration across agencies on key actions outlined in the CGRSWS including:

- ***Action 4-13****: Review of water resource risks in small, dry, peri-urban catchments*
- ***Action 4-18****: Updating groundwater management arrangements and implementing priorities for reform*
- ***Policy 4-6****: The Victorian Government will work with Melbourne Water and Southern Rural Water to ensure that license holders and the community have access to consistent and accessible information about water*
- ***Policy 7-1****: Maximising water efficiency in agriculture, and*
- ***Action 8-3****: Improve flows in Stony Creek.*

5. Recommendation | Stormwater

Urban development is moving faster than we can mitigate the degradation of waterways. New approaches for stormwater are needed to shift the focus to reducing stormwater volumes as well as water quality that reflect the state of knowledge, updated guidelines and practice standards. While there have been some policy changes (e.g. CGRSWS, IWM forums), Melbourne Water and HWS partners (such as DEECA, DTP, EPA, local government, and water retailers) need to work together to accelerate the shift IWM solutions that address the stormwater volume threat.

I- 5.1 Accelerate on-ground infiltration and harvesting projects to mitigate impacts of urban development.

I- 5.2 Expedite piloting and trialing the use of simple cost-effective infiltration systems such as riparian sponges and passively watered street trees in stormwater priority areas.

I- 5.3 Promote and showcase new and existing stormwater harvesting and infiltration projects to demonstrate different options, feasibility, multiple benefits and cost effectiveness.

I- 5.4 Foster effective and efficient collaboration across governance groups (e.g. on aligned plans and strategies – i.e. CGRSWS and IWM action plans, EPA stormwater guidance).

I- 5.5 Clarify roles, responsibilities and mechanisms (e.g .Melbourne Water Developer Services Schemes, investment frameworks and authorising environments) for mitigating the impacts of urban development through application of the new EPA stormwater guidance.

I- 5.6 Maintain focus and transparently report on progress of CGRSWS actions and strategic enabling actions in the IWM plans that will support the achievement of HWS stormwater target. See Appendix 14 for full wording of policies and actions.

- ***Policy 3-2****: Clarifying roles and responsibilities for delivering IWM outcomes*
- ***Policy 3-3****: Achieving the targets in IWM plans*
- ***Action 3-4****: Investigate options for large-scale recycled water and treated stormwater networks*
- ***Action 3-8****: Use of recycled water and stormwater for greener, open spaces*
- ***Action 3-12****: Improving stormwater regulations to support increased capture and use, and*
- ***Action 3-13****: Implement Melbourne Urban Stormwater Institutional Arrangements (MUSIA).*

I- 5.7 Ensure the Melbourne Water stormwater offsets program is reviewed in light of the CRGSWS.

- ***Action 3-15:*** *Develop a stormwater offsets framework.*

I- 5.8 Build capacity and technical guidance for construction and maintenance of stormwater assets to enable the delivery of the stormwater harvesting and infiltration initiatives including the finalisation of an approved set of stormwater assets for Melbourne Water.

6. Recommendation | Pollution

The importance of maintaining good water quality is reflected in several Performance Objectives relating to pollution from various sources such as sewage and septic tanks, agricultural areas, industrial land-use and construction activities. Overall, the current Performance Objectives in the Strategy relating to water quality are making progress towards the 10-year targets, but implementation could be further improved by the following:

I- 6.1 Investigate and implement appropriate controls for industrial areas in line with the Interventions Stocktake Report.

I- 6.2 Further advance spatial mapping of existing and future hotspot areas for industrial pollution to support the review of Performance Objectives locations for managing run-off from industrial areas. Develop indicators and rubrics to enable quantitative assessment and guide targeted action in these hotspot areas.

I- 6.3 Advocate for changes in bifenthrin application for termite control in housing estates to mitigate the impacts to water quality from this contaminant during urban development.

I- 6.4 Continue to work across multiple agencies to investigate sources of faecal pollution in the Yarra and Maribyrnong Rivers. Use findings to support future decision-making and risk-based monitoring of recreational water quality.

I- 6.5 Investigate and implement appropriate controls for construction areas in line with the Interventions Stocktake Report and develop indicators and rubrics for evaluating impacts from construction runoff.

I- 6.6 Update the metrics used to assess the likely benefits of interventions to reduce agricultural run-off and align methods across all programs for rural land management.

7. Recommendation | Natural Wetlands and Headwater Streams Loss

The Strategy is the first-time wetlands in the region have been included as a separate waterway, or asset class, to be managed with targets for values and conditions. Headwater streams have also been more clearly recognised in the HWS for their importance in the overall stream network. The biggest threat to wetlands and headwater streams in our region is urban development. In response to the first HWS Annual Report, where wetlands were reported as lost or under imminent threat, the HWS Region-wide Leadership Group (RLG) requested a discussion paper on the problem, the policy and planning context, and options for improved management. While work has been progressing to improve protection of wetlands and headwater streams urgent efforts are required to:

I- 7.1 Identify and implement further protections (e.g. land acquisition during the development process) for wetlands and headwater streams at risk in key locations.

I- 7.2 Strengthen the wording of existing Performance Objectives for specific Strategy priority wetlands that are under threat from urban development and improve reporting of their status. Update the 2028 performance expectation of RPO 29 *Programs, standards, tools and guidelines are in place to protect wetland vegetation communities from urban and rural threats, including adequate planning controls* to better drive actions towards improved outcomes.

I- 7.3 Update state-wide wetlands mapping to reflect the best available information for the Port Phillip and Westernport region, which aligns with information on the 2018 Healthy Waterways and Regional Catchment Strategy websites.

I- 7.4 Melbourne Water, DEECA and councils to explore existing policy instruments e.g. the *Catchment and Land Protection Act 1994,* and other land use planning tools and guidelines to improve wetland and headwater stream protection.

I- 7.5 Investigate the opportunity to improve natural wetland and headwater stream protections through the next iteration of the Victorian Waterway Management Strategy through a planning and policy framework that recognises the need for the protection of function and form, not just for managing condition.

I- 7.6 Update Melbourne Water and other delivery partners asset information systems with latest headwater stream mapping and ensure development referral and planning processes consider headwater streams in decisions.

8. Recommendation | Working with Private Landowners

Working with private landowners is critical to achieving HWS outcomes, especially along waterway frontages where vegetation establishment targets in high-risk sub-catchments are significantly off-track. Melbourne Water and other delivery agencies (e.g. local government) have been engaging with landowners for many years, and mature incentive programs are in place. However, due to several factors (e.g. time, resources, priorities, landowners' willingness), achieving on-ground outcomes for habitat protection, wetland management, vegetation improvements and rural water quality is becoming more challenging. There is a need to increase investment and engagement with private landowners and establish new approaches that support integrated catchment and waterway management outcomes.

I- 8.1 Investigate and implement new approaches in focus sub-catchments for relevant Performance Objectives (e.g. vegetation establish and maintain, rural land and wetlands on private land).

I- 8.2 Identify efficiencies between existing programs for rural land management (e.g. Melbourne Water's rural land program and our CMA programs) and address the need for additional resourcing to improve timeliness of assessing applications.

I- 8.3 Review partnership approaches and engagement mechanisms for the key programs such as the stream frontage management and rural land programs to increase participation in focus areas.

I- 8.4 Ensure outcomes delivered by all co-delivery partners are captured and reported.

9. Recommendation | Deer and Working in Remote Areas

Deer are an increasing threat and managing them is challenging, particularly in remote forested areas. Many high-quality vegetation sites in remote areas also need weed and other pest management interventions. Limited accessibility requires additional safety protocols, which increases the costs of delivering the necessary on-ground works. Delivery partners, including landowners and agencies (Melbourne Water, Parks Victoria, DEECA and local governments) need to work together to coordinate efforts to improve efficiencies.

I- 9.1 Identify and implement alternative options and different ways of working in remote areas. (e.g. partnerships and co-delivery models).

I- 9.2 Update high-quality vegetation priority areas based on new information from the Science Inquiry.

I- 9.3 Further refine priority areas for deer based on latest modelling, research and consideration of appropriate spatial extents and timing of works.

I- 9.4 Ensure continued support for implementation of the Peri-urban Deer Control Plan (2021-2026) for Melbourne.

I- 9.5 Improve annual tracking through the development of metrics and rubrics (e.g. ha/y deer management).

10. Recommendation | Social Values

Supporting the social values of waterways is increasingly recognised as an important component of waterway management. Community expectations around access to greenspace and the ability to connect with nature through recreation or volunteering has intensified in recent years given the mental health and well-being benefits that this can provide. Connecting with nature has also been shown to help to increase community awareness and appreciation of environmental values.

I- 10.1 Focus on reinvigorating community group participation in waterway management following a decline in recent years.

I- 10.2 Melbourne Water to work with delivery partners such as Parks Victoria and councils to improve waterway access in focus sub-catchments that also limits potential impacts on environmental values.

I- 10.3 Progress the development of the social values framework to include wetlands and enable readiness for end-of-strategy evaluation.

11. Recommendation | Litter

Litter is rated highly by the community as it has an impact on social values as well as environmental values, however, its management is complex because it requires multi-agency interventions and coordination. While there is strong consensus between agencies on the importance of this issue, action could be further strengthened by the following:

I- 11.1 Establish a clear governance framework for actions relating to litter and work in partnership to progress solutions, including a review of roles and responsibilities for actions outlined in the Litter Action Plan.

I- 11.2 Use data from the implementation of the new litter monitoring method to validate threat ratings and identify litter hotspots. Continue to fill data gaps and identify any additional data requirements.

I- 11.3 Develop methods that support the prioritisation and reporting of litter hotspots. Assess the need for additional sub-catchment Performance Objectives or priority areas for litter to drive action at a local scale over the next five years.

12. Recommendation | Evaluation and Reporting

Continue to improve reporting and adaptive management processes to ensure improvements to the HWS are made efficiently and timely. This includes improving data management systems for reporting on Strategy Performance Objectives to enable better tracking of progress and updating targets where recommended.

I- 12.1 Continue to improve data management systems and data capture processes to improve the accuracy and accessibility of reporting data and information for both Melbourne Water and external partners.

I- 12.2 Seek to fill identified data gaps for Performance Objectives where the availability of detailed information is limiting progress (e.g. wetlands and estuaries*)*.

I- 12.3 As outlined in Appendix 12, update specific targets outlined in the evaluation (e.g. the Westernport Rural Land catchment target), provide a narrative where assumptions have changed and improve the wording of performance objectives and performance expectations where recommended.

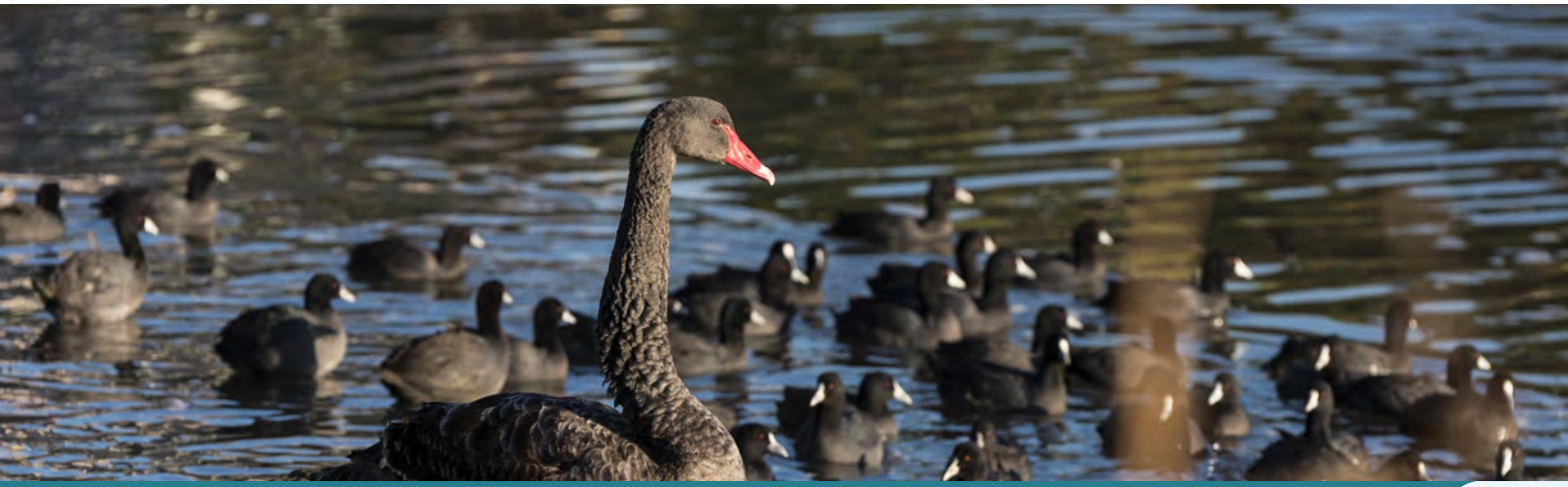
I- 12.4 Improve evaluation methods for assessing the qualitative Performance Objectives ahead of the end of strategy evaluation.

I- 12.5 Improve reporting and evaluation of erosion control and other instream habitat projects.

Next Steps

This evaluation has identified at-risk Performance Objective groups (e.g. Stormwater) and focus sub-catchments through analysis of available evidence. These findings will be considered alongside the Science Inquiry to inform future strategic planning and Strategy co-delivery. The knowledge gaps and general learnings highlighted by this Inquiry will also inform future implementation activities and ongoing monitoring, evaluation and reporting practices.

A formal response to the recommendations will be prepared to outline priorities and recommendations for Strategy implementation, timing and responsibilities for these. The formal response will be based on discussions with HWS delivery partners and community. The response will also highlight future considerations and preparation for the next Healthy Waterways Strategy.



Glossary of Terms and Abbreviations

CALP Act	**Catchment and Land Protections Act (1994)**
CGRSWS	Central and Gippsland Region Sustainable Water Strategy
CMA	Catchment Management Authority
DEECA	Department Energy, Environment and Climate Action
DELWP	Department of Environment, Land Water and Planning
DCI	Directly Connected Imperviousness
DSS	Developer Service Scheme
DTP	Department of Transport and Planning
EPA	Environment Protection Authority
EWAP	Environmental Water Action Plan
GED	General Environmental Duty
HSM	habitat suitability model
HWS	Healthy Waterways Strategy 2018
IWM	Integrated Water Management
KEQ	Key Evaluation Question
LMP	Local Management Plan
LMR	Local Management Rule
MAV	Municipal Association of Victoria
MEP	Monitoring and Evaluation Plan
MERI	Monitoring, Evaluation, Reporting and Improvement
OPLE	Officer for the Protection of Local Environment
PO	Performance Objective
RLG	Region-wide Leadership Group
RPO	Regional Performance Objective
SCPO	Sub-catchment Performance Objective
SFMP	Stream Flow Management Plan
SME	Subject Matter Expert
SRW	Southern Rural Water
STP	Sewage Treatment Plant
Strategy	refers in this instance as the Healthy Waterways Strategy 2018
VEWH	Victorian Environmental Water Holder
Waterway	refers to either River, Wetland or Estuary

Introduction

Context

All Victorian waterway managers must undertake a mid-term review of their Regional Waterway Strategy in accordance with the adaptive management framework set out in the State Government's Victorian Waterway Management Strategy (2013). In the Port Phillip and Westernport Region, Melbourne Water is responsible for leading the development and midterm review of the Healthy Waterways Strategy.

The Monitoring, Evaluation, Reporting and Improvement (MERI) framework for the HWS developed in 2019, and Monitoring and Evaluation Plans (MEPs) for rivers, estuaries, and wetlands are fundamental to supporting the mid-term review. The MEPs describe the monitoring indicators and reporting requirements needed to effectively track the progress towards targets and objectives set in the Healthy Waterways Strategy.

The HWS mid-term review is intended to drive improvements in Strategy implementation, in line with an adaptive management approach, and increase preparedness for end-of-strategy evaluation.

Therefore, it is a critical reflection and pivot opportunity toward achieving a shared strategy across Melbourne Water, State and local government, water corporations, Traditional Owner organisations, the community and others who have a role in waterway management.

Scope and focus of the Mid-term Review

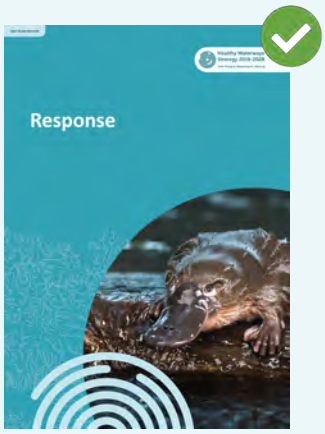
The HWS mid-term review plan outlined the scope and approach that would be undertaken. It was informed by a participatory evaluation planning process involving key stakeholders and Melbourne Water staff. Through this process, stakeholders highlighted that they wanted to know, how key values and conditions were tracking and if interventions (e.g. Revegetation) were effective. They also wanted to understand what has been achieved regarding collaboration and co-delivery.

The HWS mid-term review has been divided into three main elements, a **Science Inquiry** (which assesses the trajectory of key values across the region and the state of current threats to waterway conditions), an **Implementation Inquiry** (this Report) and a formal **Response** prepared by Melbourne Water with delivery partners and the Region-wide Leadership Group, which decides how findings and recommendations will be actioned from the Implementation and Science Inquiry Reports (Figure 6).

The Mid-term Review comprises

A **Science Inquiry** to assess changes to the trajectory of key values across the region, the state of current threats to waterway conditions and knowledge gaps.

An **Implementation Inquiry** to assess progress and evaluate factors influencing implementation of the Strategy and the likelihood of meeting 10-year Performance Objective targets.



A formal '**response**' developed in collaboration with delivery partners that outlines adjustments to implementation of the Healthy Waterways Strategy for 2024-2028 and beyond.

Figure 6. Outline of HWS Mid-term elements.

The Implementation Inquiry (this Report) considers how implementation is tracking, the likelihood that targets will be met by the end of the Strategy and evaluates the strengths of the collaborative delivery approach.

The mid-term review has been guided by key evaluation questions set out in the HWS MERI framework. The questions were refined when establishing the Science and Implementation Inquiries (Table 1).

Table 1. Key evaluation questions in the HWS MERI framework and the sub-key evaluation questions developed for the mid-term review for both Science and Implementation Inquiries.

Key Evaluation Questions and sub-Key Evaluation Questions	Where answered
1 – To what extent have the Performance Objectives of the Strategy been achieved?	
1a. To what extent is strategy delivery on track to achieve the Performance Objective targets by 2028?	Implementation Inquiry
1b. To what extent has collaboration and co-delivery contributed to achieving the Performance Objective targets so far?	
2 – To what extent has progress been made towards the longer-term environmental condition targets for rivers, wetlands and estuaries?	
2a. What environmental conditions (*e.g. Water Quality*) and external conditions (*e.g. policy*) help explain current key value trends?	Science Inquiry
2b. To what extent have projected known and emerging future threats changed from 2018? Have any assumptions about impacts to key values changed?	
3 – What is the state of waterway values?	
3a. To what extent are key values on the target trajectory?	Science Inquiry
3b. What other spatial and temporal trends and patterns for key values are of significance for implementation?	
4 – To what extent have the delivery methods of the Strategy been appropriate, effective, and efficient?	
4a. To what extent are interventions appropriate and effective for achieving outcomes?	Science Inquiry
4b. What are the key remaining knowledge gaps that need to be addressed in the next 5 years to improve strategy delivery or prepare for the next HWS?	Science Inquiry
4c. How can collaborative governance enable effective and efficient delivery of the Strategy?	Implementation Inquiry

The mid-term review was coordinated by Melbourne Water and supported by an independent panel including members with a strong background in waterway management, science and evaluation.

The role of the panel was to guide the evaluation by ensuring the information had sound reasoning, that the evidence used was credible and that any limitations or uncertainties were made explicit. The panel reviewed the draft Inquiry Reports and Recommendations. The panel also play a key role in communicating the process and findings to the Region-wide Leadership Group. The Terms of Reference for the Panel are outlined in Appendix 15.

Approach

The Implementation Inquiry was conducted using multiple lines of evidence (e.g. surveys, interviews, case studies, data etc.) through a mixed methods approach. Evaluative judgements were informed by a combination of quantitative and qualitative analysis. Rubrics were developed or refined to guide assessments and ensure transparency in the evaluation findings.

The Implementation Inquiry consisted of three main components:

- Evaluation of collaboration and co-delivery
- Evaluation of progress of Sub-catchment Performance Objectives and Regional Performance Objective implementation and the likelihood of meeting the targets by end of strategy, and
- Review of Performance Objectives as part of adaptive management to identify Performance Objectives that require clarification.

The evaluation of collaboration and co-delivery (Part A) used an appreciative inquiry approach to examine the three elements of the HWS co-governance framework (Region-wide Leadership Group, Catchment Implementation Forums and Waterway Labs), as well as specific Performance Objective group and sub-catchment collaborations. It was conducted via:

- An independent review of the HWS Region-wide Leadership Group
- An external evaluation of collaboration and co-delivery conducted by independent consultant Clear Horizon. This evaluation focused on six Performance Objective groups (Stormwater, Deer, Water for the environment, Litter, Pollution, Vegetation and a holistic sub-catchment collaboration) to surface both Performance Objective group-specific and whole of Strategy findings, and
- Additional lines of evidence used to verify and explore the external evaluation findings.

The likelihood of meeting the Sub-catchment Performance Objective targets was assessed using a systematic evaluation method as outlined in Appendix 3 which sought inputs through a survey and workshops with Melbourne Water Subject Matter experts, as well as existing information from previous years HWS Annual Reports. Insights on the implementation of the Strategy to date were also collated to identify challenges and opportunities to improve outcomes over the next five years.

The likelihood of meeting the Regional Performance Objective targets was assessed based on information contained in HWS Annual Reports from 2019 to 2022. A rubric outlined in Appendix 2 that enabled evaluation of qualitative performance expectations for each Regional Performance Objective.

The likelihood analysis was then combined with the focus sub-catchments identified from the Science Inquiry, to identify a shortlist of focus sub-catchments for consideration for potential management focus as part of the Evaluation Response Report process.

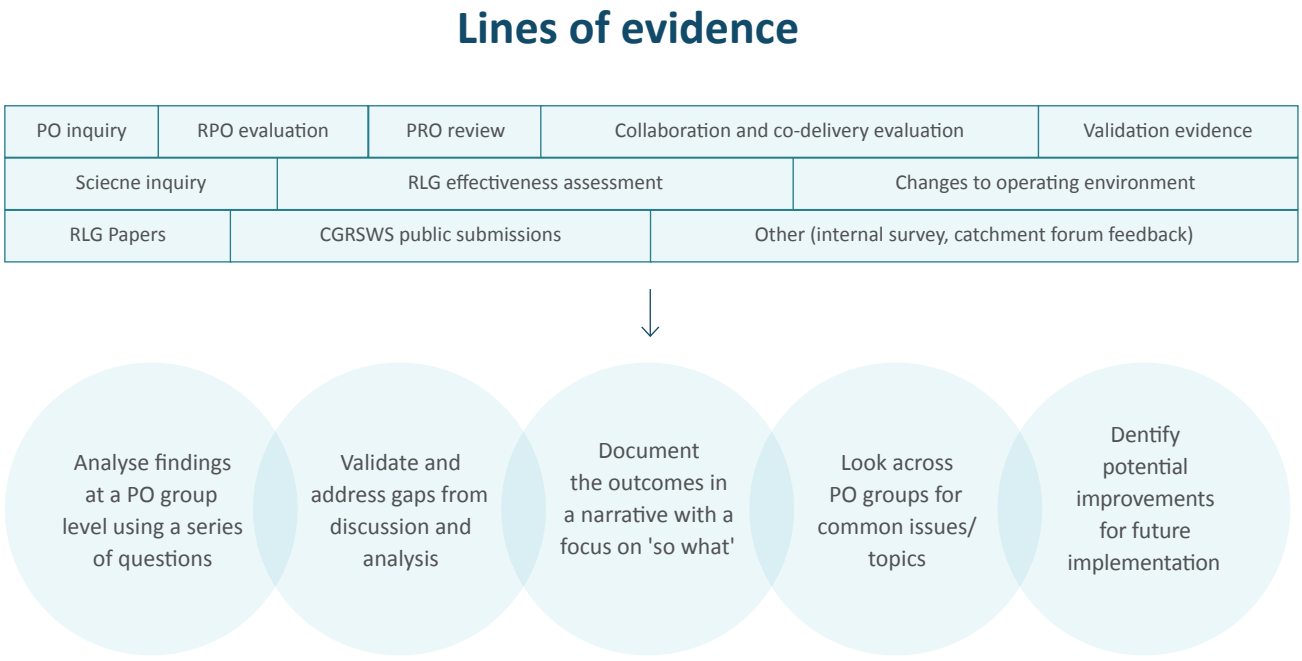
A synthesis of findings by HWS Performance Objective group and sub-catchments was also undertaken to understand common patterns and differences across the multiple lines of evidence. This connects findings, enabling greater meaning to be drawn from the analysis in order to ‘tell the story’ at the Performance Objective group and sub-catchment, catchment or regional level and identify key opportunities for implementation improvement.

The synthesis of findings by Performance Objective group (Part B) drew on multiple lines of evidence from this report and the Science Inquiry and followed a systematic process (Figure 7) of analysing the information at the Performance Objective group level using a series of questions:

- What is working well, and what are the areas for improvement based on the Performance Objective evaluation findings?
- What are the learnings from the collaboration inquiry?
- What are the reflections from the science inquiry?
- Where is there alignment in terms of challenges and opportunities?
- Where/what do we need to get back on track and why?

Any gaps identified through this process were addressed through further analysis and discussion with internal Melbourne Water Subject Matter Experts and the Evaluation Panel before documenting the findings and determining the potential implications for Strategy implementation for each Performance Objective group. Common issues and topics that spanned across multiple Performance Objective groups were identified and provided the basis for outlining potential opportunities to reinvigorate the implementation of the Strategy.

Figure 7. Summary of synthesis process.



Science Inquiry inputs

The Science Inquiry gathered evidence to assess the trajectory of the key Strategy values across the region and the state of current threats to waterway conditions. This informed where additional focus may be required to support key values.

Focus areas are sub-catchments identified as having multiple stable values (18/69 sub-catchments), multiple declining values (16/69 sub-catchments), and/or being climate change strongholds (14/69 sub-catchments) or climate change vulnerable (18/69 sub-catchments).

Focus areas were further classified based on existing environmental conditions into Group A (mostly moderate to very high rating of environmental conditions) or Group B (mostly very low to low rating of environmental conditions). Information about the focus areas was used in the Performance Objective evaluation to help prioritise sub-catchments in need of urgent attention over the next five years. Prioritisation criteria is outlined in Part A.

Several key themes that emerged during the Science Inquiry will be further explored in this Implementation Inquiry. These included:

- The critical importance of meeting Stormwater Performance Objectives due to faster Urban development and the increased environmental impact of additional imperviousness since the start of the Strategy
- Long-term predicted climate change impacts on environmental conditions and values were underestimated during the development of the HWS. Implications for the different Performance Objectives and focus areas need to be considered, and
- Declining water availability is a growing key threat to the implementation of the Strategy, and further work is required to understand the extent of impact and what this means for the Water for Environment Performance Objectives.

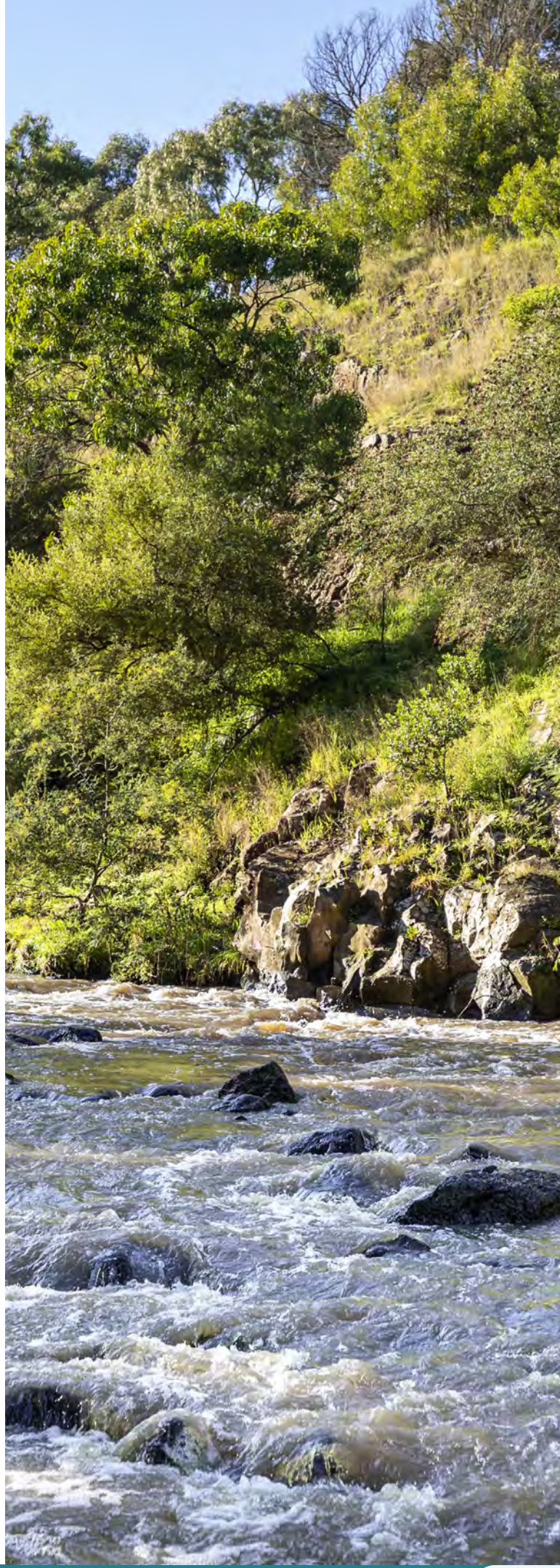
Traditional Owners

As part of the scoping of the mid-term review, Traditional Owners advised their preference for a separate process to have a reflection (not evaluation) of the past five years which could include some of the projects implemented on the ground and the context of changed policy around water and Traditional owners (e.g. Victorian Traditional Owner Cultural Landscapes Strategy and Water is Life). Traditional Owners have indicated they are ready to be involved in reflecting on the Cultural Regional Performance Objectives and have started to develop a path forward as part of self-determination for the next five years of the Strategy and beyond. The mid-term review provides a platform to progress this and will occur outside of the timelines for this Report.

Changes in the Operating Environment

A scan of the operating environment was undertaken as part of the technical and preparatory support for the mid-term review. The process sought to identify the main changes to the external operating environment for the Healthy Waterways Strategy since 2018 that may have impacted the effectiveness of strategy implementation.

Below is a summary of changes in governance and implementation, legislation, policy and regulation and socio-economic factors drawing on the operating scan and information collated for the renewal of the Port Phillip and Western Port Regional Catchment Strategy. Information from the operating scan also informed the assessment of threats outlined in the Science Inquiry. It was also used as additional lines of evidence throughout the evaluation to help explain the status of performance objectives.



Legislation, policy and regulation

Climate Change Act 2017 sets out a legislative framework to drive action to achieve net zero emissions, climate resilient Victorian community and economy. It is supported by a Climate Change Strategy and sector-based and regional Adaptation Action Plans.

Environment Protection Act 2017 has come into force, and subordinate legislation – **the Environment Protection Regulations** in 2021. These provide a new framework for protecting human health and the environment from pollution and waste through the General Environment Duty.

Marine and Coastal Act 2018 and Policy provides a simpler, more integrated, and coordinated approach to planning and managing the marine and coastal environment. The Act enables the protection of the coastline and the ability to address the long-term challenges of climate change, population growth and ageing coastal structures.

Integrated Water Management Catchment-Scale Plans and Strategic Directions Statements (2018) for Melbourne's five catchments set out the outcomes, targets and strategic IWM opportunities at a catchment scale.

Flora and Fauna Guarantee Amendment Act 2019 provides a strengthened framework for protecting Victoria's biodiversity. The amendment to the act has also removed duplication by establishing a single comprehensive list of threatened flora and fauna species.

Water and Catchment Legislation Amendment Act 2019 provides greater recognition and involvement of Traditional Owners and Aboriginal Victorians in catchment and waterway management. It also requires waterway managers to consider waterways' cultural, social and recreational values when preparing regional waterway strategies and recognises the Yarra Strategic Plan.

The Catchment and Land Protection Act 1994 was amended in 2021 to reflect that Melbourne Water as the Catchment Management Authority for the Port Phillip & Western Port region.

Whole of Country Plans are being prepared individually by relevant Traditional Owners to express their visions, aspirations, strategies and actions for their Country.

The **Yarra Strategy Plan** and **Waterways of the West Action Plan** were finalised in 2021, recognising the waterways as living and integrated natural entities and Traditional Owners as voices of the entities on their Country. The plans set a community vision and actions for these important waterway corridors.

A Regional Climate Change Adaptation Strategy (2021) has been developed for Greater Melbourne, focusing on projects that build on current knowledge and increase capability.

The **Port Phillip and Western Port Regional Catchment Strategy** was renewed in 2021. It aims to foster collaboration towards its vision of a healthy, resilient environment and well-managed natural resources. It supports the implementation of the HWS and its targets.

The **Central and Gippsland Region Sustainable Water Strategy (2022)** identifies the need for a greater reliance on manufactured water in the future. It seeks to return water to Traditional Owners and strengthen their water planning and management role. It identifies actions to maintain and improve waterway health and provide for social and recreational uses of waterways.

Water is Life: Traditional Owner Access to Water Roadmap (2022) provides a framework for Traditional Owner self-determination in water access and management and the rights and entitlements of a range of stakeholders.

Governance and implementation

Traditional Owners cultural values & knowledge Traditional Owner self-determination and allocation of waterflows for management has changed the role that the HWS plays in managing waterways.

There has been an increase in learning from Traditional Owner knowledge in relation to managing waterways.

Institutional structural changes There have been institutional structural changes within Melbourne Water and HWS delivery partners (e.g., PPWCMA integration to Melbourne Water and new leadership), influencing the delivery of the HWS.

Governance & co-delivery strategy The Region-wide Leadership Group has evolved, transitioning from co-design to implementation of the Strategy.

Technology & monitoring There have been technological changes to the way that data and information is collected and stored which elevates the ability to track changes to waterways (e.g., eDNA monitoring, LiDAR, AI/machine learning and drones).

Investment, costs & resources There have been challenges attracting investment and resources to deliver projects. Costs to deliver works programs have also increased significantly.

Socio-economic factors

Urban growth patterns There has been increased urban development and migration to and from urban and regional locations, which has impacted the size and distribution of settlements and has implications for HWS stormwater targets.

Community expectations There have been changes in community expectations towards the use of the environment and accessibility of waterways which were amplified during the COVID-19 pandemic.

Economic factors Economic factors (such as increased cost of living, inflation, higher cost of debt, and rising interest rates) have affected the implementation of the HWS and the costs of key stakeholders.

Changing use of the environment Through the COVID-19 pandemic, we saw increased visitation and use of local parkland areas for recreational purposes.

COVID-19 pandemic and follow-on impacts The COVID-19 pandemic has greatly impacted individuals in the day-wage economy, and front-line businesses became under pressure to 'pivot or perish'. Extended periods of lockdowns between 2020 and 2022 delayed the delivery of some on-ground works.

Inquiry Limitations and Constraints

The evaluation process was adaptive, a reflection of learning and capacity building that took place as the Inquiries unfolded and it is acknowledged that this is the first time such a complex and rigorous mid-term review of a Greater Melbourne Regional Waterway Health Strategy has been undertaken. While further details are outlined in more detail in the method appendices (Appendices 1-5), several key limitations are highlighted below:

- The identification of barriers to implementation and opportunities for improvements for the Sub-catchment Performances Objectives reflects the views of Melbourne Water Subject Matter Experts. Broader input was gathered via the independent evaluation of collaboration and co-delivery.
- The evaluation of collaboration and co-delivery was conducted via a select sample of interviewees and while the interviews provide a good indication of a range of views within Melbourne Water and among partners, they do not represent the views of all Strategy stakeholders.
- The evaluation of Sub-catchment Performance Objectives which did not have quantitative targets was limited to a qualitative assessment.
- The evaluation of Performance Objective likelihood for estuaries was very limited due to insufficient data.
- The synthesis of findings provides a detailed perspective of the current issues and opportunities but may not cover the full story due to many of the HWS Performance Objective groups representing wicked problems that have complex operational and external factors and due to limited input on perspectives and insights from stakeholders.

Structure of this Report

An outline of the Inquiry Report structure and an overview of each section is provided below.

PART A presents evaluation findings from a whole-of-strategy perspective on collaboration and co-delivery and the likelihood of meeting Regional and Sub-catchment Performance Objectives.

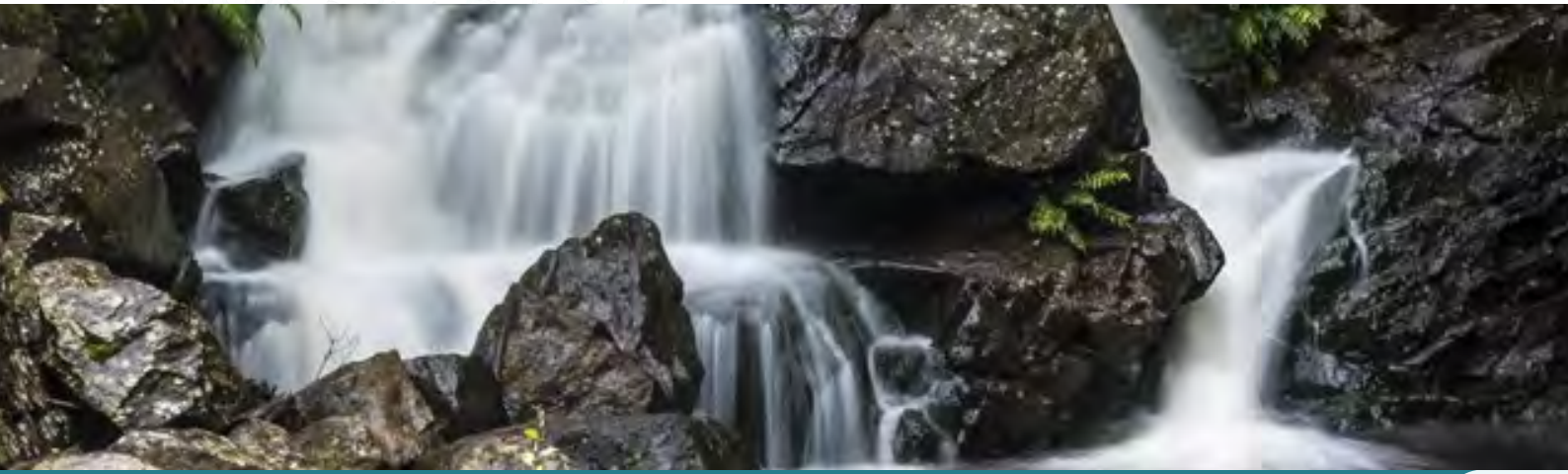
PART B summarises evaluation findings from a Performance Objective group and sub-catchment perspective drawing on the collaboration, co-delivery, and performance objective evaluations along with additional lines of inquiry (e.g. findings from the Science Inquiry).

PART C provides an overall summary, presenting common patterns and differences across the different Performance Objective groups and sub-catchments in the region.

Appendices 1 - 5 detailed methodologies and limitations for evaluating collaboration and co-delivery, the Regional Performance Objectives, the likelihood of meeting the 10-year Sub-catchment Performance Objective targets, and review of Performance Objectives.

Appendices 6 - 13 presents detailed evaluation data and analysis.

Appendices 14 - 17 presents background information for easy reference such as actions in other relevant strategies, the Terms of Reference for the Evaluation Panel, list of the documents developed to support both Inquiries and a map of the sub-catchments in the region.



PART A

Whole of Strategy – Collaboration, Co-delivery and Performance Objectives

Part A focuses on summarising the key findings at the **REGIONAL SCALE** relating to **Key Evaluation Question 1a**. To what extent is strategy delivery on track to achieve the performance objectives by 2028? **Key Evaluation Question 1b**. To what extent has collaboration and co-delivery contributed to achieving the performance objectives so far? **Key Evaluation Question 4c**. How can collaborative governance enable effective and efficient delivery of the Strategy?

The 2018 Healthy Waterways Strategy recognises that action by Melbourne Water alone is not sufficient to unlock the full value of the region's waterways, nor stem their decline due to the pressures of climate change, urban development or land use change. It calls for collective action from State government and regulators, local government and other public land managers, the development sector, landholders, Traditional Owners and community groups.

This section presents the outcomes of the evaluation at a whole-of-strategy level for the three key aspects of (1) collaboration and co-delivery, (2) the status and likelihood of meeting the Regional Performance Objectives, which are typically region-wide foundational activities, and (3) a region-wide view of the Sub-catchment Performance Objectives.

Detailed evaluation methodologies and limitations for these are all outlined in Appendices 1-5.
Further assessment and evaluation at a Performance Objective group level is provided in Part B.

Collaboration Evaluation

This section presents the findings of the collaboration and co-delivery evaluation related to the Region-wide Leadership Group review and the whole-of-strategy component of the external evaluation of collaboration and co- delivery. It is complemented by:

- Performance Objective group-specific findings in Part B
- Additional lines of evidence presented in Appendix 6, and
- The Regional Performance Objective evaluation findings for Regional Performance Objectives 33, 34, 35, and 36 in Appendix 9.

The collaboration and co-delivery evaluation was designed to answer the following two key evaluation questions:

1b. To what extent has collaboration and co-delivery contributed to achieving the Performance Objective targets so far?

4c. How can collaborative governance enable effective and efficient delivery of the Strategy?

The approach to the collaboration evaluation is outlined in Appendix 1.

Region-wide Leadership Group Review

The independent consultant combined the results of the Region-wide Leadership Group (RLG) member interviews and gave the following reflections on these... *"Overall, the group assessment reflected that the RLG is working as a leadership group and is effective in its role. Reflections from RLG members were that the strategy was designed using a collaborative approach, and the RLG was set up to collaborate on the delivery of the strategy. However, the RLG is not a decision-making group; it has no authorising mandate nor legal structure with legal accountabilities to require others to act and take accountability".*

The independent consultant also found that whilst the RLG has largely been an advisory body to date and not accountable for making decisions, it provides a forum for advocacy and collaboration across the primary agencies responsible for waterway management. The HWS midterm review provides an opportunity for the RLG to take up a leadership role in response to the recommendations, targeting complex cross-agency issues like stormwater management and litter, and driving greater collaboration with the community and other agencies.

The RLG's evidence for their effectiveness is illustrated in their responses to the survey question about how they have contributed to the successful implementation of the Healthy Waterways Strategy over the past three years. Some of the evidence included:

- Advocacy for the objectives of the Strategy within partner agencies and in the broader public sphere
- Growing the visibility, accountability, and profile of the strategy in our own business as usual
- Ongoing connection with the community and stakeholders that contributed to the strategy through the forums and focus areas
- Providing a platform for key stakeholders to connect, discuss and work through issues arising
- Providing detailed analysis and potential pathways forward to address areas where implementation has not been sufficient/as anticipated and seeing through to successful resolution, and
- Increasing the focus on natural wetlands protection through discussion papers and multi-stakeholder working groups.

The Report provides nine recommendations for building on and improving the effectiveness of the RLG to be prioritised over a two-year period, which is the proposed timeframe between reviews. The recommendations were prioritised based on the complexity, expected time to complete the actions, and further discussion with the RLG. As of June 2023, five of the nine recommendations have been completed, and two more are underway. The recommendations and their progress are shown in Table 2.

Table 2. Recommendations on improving effectiveness of RLG.

Recommendation
1. Clarify the HWS lead role and confirm hoe the role intends to add value to the group.
2. Update the role and purpose of the Terms of Reference to reflect the needs of the evolving RLG.
3. The Chair, MW lead and Secretariat work with the RLG to confirm the reporting and information that will enable the RLG to have confidence in the oversight of HWS implementation.
4. The Chair, MW Lead and the Secretariat work with the RLG to improve the coordination and collaboration between members organisations.
5. Invite stakeholders, including from Catchment Forums to RLG, to provide different perspectives.
6. Invite partner organisations, including RLG members, to share their progression the Strategy implementation.
7. Update future agendas to ensure objectives of agenda items are clear and the agenda is aligned with the revised Terms of Reference.
8. Discuss and consider if there is an opportunity to supplement reporting from the RLG.
9. Discuss and agree how the RLG can strengthen reporting back to the Melbourne Water Board.

The evaluation suggests that the advisory role that the RLG currently operates within for HWS implementation presents some challenges and opportunities within a collaborative governance framework for effective and efficient delivery of the Strategy. This is explored further below.

External Evaluation of Collaboration and Co-delivery (whole-of-Strategy findings)

At a whole-of-strategy level, the external evaluation (Clear Horizon, 2023) evaluation noted that the first five years of Strategy implementation have provided opportunities for Melbourne Water and HWS partners to test approaches and learn about what helps and hinders collaboration. Its key findings are:

- Most internal and external interviewees have strong alignment and buy-in for the Strategy vision and targets. They see themselves as partners aligned under the Strategy and express willingness to collaborate with Melbourne Water on the implementation of the Strategy. Details of areas with weaker alignment and buy-in are provided in the PO group sections in Part B.
- There is, however, confusion about who 'owns' the Strategy and who is responsible for leading its delivery. Many stakeholders see Melbourne Water as the appropriate owner, consistent with how its role is defined in the Strategy; however, this understanding is not consistently shared as the Strategy is also viewed as co-owned due to the co-design process to develop it.
- Melbourne Water is leading or participating in multiple collaborative projects across the region. Some of these are functioning as 'pilots' that are beginning to demonstrate new or transformative approaches to collaborative waterway management, such as the Chain of Ponds (Moonee Ponds Creek) Collaboration, Litter Labs and Lower Dandenong Creek Litter Collaboration. Others use more standard or well-established approaches to collaboration, for example, in vegetation and deer management.
- Some teams within Melbourne Water have been developing, testing and refining strategic approaches to co-delivery. In some cases, they have developed tools and approaches that could be expanded upon and used to guide the broader co-delivery of the Strategy. As an example, an intentional approach grounded in a shared vision, trust, accountability and transparency and supported by a fit-for-purpose governance model that combines structure and responsiveness were used to establish the Chain of Ponds (Moonee Ponds Creek) collaboration.
- Through their collaborative work to date, Melbourne Water and its partners are building a working understanding of what a collaboration 'spectrum' might look like under the Strategy. While this has not been codified or defined, the shared knowledge established through the first implementation period should provide a solid basis for that work to occur.

- Stakeholders' collaboration experiences have surfaced a reasonably consistent and cohesive understanding of what is needed for effective collaboration. A set of principles for effective collaboration has been synthesised from these findings. The principles are provided in Appendix 7 and those along with the directions outlined in Appendix 13 have informed the recommendations of this Implementation Inquiry.
- The evaluation found that establishing new ways of working across sectors takes considerable time and effort and requires a focus on learning and adaptation. However, five years on, there remain significant foundational gaps in the collaborative implementation of the Strategy.
- There is little evidence of co-delivery being implemented in a coordinated way across catchments, or of a step-change in collaboration occurring at the PO Group scale. The Catchment Implementation Forums were not delivered as intended, leaving a critical gap in coordination and planning at the program level.
- There is some confusion about who is responsible for leading the delivery of the Strategy, which has led to highly variable progress in co-delivery.
- A framework to guide decision-making about how and when to collaborate under the Strategy has not been developed and key terms such as co-delivery and collaboration have not been defined. This lack of agreed definitions and context-specific guidance has made it difficult for internal and external stakeholders to determine which approaches should be applied under what circumstances, and whether they amount to co-delivery of the Strategy.
- The 'authorising environment' required to embed collaboration and co-delivery has not always been present within Melbourne Water or among the Strategy co-delivery partners. Examples of this include inflexible systems and processes that do not support collaborative ways of working, and unwillingness to relinquish control to the degree that is often required for collaboration.

Summary

Based on the above findings, the overarching assessment is that:

- The Strategy is not being co-delivered to the extent intended and there is limited evidence of a step-change in collaboration occurring at the whole-of-Strategy scale, and
- The first phase of the Strategy's implementation (2018-2023) can be understood as an opportunity to test, learn and refine various approaches to co-delivery, so that Melbourne Water and its partners can identify what works well, and what is needed to enable the next phase.

The work undertaken to date has generated important lessons and insights, and established some foundations that can be built upon throughout the remaining delivery period. Many of these are explored in the following Performance Objective group sections.

Regional Performance Objectives

Regional Performance Objectives (RPOs) were developed to represent the actions, initiatives or collaboration required at a regional scale to effect change for waterway health.

There are 45 RPOs that cover all the PO groups in the Healthy Waterways Strategy (Table 3). They have diverse attributes including:

- Qualitative targets that can be outcome or output based
- Representing key threats, issues or foundational initiatives that would benefit from a regional approach
- Representing some of the responsibilities of HWS partners
- Highlighting a partnership approach required with other organisations that undertake waterway management actions, and
- Linking to existing strategies, plans or programs.

The RPOs are tracked annually in the Healthy Waterways Strategy Annual Report via a status report describing actions undertaken. Progress is reported as not started, in progress, complete or under review. The Regional Monitoring Evaluation Plan (Melbourne Water, 2020) outlines for each RPO, the description, intent, and targets (outlined as Performance Expectations (PEs)) that qualitatively state what progress or outcomes are required by 2028). The PEs provide the basis for evaluation as outlined in Appendix 2.

Table 3. List of Regional Performance Objectives organised by Performance Objective group.

PO Group / Section	Regional Performance objectives	
Traditional Owners	RPO-1 (Self-determination) RPO-2 (Partnership projects) RPO-3 (Influence) RPO-4 (Cultural awareness training)	RPO-5 (Cultural competency) RPO-6 (Technical Ecological Knowledge) RPO-7 (Public events)
Part A & Appendix 9 – multiple PO groups	RPO–33 (HWS governance) RPO–34 (Waterways labs) RPO-8 (Environmental Economic accounts) RPO-9 (SEEA adopted into MERI) RPO-10 (Adaptive pathways) RPO–44 (Website report card) RPO-45 (Research partnerships)	RPO–35 (Governance effectiveness) RPO–36 (Catchment forums) RPO-21 (Multiple benefits) RPO-41 (MERI Plan) RPO-42 (Wetland condition)
Part B Water for the Environment	RPO-11 (Groundwater)	RPO-12 (Management and recovery)
Part B Stormwater	RPO-13 (Standards and tools) RPO-14 (Industry capacity) RPO–15 (Planning system)	RPO -16 (Headwaters) RPO- 18 (Asset management)
Part B Water Quality	RPO-17 (Construction runoff) RPO-24 (Urban pollution programs) RPO-26 (Litter framework)	RPO-25 (Rural land runoff) RPO-23 (Emerging contaminants of concern) RPO-27 (Litter incidence)
Part B Vegetation and Pests	RPO-28 (Seasonal herbaceous wetlands) RPO-29 (Wetland vegetation protection)	RPO-30 (Climate change resilient vegetation) RPO-31 (Pest risk-based approach)
Part B Habitat	RPO-32 (Biodiversity significance)	RPO- 18 (Asset management)
Part B Community	RPO-19 (Reimagine your creek) RPO-20 (Wetland social values) RPO-22 (Urban cooling), RPO-37 (Participation rates)	RPO-38 (Stories and resources) RPO-39 (Systems for knowledge sharing) RPO-40 (Profile of waterways) RPO-43 (Social values framework)

Outcomes

The evaluation of RPO status at mid-term identified that of the 45 RPOs, two RPOs have been achieved, 20 are on track, 13 are slightly off-track, and three are significantly off-track (Figure 8). With seven RPOS out of scope for this evaluation (i.e. the Traditional Owners-related RPOs have a separate process), 22 of the 45 RPOs are meeting performance expectations at this point of the strategy implementation (Table 4).

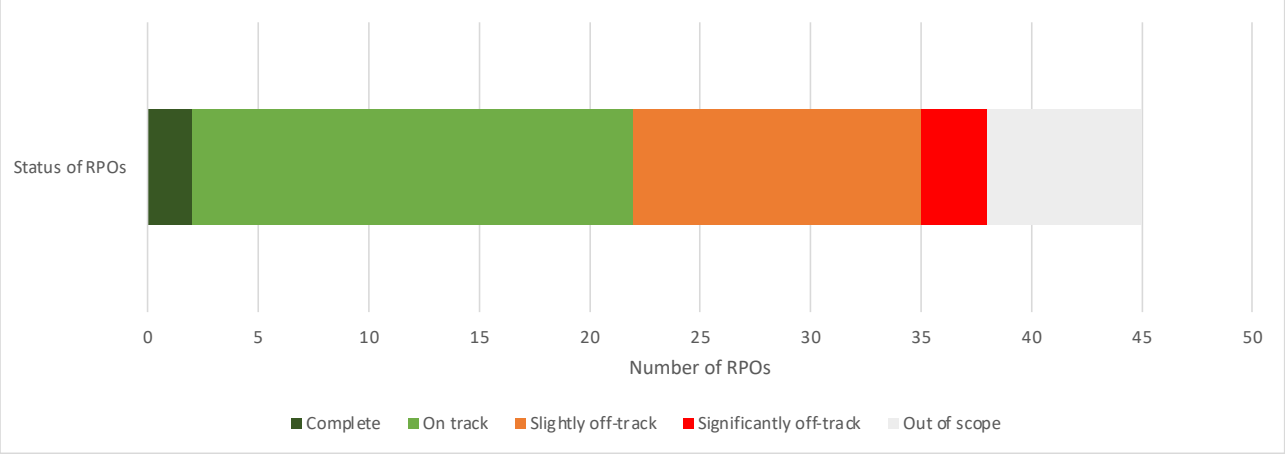


Figure 8. Evaluation results of Regional Performance Objectives.

The majority of RPOs that are on-track represent established programs/initiatives or are linked to research programs. The two RPOs that have been achieved represent foundational outputs related to the Strategy Monitoring, Evaluation, Reporting and Improvement framework.

Many of the slightly off-track or significantly off-track RPOs represent PO groups that are 'wicked problems' that require multi-agency coordination or represent the application of research findings into policy or delivery. Repetitive or incomplete reporting on the progress of some of these RPOs has also been a factor in the evaluation results.

The three RPOs that are significantly off-track are:

- RPO-21 (Multiple benefits)
- RPO-12 (Water for the environment), and
- RPO-40 (Profile of waterways).

Both RPO-21 and RPO-40 are significantly off-track because they do not have performance expectations defined and have very limited or no reporting of progress over the past four years of HWS Annual reporting. These RPOs need urgent and immediate attention to define PEs, confirm lead accountability in Melbourne Water and engage with relevant HWS delivery partners to begin planning and progressing activities. RPO-12 (Water for Environment) is significantly off-track due to the limited progress made towards water recovery across the region.

The evaluative reasoning of the RPOs at risk of not meeting performance expectations by the end of the Strategy is outlined in Part B and the evaluative reasoning for all RPOs are outlined in Appendix 9. As many of the RPOs represent foundational activities required to achieve strategy outcomes, these are referred to in Part B as they help to explain why some sub-catchment performance objectives are off-track.

Table 4. Summary of Regional Performance Objective evaluation results by PO Group. (Note that RPOs 1-7 were out of scope for reasons outlined above).

PO Group	Standards			
	On track to meet Performance Expectations	On track to meet Performance Expectations	Slightly off track to meet Performance Expectations	Significantly off track to meet Performance Expectations
Adaptive Management	RPO-41 (MERI Plan) RPO-44 (Website report card)	RPO-10 (Adaptive pathways) RPO-42 (Wetland condition) RPO-45 (Research partnerships)	RPO-8 + 9 (SEEA) RPO-18 (Asset management)	RPO-21 (Multiple benefits)
Water for the Environment		RPO-11 (Groundwater)		RPO-12 (Water for environment)
Stormwater			RPO-13 (Standards and tools) RPO-14 (Industry capacity stormwater) RPO 15 (Planning system) RPO-16 (Headwaters)	
Water Quality		RPO-23 (Emerging contaminants of concern) RPO-24 (Urban pollution programs) RPO-26 (Litter framework) RPO-27 (Litter incidence reduced)	RPO-17 (Construction runoff) RPO-25 (Rural land management)	
Vegetation and pests		RPO-28 (Seasonal Herbaceous Wetlands) RPO-29 (Wetland vegetation protection) RPO-30 (Climate change resilient vegetation) RPO-31 (Pest risk-based approach)		
Habitat		RPO-32 (Biodiversity significance)	RPO-18 (Asset management)	
Collaborative Governance		RPO-33 (HWS regional governance) RPO-35 (Effectiveness of HWS governance)	RPO-34 (Waterways labs) RPO-36 (Catchment forums)	
Community		RPO-19 (Transform modified waterways RPO-22 (Urban cooling) RPO-37 (Participation rates) RPO-38 (Stories and resources) RPO-39 (Systems for knowledge sharing)	RPO-20 (Wetland social values) RPO-43 (Social values framework)	RPO-40 (Profile of waterways)

The RPO evaluation has highlighted that future HWS annual reporting needs to better address the performance expectations outlined in the RPO MEP. It is possible that more progress has been made for some RPOs but has yet to be documented in the HWS Annual Reports. This could be a symptom of agency personnel updating the report for an RPO based on what was written previously rather than reflecting on the performance expectations outlined in the RPO MEP.

Some RPOs would also benefit from reviewing performance expectations to better reflect the change desired by the end of the Strategy. Conversely, there is also the opportunity to improve how the Sub-catchment POs are reflected in the performance expectations of linked RPOs.

Given that this is the first time RPOs have been evaluated in the Strategy there is an opportunity to learn from this evaluation process and improve future reporting on RPO implementation.

Summary of Sub-catchment Performance Objectives

The Strategy includes Sub-catchment Performance Objectives (SCPOs or Sub-catchment POs) that represent short- term measures (1-10 years) to guide activities towards improving waterway conditions assigned spatially to a specific sub-catchment. These measures track progress towards achieving the long-term goals (10 to 50 years) set out in the Strategy.

The PPWP region is divided into 69 sub-catchments with individual performance objectives for rivers, wetlands and estuaries. While most are customised for a specific sub-catchment, common characteristics enable grouping POs by topics. (Table 5).

Table 5. Groups relevant for the SCPO evaluation.

Groups	Types of performance objectives
Water for the Environment	• Increase environmental water reserve in regulated systems. • Maintain or improve flow regimes in unregulated systems.
Stormwater	• Harvest stormwater per hectare of new impervious area. • Infiltrate stormwater per hectare of new impervious area. • Treat existing development.
Water Quality	• Improve water quality from agricultural land practices. • Maintain/protect recreational water quality. • Maintain loads from sewage treatment plant (STPs). • Reduce construction and industrial run-off.
Vegetation & Pests	• Establish riparian vegetated buffer. • Maintain existing vegetation quality. • Protect high quality vegetation and habitat. • Manage pests.
Habitat	• Improve/increase connectivity for fish passage. • Mitigate threats to physical form. • Protect and/or improve specific values and habitat. • Re-engage floodplains.
Community	• Increase participation rates. • Improve access to and along waterways.

There are two main types of POs that are important for the purposes of evaluating the likelihood of evaluating progress towards the 10-year targets:

- **Quantitative** – Performance Objectives with a numerical target that can be assessed using empirical data. For example, these types of POs may define hectares of land for revegetation, or the number of instream barriers to fish movement to be removed.
- **Qualitative** – Performance Objectives that currently do not have a numerical target but can be assessed semi-quantitatively using a rubric or alternate measures. For example, these types of POs may define a tangible outcome, such as maintain recreational water quality, then apply decision rules via a rubric to assess progress towards the target.

The likelihood ratings are based on the current status (e.g. on-track, slightly off-track or significantly off-track) combined with the future operating environment (i.e. increased effort, decreased effort or business as usual). See Appendix 3.

Outcomes

A summary of the evaluation findings for the quantitative and qualitative SCPOs for rivers, wetlands and estuaries are provided below. Further detail can be found in the following section (Part B) for each PO group that highlights the sub-catchments at high risk of not meeting targets, describes the factors affecting implementation and proposes potential opportunities for improvement.

Rivers

At a region-wide scale, the quantitative POs for rivers are summarised in Figure 9 and Figure 10. This highlights that the majority of the POs in the Water for Environment and Stormwater group are unlikely to meet the 10-year target under the current operating environment. Conversely, the Maintain Vegetation and Community Participation POs indicate that good progress has been made so far, with many sub-catchments found to be almost certain to meet the 10-year target. However, there is a degree of uncertainty as to whether the targets will be met for a proportion of sub-catchments for the vegetation establishment and maintenance targets and for the participation and waterway access targets. These fall into the 'possible' category.

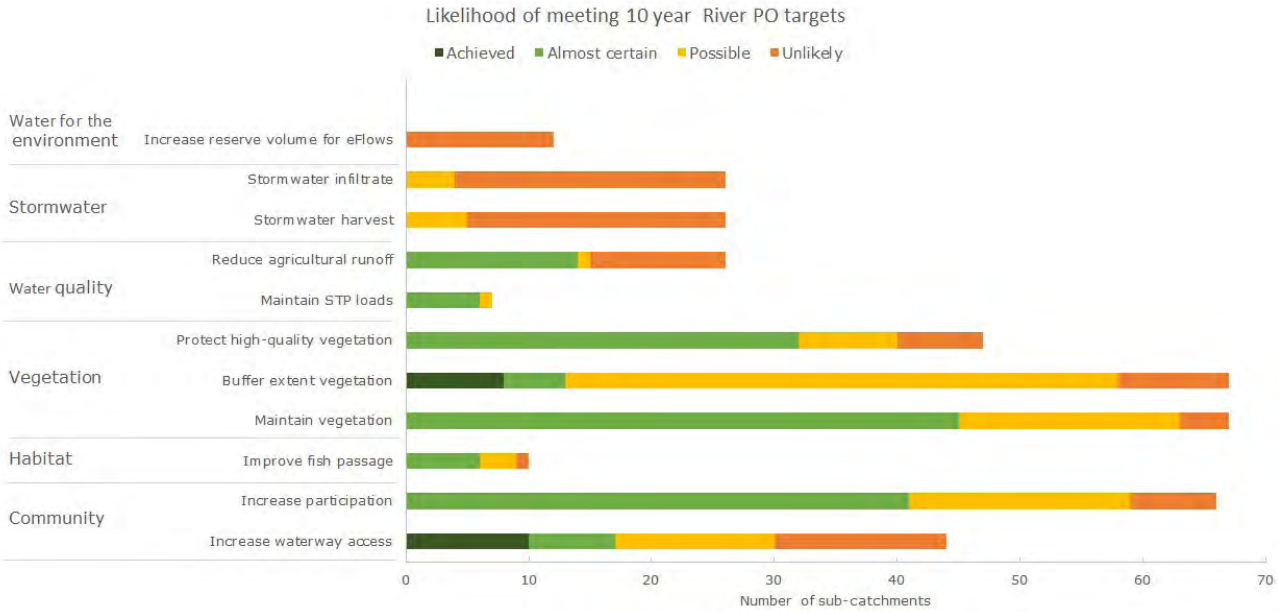


Figure 9. Summary of evaluation of likelihood of meeting 10-year SCPO targets for rivers by end of strategy for different PO groups.

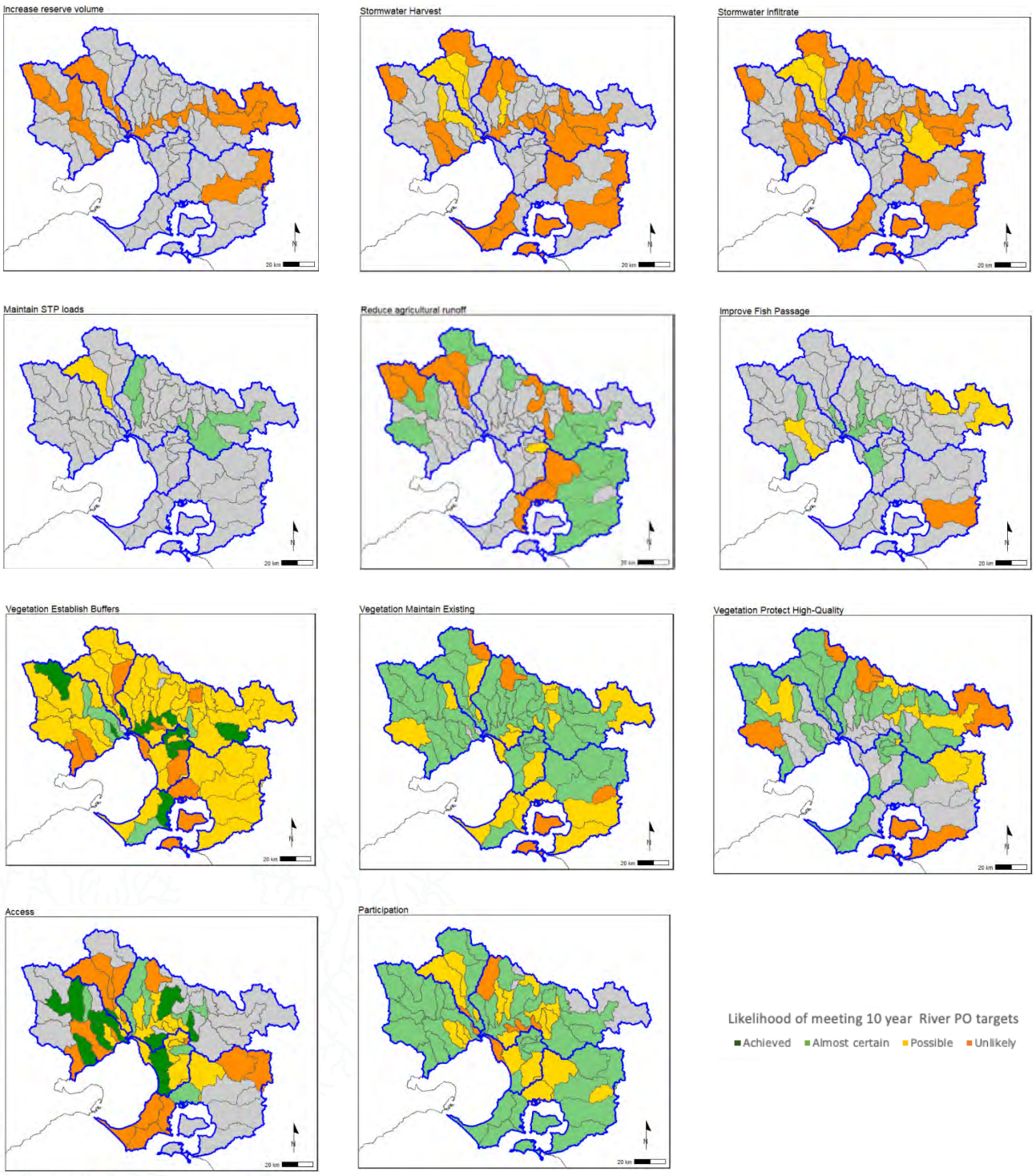


Figure 10. Likelihood of meeting the 10-year quantitative SCPO targets for rivers.

It is also important to consider findings from the POs which could only be assessed qualitatively, especially where there was multiple lines of evidence and input from the Science Inquiry (e.g. increasing threat). The outcomes of this assessment have highlighted the PO groups and areas that are important to consider alongside the quantitative results (Table 6).

Table 6. Qualitative PO groups considered 'off-track' based on multiple lines of evidence.

PO group	Qualitative performance objective	Important because?	Where
Water for the Environment	Maintain or improve flow regimes in unregulated systems.	Many barriers to implementation were identified. Science Inquiry identified decreasing water availability as one of the top 3 threats in the region. The wording of the performance objectives is too vague.	All related SCPOs
Stormwater	Headwater streams.	Many barriers to implementation were identified. Science Inquiry identified urban development as one of the top 3 threats in the region.	All headwater streams, particularly in the stormwater priority areas
Water Quality	Construction and industrial run-off.	Significant research into the issues through the Waterways Practice Partnership research program which has highlighted key water quality issues (e.g. bifenthrin).	In the relevant SCPOs
Habitat	Mitigate threats to physical form.	Evidence that little progress has been made towards on-ground outcomes in most SCPO areas.	All SCPOs and particularly those in the Stormwater priority areas.

Wetlands

While many of the performance objectives for rivers will benefit the regional priority wetlands in the HWS, several specific performance objectives have been set for particular priority wetlands. Tracking these is through qualitative reporting with a 'Not Started' status by 2022 being evaluated as unlikely to meet the 10-year target. The evaluation has found that we are off-track in most catchments and for most PO groups (Table 7).

Table 7. Region-wide summary of the evaluation of wetland Performance Objectives 'orange = unlikely.

Catchment	Maintain/ improve flow regime	Establish buffers	Protect/ maintain/ improve vegetation	Protect specific values	Treat existing stormwater	At risk from development[1]
Dandenong	Not started in 7 wetlands (out of 11 wetlands).	Not started in 1 wetland (out of 10 wetlands).	Not started in 1 wetland (out of 6 wetlands).	In progress	No performance objectives	3
Maribyrnong	In progress.	In progress	No performance objectives	In progress	No performance objectives	0
Werribee	Not started in 12 wetlands (out of 19 wetlands).	Not started in 9 wetlands (out of 23 wetlands).	In progress	Under review	No performance objectives	7
Westernport	Not started in 4 wetlands (out of 6 wetlands).	Not started in 3 wetlands (out of 6 wetlands).	Not started in 2 wetlands (out of 3 wetlands).	No	No performance objectives	7
Yarra	Not started in 4 wetlands (out of 15 wetlands).	Not started in 4 wetlands (out of 13 wetlands).	Two POs will be reported on at the end of strategy in 2028	No	Not started in 1 wetland (4 under review)	1

1. Based on 2022 assessment of wetlands at 'future risk' and 'imminent risk' as reported on the HWS website.

Estuaries

Like wetlands, many of the POs set for rivers will benefit estuaries. However, there are a number of specific performance objectives that have been set for different estuaries across the region. Evaluation of these performance objectives was very limited due to insufficient data and this has been highlighted as a major gap in the inquiry.

Focus areas for Implementation

Given the large number of targets that are off-track, there is a need to prioritise effort for the remainder of HWS implementation. Focus sub-catchments and wetlands have been determined using criteria outlined below. While all the POs in the HWS are important, the focus sub-catchments are intended to guide effort and investment where it is most important to focus effort.

It is proposed that ALL performance objectives within a focus sub-catchment or wetland should be met – not just the high-risk performance objectives. Similarly for the community places PO group, ALL performance objectives in the focus sub-catchments are important, as in most cases improving environmental outcomes is desirable for social values as well.

Approach

Rivers – environmental values focus

Criteria used to prioritise sub-catchments and performance objectives aimed at improving environmental values is outlined in Table 8. The criteria centres around the risk ratings developed from the SCPO evaluations and the focus sub-catchments identified in the Science Inquiry. The focus sub-catchments represent areas where we need to prevent or halt declines of multiple values or where climate change implications are particularly important (Figure 11). High risk SCPOs are based on the likelihood of meeting the 10-year targets, the size of the target and whether they are in a focus sub-catchment.

Table 8. Criteria used to prioritise sub-catchments for environmental related performance objective target attainment.

Focus ranking	Criteria	Rationale
Tier 1	Sub-catchments at high risk of not meeting the target in one or more PO groups that are in Group A focus sub-catchments.	Group A focus sub-catchments represent a protect the best principle and focus on preventing declines from future threats. Sub-catchments at high risk typically have large targets which are important to meet.

Rivers – social values focus

Criteria used to prioritise sub-catchments and performance objectives aimed at improving social values is outlined in Table 9. The criteria centres around the risk ratings developed from the SCPO evaluations. Focus sub-catchments based on the criteria above are presented in Figure 12.

Table 9. Criteria used to prioritise sub-catchments for social value related performance objective target attainment.

Focus ranking	Criteria	Rationale
Tier 1	Sub-catchments at very high risk of not meeting the target in one or more PO groups.	Increased effort is required and the targets are large compared with what has been delivered to date.
Tier 2	Sub-catchments at high risk of not meeting the target in one or more PO groups.	Increased effort is required and the targets are large compared with what has been delivered to date.

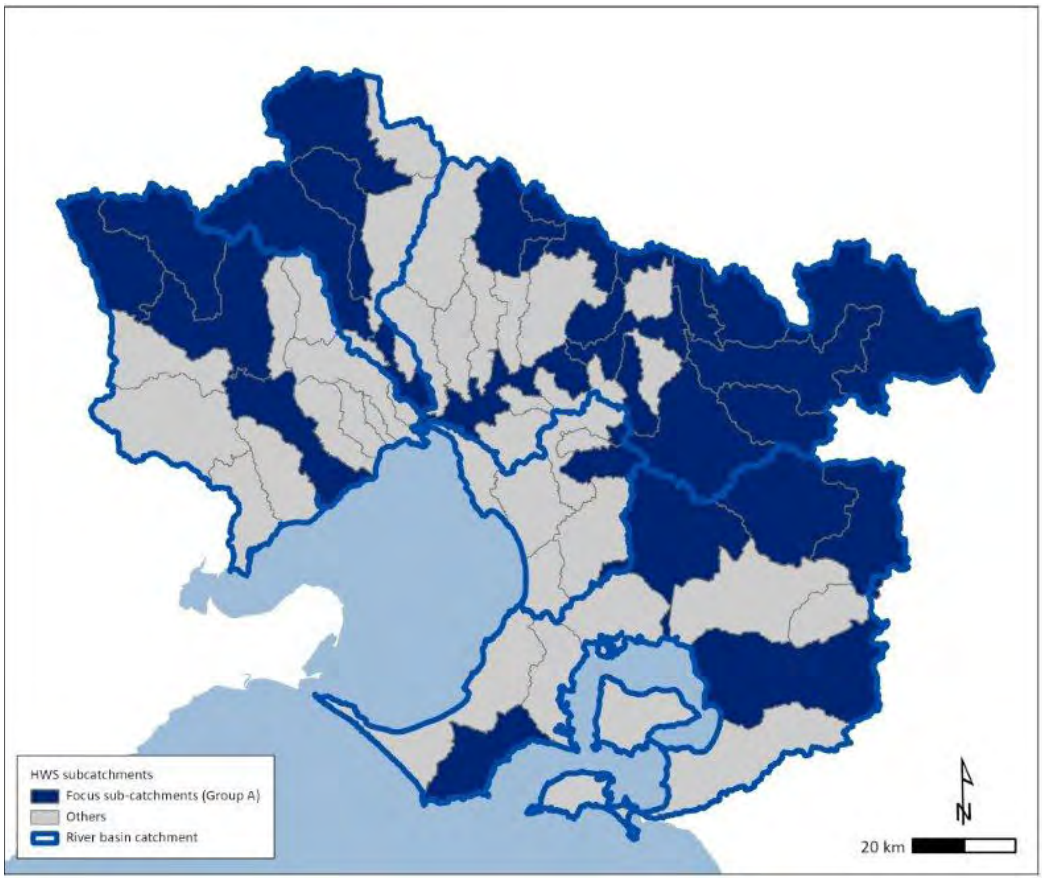


Figure 11. Focus sub-catchments for environmental POs - Dark blue = Focus sub-catchments with high-risk POs.

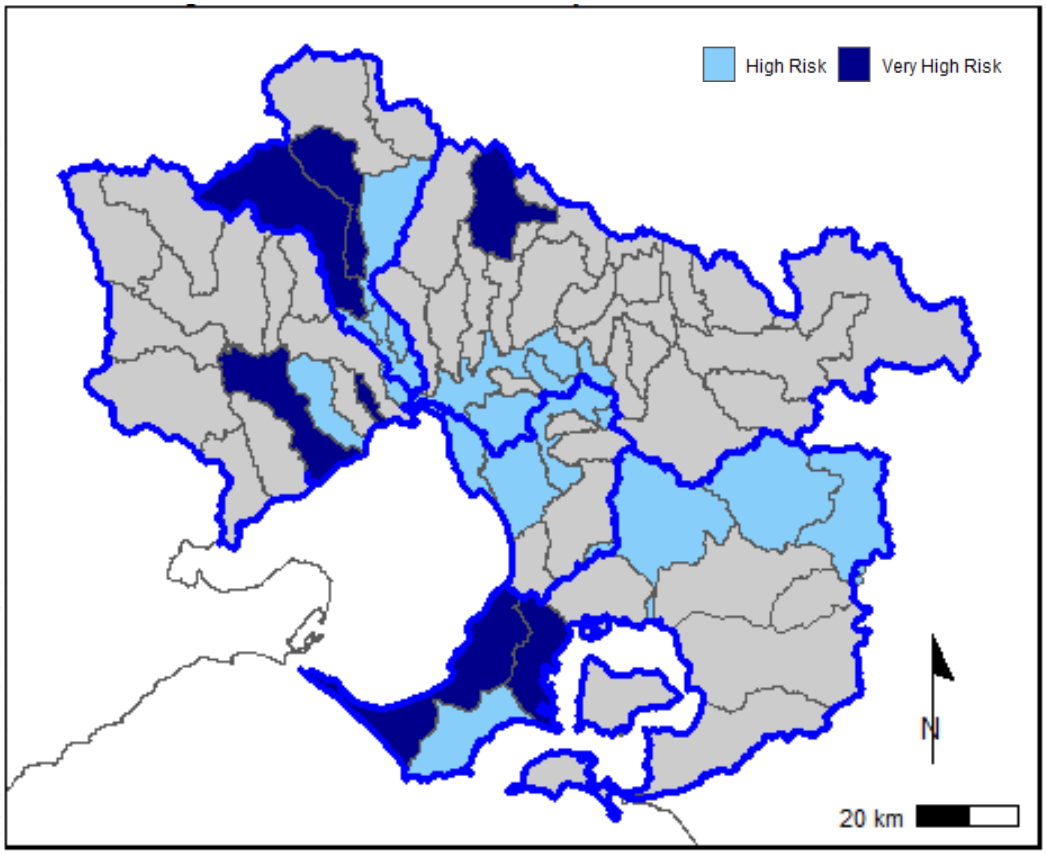


Figure 12. Focus sub-catchments for the community related POs (waterway access and participation) (dark blue = very high risk POs and light blue = high risk POs).

Wetlands

Criteria for prioritising areas for the Access and Participation Performance Objectives is based on wetlands at risk of not meeting the 10-year targets (Table 10).

Table 10. Criteria used to prioritise wetland performance objectives.

Focus ranking	Criteria	Rationale
Tier 1	Wetlands under threat from urban development.	Protecting wetlands from urban development and being built over is critical as once they are lost it is very difficult to restore.
Tier 2	Wetlands where POs have not started.	Increased effort is required and or the targets are large.

Focus sub-catchments based on the criteria above are presented in Figure 13. These sub-catchments need to be agreed upon through the Evaluation Response Report process and changes or additional areas should be based on a set of clear principles. In some cases, the priorities overlap across the three groupings. For example, Upper Plenty River, Lower Werribee River and Jacksons Creek are all Tier 1 for environmental and social values. Other sub-catchments that align include Tarago, Middle and Upper Bunyip, Cardinia, morning peninsula sub-catchments, Lower Yarra and Brushy Creek.

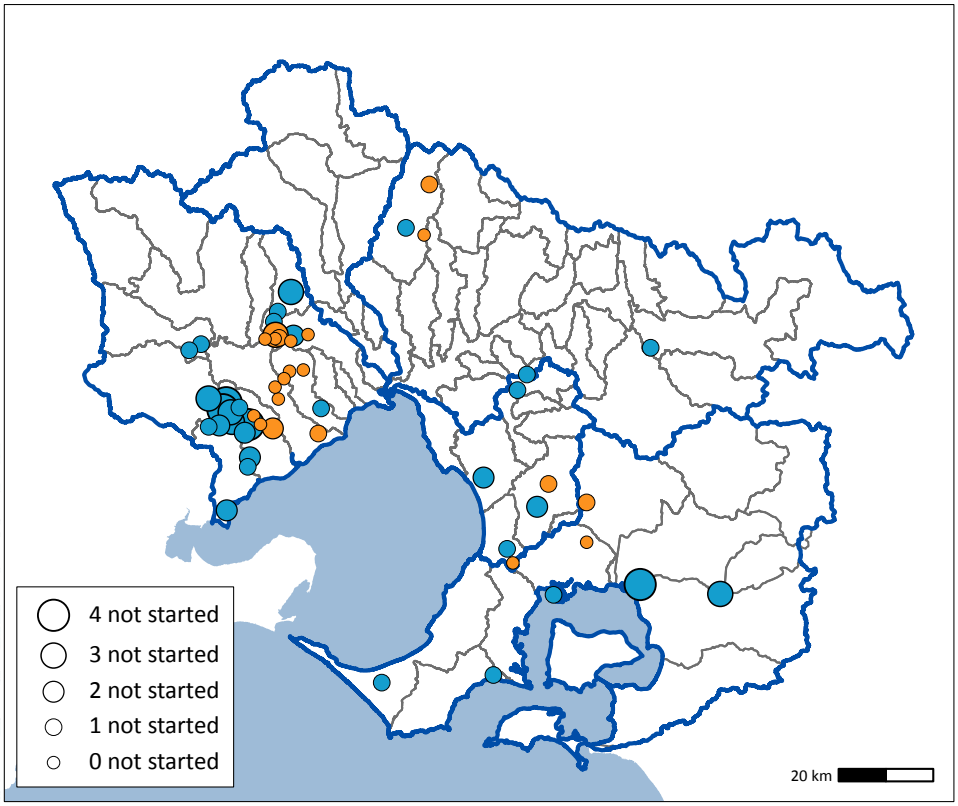


Figure 13. Regional priority wetlands (blue) and those at risk from urban development (orange) and/or at risk of not meeting performance objectives.

Key recommendations relating to Part A

1 Refocus effort

The mid-term review found that the intent of current Performance Objectives is sound; however, the implementation of many Performance Objectives is significantly off-track and requires urgent refocused effort. Recognising that there are constraints and limitations to delivering all outcomes across the region, focus sub-catchments have been identified. These are intended to guide effort and investment over the next five years. As presented in the Science Inquiry, we are facing a warming and drying climate with rapid urbanisation that is leading to stream degradation and loss of wetlands. Based on this, Stormwater, Water for the environment and Vegetation are the most critical Performance Objective groups in the Strategy to focus attention on. Recommendations to refocus effort include:

I-1.1 Accelerate on-ground outcomes in focus sub-catchments and wetlands identified through the evaluation to ensure 10-year targets are achieved.

I-1.2 Concerted effort is required at all levels of management to overcome barriers to the challenging but critical, areas of Stormwater (including natural wetland protection), Water for the Environment and Vegetation.

I-1.3 Prioritise interventions that have immediate outcomes such as fishways for Lang Lang River and Lower Werribee River and stormwater infiltration measures.

I-1.4 Investigate options and implications of providing flexibility in target contribution that reflect the intent of the Performance Objectives (e.g. establishing vegetation outside of priority areas).

I-1.5 Ensure Melbourne Water and other delivery partners where appropriate update guidelines (e.g. managing vegetation) to improve on-ground outcomes (e.g. latest knowledge on how to improve resilience under new climate change projections).

2 Reinvigorate co-delivery

Reinvigorate and improve co-delivery of the Strategy. Melbourne Water to strengthen its role as the Strategy lead – working with the Region-wide Leadership Group to deliver targeted collaboration initiatives focused on engagement, co-planning and co-delivery with HWS partners. This includes:

I-2.1 Identify and leverage opportunities to build appetite and alignment of issues and priorities across HWS partners, including links with the Port Phillip and Westernport Regional Catchment Strategy.

I-2.2 Melbourne Water to clarify accountabilities with partners to progress critical Performance Objectives groups such as water for the environment and stormwater.

I-2.3 Work with HWS partners including agencies and the community to co-plan and co-deliver at multiple scales:

- Enable local, catchment and regional co-delivery particularly in focus sub-catchments.
- Increase the sharing of data, knowledge, research and evaluation initiatives
- Use the proposed principles of collaboration to ensure the learnings from the Mid-term Review are applied. See Appendix 7.

I-2.4 Target at-risk Performance Objectives and complex region-wide issues specifically (but not limited to):

- Stormwater harvesting and infiltration
- Environmental water
- Riparian buffers and protection of high-quality vegetation, and
- Social values (e.g. improving community access to and along waterways)

I- 2.5 Recognise and celebrate local leaders in waterway management, including promoting achievements and encouraging the uptake of community incentives.

I-2.6 Continue to build and embed a culture of knowledge sharing, collaboration and learning within Melbourne Water and with delivery partners.

I-2.7 Improve and streamlining systems, processes and approaches to aid in more effective and efficient co-delivery (e.g. easier grant application processes).

3 Traditional Owners

Engage Traditional Owner Groups to understand their aspirations and expectations for involvement infuture evaluation (e.g. cultural POs, cultural indicators) and implementation of the HWS in line with Water is Life.

PART B

Synthesis of findings by Performance Objective group

Part B focuses on summarising the key findings at the **Performance Objective GROUP AND SUB-CATCHMENT SCALE** relating to **Key Evaluation Question 1a**. To what extent is strategy delivery on track to achieve the performance objectives by 2028? **KEQ 1b**. To what extent has collaboration and co-delivery contributed to achieving the performance objectives so far?

Part B provides an opportunity to drill further into the findings from the collaboration and co-delivery and Performance Objective (PO) evaluations at both a PO group and sub-catchment level. This section connects findings from the multiple lines of inquiry, enabling greater meaning to be drawn from the analysis in order to 'tell the story' at the PO group level and identify key opportunities for implementation improvement. The synthesis presented below is organised by PO groups followed by a summary of the key learnings and common challenges running across the groups.

Detailed methodologies and limitations are provided in Appendices 1-5.

Water for the Environment

Water is critical for waterway ecosystems and managing competing multiple water demands in a drying climate is a very complex issue.

The Strategy set ambitious but necessary targets to return water to the environment in both regulated and unregulated systems.

The mid-term review Science Inquiry found that decreased water availability was one of the top three threats to environmental values that has increased since the start of the Strategy. In particular, the Victorian Government's long-term water resources assessments for each catchment indicated significant declines in water availability. Additionally, the Science Inquiry has identified that we have underestimated the potential impact of climate change on the Healthy Waterways Strategy's long-term targets (10 to 50 years) and, to a lesser extent, the 10-year POs.

Strategy Targets

The HWS sets out 2 RPOs (RPO 11: groundwater and RPO 12: water management and recovery) and several sub-catchment POs for rivers, wetlands and estuaries. These are outlined in Table 11. Note that there is only one quantitative SCPO in this list, which applies to rivers with environmental entitlements (Werribee, Yarra, Tarago) or where water may be purchased for environmental flows (Maribyrnong). The other SCPOs and the RPOs do not currently have a numerical target.

It is worth noting that the intent of these Performance Objectives is similar to the stormwater targets, which also protect flow regimes in urban catchments. Integrated Water Management (IWM) solutions are being used to meet both targets through the use of excess stormwater runoff to address environmental water shortfalls.

Table 11. RPOs and SCPOs relating to Water for the Environment.

Waterway	PO Type	Typical Performance Objective wording	2028 Target
Regional	RPO - groundwater	RPO 11: Understanding of groundwater dependent ecosystems is improved and opportunities to maintain or improve these continue to be investigated.	Qualitative
Regional	RPO – water management and recovery	RPO 12: Water for the Environment continues to be managed and delivered to the region's rivers and wetlands and recovery options continue to be investigated.	Qualitative
Rivers	Increase reserve volume	Investigate options to increase the environmental water reserve by x GL by 2028 to meet ecological watering objectives and cover projected shortfalls. Environmental water recovery targets are captured at lowest downstream sub-catchment, which reflects targets for whole catchment.	Quantitative Werribee 7 GL/y Maribyrnong 5 GL/y Yarra 10 GL/y Dandenong n/a Westernport 1 GL/y
Rivers	Maintain/improve flow regime	Identify and implement opportunities to reduce the key threat of flow stress on waterways by addressing causal factors.	Qualitative
Wetlands	Maintain/improve flow regime	Maintain or improve wetland water regime to support values.	Qualitative
Estuaries	Increase reserve volume	Investigate opportunities to increase the environmental water reserve to meet ecological watering objectives and cover projected shortfalls.	Assessed as part of Rivers PO equivalent above
Estuaries	Maintain/improve flow regime	Maintain critical flow components in refuge reaches to protect instream environmental values.	Assessed as part of Rivers PO equivalent above

Operating Environment

In regulated river systems (those with storage reservoirs), the volume allocated to the environmental water reserve comprises passing flows, above-cap water and/or environmental entitlements. Environmental entitlements are held by the Victorian Environmental Water Holder (VEWH) and delivered by Melbourne Water. These exist in the Yarra, Tarago and Werribee River systems. There is currently no environmental entitlement in the Maribyrnong, but water is purchased opportunistically for the environment.

For other areas across the region, DEECA sets policies on farm dams, domestic and stock and diversion licences. These unregulated rivers are managed through Stream Flow Management Plans (SFMPs), Local Management Plans (LMPs) or Local Management Rules (LMRs) by Melbourne Water and Southern Rural Water (SRW) in their respective areas. In these systems, maximum licensable extractions for each catchment are set by DEECA using Sustainable Diversion Limits (SDL). Melbourne Water also develop Environmental Water Action Plans (EWAPs) in consultation with various stakeholders (e.g. Southern Rural Water, local government, Parks Victoria) for the management `of environmental water in a particular area. To date, several EWAPs have been developed as a mechanism to protect the flow regime of drought refuges and ground water dependent ecosystems (GDEs) in unregulated systems to support implementation of the HWS.

Several Non-Governmental Organisations (e.g. River Keepers and Environment Victoria) are also interested and involved in understanding and influencing the management of water in the region. Groundwater resources are managed by SRW, and as waterway manager, Melbourne Water has a role in understanding and protecting Groundwater Dependent Ecosystems (GDEs).

The Central and Gippsland Region Sustainable Water Strategy (CGRSWS) released in 2022 by the Department of Energy, Environment, and Climate Action (DEECA) aims to return a total of 31.3GL to Traditional Owners and the environment across the region by 2032.

Collaboration Case Study

Recovering water for the environment requires collaboration due to the diverse number of stakeholders using and managing water resources in the region.

The external evaluation of collaboration and co-delivery reported that there is broad support for the co-designed targets for environmental water recovery among the internal and partner stakeholders interviewed and this is reinforced in the inclusion of the targets in the Central and Gippsland Region Sustainable Water Strategy (CGRSWS) released in 2022.

The achievement of this target primarily relies on collaborative effort between Melbourne Water, DEECA, the Victorian Environmental Water Holder, urban and rural water authorities and councils through the DEECA-led Central and Gippsland Region Sustainable Water Strategies (CGSWS) and IWM Forums, markets, use of alternative water and water recovery.

Key findings for this PO group are outlined below, noting that that some aspects of collaboration may not have been surfaced due to the inability to interview some key external stakeholders.

- Internal interviewees acknowledge that the role of the Strategy is to inform state-wide water recovery negotiations and that progress is reliant on state level (DEECA) policy mechanisms.
- Through Melbourne Water's involvement in the IWM Forums and Sustainable Water Strategy development process, the co-designed targets for environmental water recovery presented in the Strategy influenced the state level environmental water recovery targets in the Central and Gippsland Region Sustainable Water Strategy (SWS) (DELWP, 2022) and the Greater Melbourne Urban Water and System Strategy (GMUSS) (Melbourne Water, 2022). This contributes to the foundations for potential future collaboration on environmental water recovery with water authorities, DEECA and local councils.
- There is broad support for the co-designed targets for environmental water recovery among the internal and partner stakeholders interviewed.
- There is, however, limited general 'buy-in' or 'co-ownership' from partner stakeholders for the shared achievement of these targets. As such, there is limited evidence that co-delivery has contributed to the achievement of the targets for environmental water recovery to-date. This is exemplified in the Werribee system where internal interviewees described:

- Collaboration effort is hampered by role conflict within and between organisations that are a resource manager and a waterway manager, and inconsistent management practices, and
- The need for Melbourne Water to take a leadership role in progressing this relationship and clarify internal responsibilities for progressing collaborative work with these key partners.

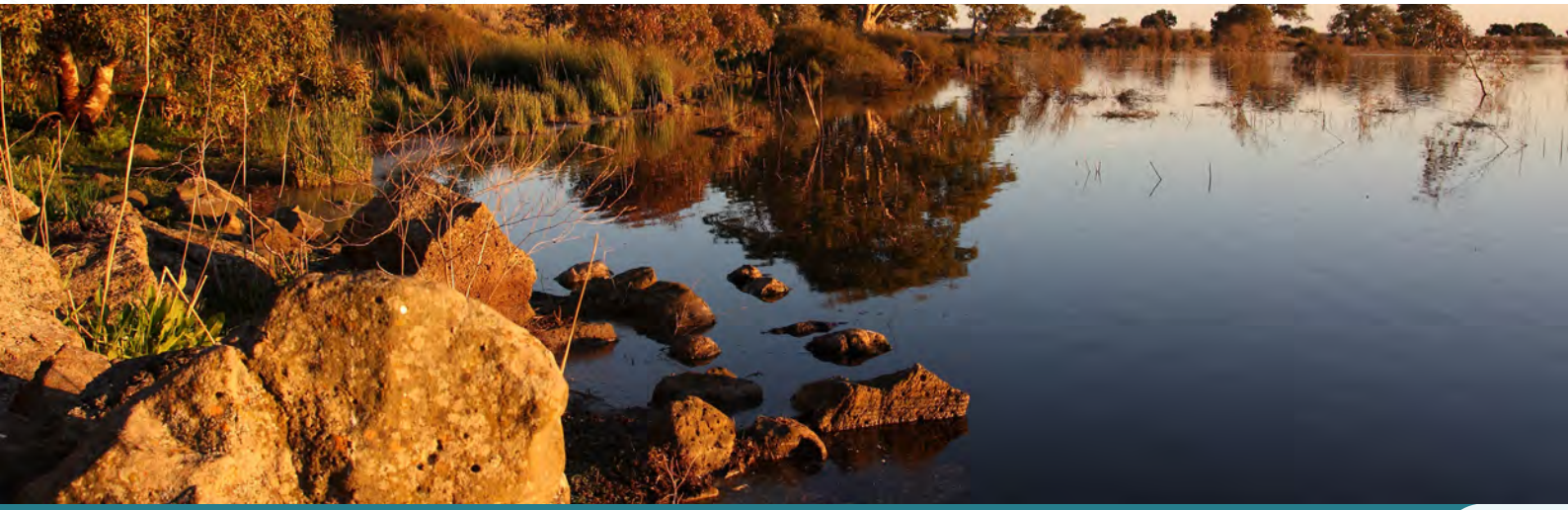
- Beyond the collaboration mechanisms described, interviewees rely on relationships to influence collaboration. Internal interviewees described examples of positive officer-level collaboration with partner stakeholders as developing 'organically' in response to local opportunities, rather than through the influence of the Strategy. Partner stakeholders also described the strong collaborative relationships they have developed with Melbourne Water through the IWM Forums.

Regional Performance Objective Evaluation

The following table (Table 12) provides the status and evaluative reasoning for the Water for Environment related RPOs. The details of the rubric used to evaluate the likelihood of meeting performance expectations by the end of the Strategy are outlined in Appendix 2 METHODS RPO evaluation. RPO 12 is significantly off-track as little progress has been made towards water recovery across the region. This is explored further in the Rivers SCPO section. RPO 11 is on- track as monitoring of groundwater-dependent ecosystems is occurring with some evidence of adaptive management across the region. Further discussion around this is provided in the unregulated sub-catchment Performance Objectives below.

Table 12. Water for Environment RPO assessment summary.

Regional Performance Objective	Evaluative reasoning
RPO 11: Understanding of groundwater dependent ecosystems is improved and opportunities to maintain or improve these continue to be investigated.	**On track to meet performance expectations** Most performance expectations outlined in RPO MEP have been met with evidence of adaptive management and improvement of the monitoring program and Environmental Watering Action Plans. The new project initiated to map the risk of climate change and urbanisation to GDEs will contribute to meeting the last outstanding performance expectation.
RPO 12: Water for the Environment continues to be managed and delivered to the region's rivers and wetlands and recovery options continue to be investigated.	**Significantly off-track – At risk of not meeting performance expectations by end of Strategy** This RPO is linked to SCPOs related to increasing reserve volume and maintaining or improving flow regimes in unregulated systems. Targets and environmental water recovery opportunities have been outlined in the CRSWS to be delivered by 2032. However, a limited number of funded projects are planned to achieve these targets. The Victorian Environmental Water Holder holds water for the environment and is delivered by Melbourne Water on their behalf in regulated systems. This includes temporary trade of unused irrigation allocations being delivered to Jacksons Creek in the Maribyrnong Catchment. It is unclear what proportion of the 23GL per year environmental reserve target has been met to date.



Rivers and Estuaries Evaluation

The current status of the increase reserve volume quantitative SCPO reported in 2021-22 are all significantly off-track (Figure 14) and the likelihood evaluation shows that all sub-catchments are at risk of not meeting the 10-year targets (Figure 15). Werribee is the only sub-catchment where some progress has been made towards the target. All results relating to the data analysis are available in Appendix 10.

Figure 14. Healthy Waterways Strategy website 2022 results for increase reserve volume showing all catchments are significantly off-track.

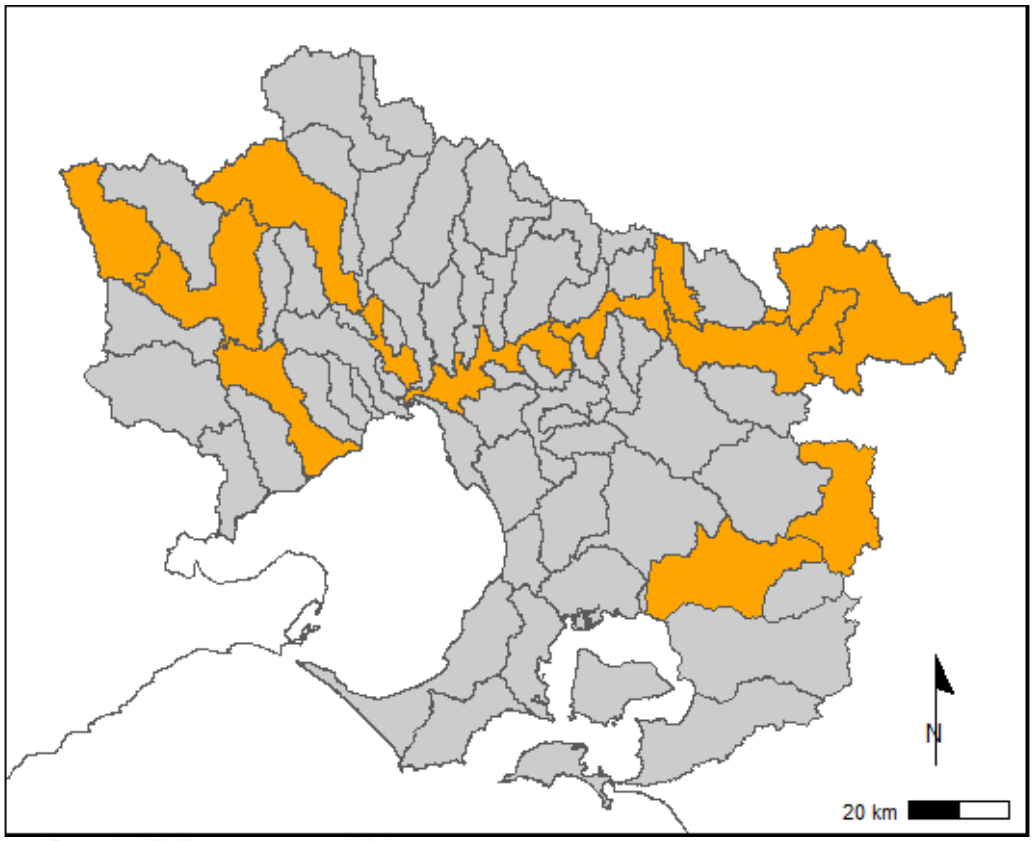


Figure 15. River sub-catchments that were identified as at risk of not meeting target/s for increase reserve volumes for Water for the Environment.

Tracking the SCPOs in unregulated systems is via implementation of area-specific management plans such as Streamflow Management Plans, Local Management Plans and Environmental Water Action Plans. However, it is difficult to evaluate progress as Annual Reports only provide a narrative over the last five years and there needs to be a rubric or clearly defined performance expectations.

In the Yarra catchments there are seven unregulated sub-catchments with high value and flow stress where Streamflow Management Plans have been developed. These plans help guide management interventions such as requiring bans and restrictions. There are 1,810 surface water diverters across the region in Melbourne Water's

management area. The objective of the plans is to ensure water resources are managed equitability across water uses including diverters and the environment. Reporting annually to the Water Minister and to the public is required as part of these plans.

Water uses that use more than 5 ML/y are regulated through licenses, which includes bans and restrictions and license transfers. For all uses, bans and restrictions and license transfers are also used to protect or improve flows in the different systems. License transfers can occur within or outside of the sub-catchment. When a license is sold 20% of the water is returned to the environment and the future license is effectively reduced.

While there are no numerical targets, the Long-Term Water Resources Assessment (DELWP 2020) indicates that water availability is declining across all systems in the region and therefore the overall trajectory of target attainment is likely to be similar to the quantitative SCPO detailed above.

Factors Influencing Implementation

The following factors influencing implementation include:

- **Climate change** – Water resources are limited. The LTWRA has determined that there has been an average decrease of 14% in available water across the region. Accelerated rates of climate change mean that the recovery volumes are already insufficient to meet required flow regimes.
- **Timing of delivery** – The water recovery targets have a solid scientific basis but delivery in 5-10 years is challenging due to longer time frames for legal processes and development of infrastructure projects. Formally transferring water to increase the environmental entitlement in any system takes time as it requires a formal process in government and legislation. This means that often temporary trading is the only short-term conduit.
- **Lack of Environmental Entitlement in Maribyrnong** – The Maribyrnong has no formal water environmental entitlement and currently, environmental water is purchased in small amounts through ad hoc temporary licence transfer. The opportunity to use stormwater from the Sunbury IWM project is currently being explored, however implementation of this project is still several years away.
- **Innovative solutions** – There is a lack of in incentives and/or capital funds to develop innovative solutions to improve flows and increase water volumes for the environment (e.g. buyback schemes, reconfiguration, manufactured water).
- **Internal resourcing** – Melbourne Water needs more planning resources to coordinate strategically and consistently across agencies.
- **Alignment with co-delivery partners** – There is conflict between roles as a resource manager vs a waterway manager both within and between organisations and inconsistencies between management practices (e.g. no SFMPs or LMRs in Werribee or Maribyrnong). Clear responsibilities and accountabilities for all partners is critical to success.
- **Co-delivery with CGRSWS** – There is a lack of detailed implementation planning for the water recovery targets and the actions required for unregulated systems within both the HWS and the Central and Gippsland Region Sustainable Water Strategy (CGRSWS). See Appendix 14.
- **Compliance** – Bans and restrictions are not enforced consistently across the region and the approach to compliance between agencies needs to be tightened. There is anecdotal evidence of over-extraction, which needs to be closely monitored. There is also a lack of transparency of information (e.g. location of licenses, volume, actual take vs sleeper licences, rosters/bans/restrictions and conditions on licences).
- **Passing flows** – Current rules for passing flows (minimum volume of water that must be released from a reservoir) are outdated and open to interpretation. There is a need to review how these rules are applied.
- **Policy and guidance** – There is a lack of guidance and policy around several key areas including:
  - The use of alternative water for environmental water (e.g. substitution/reallocation of consumptive use vs direct use, water quality of recycled water, roles and responsibilities, cost sharing arrangements, costs and the use of desalinated water).
  - In unregulated systems it is very difficult to impose limits on Domestic & Stock use (e.g. volumes permissible and passing flows.
  - Sustainable Diversion Limits have not been updated since 2014 (e.g. no updates for climate change) and many SDLs are over allocated due to allocations made prior to the introduction of the SDL.

Refinement of Performance Objectives

The method used to assess whether POs needed to be updated is outlined in Appendix 5 with detailed results and potential changes for consideration outlined in Appendix 12.

In summary, there is a need to improve the wording of the regulated water POs to provide greater clarity on where the targets apply in the catchment. There is also a missing PO for the Watts River rural sub-catchment which is immediately downstream of the Maroondah dam where flow releases will be delivered and hence targets achieved. Refer to Table 48 in Appendix 12 for proposed changes.

For unregulated sub-catchments there is a need to develop a rubric in-order to better evaluate these qualitative POs both annually and at the end of strategy evaluation. Refer to Table 48 in Appendix 12 for proposed changes.

Wetlands evaluation

Similar to the equivalent SCPO for rivers, this Performance Objective aims to meet ecological watering objectives for the protection of wetland values.

A case study below describes a watering event at the Annulus billabong.

Strategy to implementation - Annulus billabong watering event 2022

Annulus billabong is an important billabong on the Yarra (Birrarung) floodplain, situated on Yarra Flats near Heidelberg. It's home to many special plants and animals. It has a deep cultural connection for the Wurundjeri Woi-wurrung people. Due to its unique values, Melbourne Water, Parks Victoria, Wurundjeri Woi-wurrung Corporation, Victorian Environmental Water Holder and Banyule City Council have been investigating the long-term water needs of Annulus Billabong to ensure the site's ecological, cultural and liveability future.

What's the issue?

Billabongs are generally former paths of the river that have been cut off and are sometimes known as oxbow lakes. The billabongs are currently under threat due to a range of issues, including changes to the water they receive. The billabong fills periodically from high flows from the Yarra River. Changes to river flows as Melbourne has grown over many years has reduced how frequently the billabong fills. This means that the billabong doesn't receive the watering it needs to support the vegetation in and around it.

What did we do?

Some sections of the billabong are in good condition, but the habitat in and around the channel is degraded. In order to protect and maintain the billabongs ecological values, the delivery of environmental water to the site mimics what would naturally occur.

Where did the water come from?

Water was pumped from the Yarra River into the billabong. The water was accounted for under Yarra River's Environmental Entitlement, held by and authorised by the Victorian Environmental Water Holder in line with its Seasonal Watering Plan 2022-23. This watering was a follow up event from 2020 and 2021, as the monitoring from the events recommended a follow up watering. Further monitoring will be undertaken to understand how the billabong responds to the water levels and how the vegetation responds.

How does this work delivery on objectives in the Strategy?

Annulus billabong is a priority wetland in the Strategy. The PO for this wetland is "Investigate opportunities to improve wetland water regime to meet ecological watering objectives, improve ecosystem services, cultural and social value." These types of watering events improve the water regime to this priority wetland and is part of a landscape scale approach to the lower Birrarung billabongs.

The likelihood of meeting the 10-year targets was based on whether the PO had started or not. A 'Not Started' status resulted in a wetland being at risk of not meeting the 10-year target. All catchments except Maribyrnong are rated as high risk of not meeting the 10-year targets by 2028.

In particular, there were 27 wetlands across four catchments identified as at risk (see Table 13) and the Dandenong and Werribee catchments had over 60% of priority wetlands where works had not yet commenced. Based on the annual progress reports there has been very little on-ground intervention to date.

A notable exception is in the Yarra Catchment where a landscape scale approach has been applied to five priority wetlands that collectively form the lower Birrarung billabongs. This includes the Annulus billabong that received water from the Yarra River as part of a watering event in 2022 (see case study in the box above). Ecological responses to the billabong inundation have been monitored in conjunction with Wurundjeri Narrap Rangers, Melbourne University and Birdlife Australia.

Table 13. Summary of SCPO progress for Water for the Environment in priority wetlands.

Catchment	Maintain/improve flow regime
Dandenong	Not started in 7 wetlands (out of 11 wetlands). *Braeside Park, Dwarf Galaxias Conservation Wetland, Dwarf Galaxias Habitat Ponds, Hallam Valley Floodplain Wetlands, Tamarisk Waterway Reserve, Tirhatuan Wetlands, Winton Wetlands.*
Maribyrnong	In progress. Macedon Ranges Shire Council and Melbourne Water are investigating opportunities to improve the flow regime at the priority wetland in this catchment.
Werribee	Not started in 12 wetlands (out of 19 wetlands). *Cherry Lake, Deanside Marsh, Paynes Road North Swamp, Holden Road Wetland, Kirks Bridge Road West Wetland, Greens Road East Wetland No. 3, West Quandong Swamp, Balls Wetland Complex, Black Swamp, Rabbiters Lake & Swamp, Target Range Swamp, WTP - Paul & Belfrages Wetland.*
Westernport	Not started in 4 wetlands (out of 6 wetlands). *Yallock Creek Floodplain Wetlands, Cardinia Creek Retarding Basin Wetlands, Lang Lang Floodplain Wetlands, Tootgarook Swamp.*
Yarra	Not started in 4 wetlands (out of 15 wetlands). *Hearnes Swamp, Kalkallo Common, Ringwood Lake, Yarra Bridge Streamside Reserve.*

Factors Influencing Implementation

Many of the factors affecting implementation identified above are relevant to natural wetlands as well. Specific additional factors are outlined below:

- **Internal resourcing** – More planning and delivery resources are required implement actions
- **Policy and guidance** – There is a lack of policy to require protection of wetlands impacted by stormwater runoff in urban growth areas and a lack of guidance on approaches to protect flow regimes, and
- **Use of entitlements or licenses** – Active watering of wetlands and billabongs (as opposed to re-creating floodplain connections) requires the use of an entitlement or license.

Refinements to Performance Objectives

The method used to assess whether POs needed to be updated is outlined in Appendix 5 with detailed results in Appendix 12.

In summary there is a need to improve wording of the PO for the wetland in the Eumemmering Creek sub-catchment and to remove reference to Yarra Pygmy Perch as they are not found in this system.

Summary

The HWS was co-designed and set targets for the recovery of water, and the Science Inquiry found that the targets remain appropriate and were based on sound scientific evidence. The Collaboration evaluation reported that there is broad support for the co-designed targets for environmental water recovery among Melbourne Water and the partner stakeholders interviewed, and this is reinforced in the inclusion of the targets in the Central and Gippsland Region Sustainable Water Strategy (CGRSWS) released in 2022. However, under a business-as-usual approach, we are unlikely to meet most of the 10-year water recovery targets for water for the environment.

The SCPOs set for unregulated systems where diversions and farm dams impact on flow regimes and water availability is becoming in increasing concern due to climate change, are somewhat vague in their description and do not have a rubric or clear performance expectations set. It was difficult to evaluate progress, however, several issues with management were identified.

In summary, the reasons for POs relating to Water for the Environment being off-track are outlined in Figure 16. While these factors were based on the SME workshops they are reflective of the collaboration evaluation findings. Key issues are expanded on below.

Figure 16. Summary of key barriers to implementing SCPOs relating to Water for the Environment.

While policy alignment with the CGRSWS is fundamentally important to achieving these targets, it is worth noting that there is limited detail outlined in the CGRSWS to describe the actions that will substantially drive the attainment of these volumes and the CGRSWS has a 10-year timeframe and therefore goes beyond the 2028 targets in the HWS. Key relevant actions in the CGRSWS are outlined in Appendix 14.

One of the key barriers to progressing the targets is 'buy-in' or 'co-ownership' from partner stakeholders. The PO evaluation identified Melbourne Water must work collaboratively with key partners, Southern Rural Water, DEECA and VEWH, and be at the table during decision-making processes.

The PO and collaboration evaluation both highlighted that there is also a conflict between roles for Melbourne Water as resource manager vs waterways manager in delivering these targets and inconsistencies between management practices (e.g. no SFMPs or LMRs in Werribee or Maribyrnong). Clear responsibilities and accountabilities for all partners is critical to success. At present there is inconsistency in the use of existing mechanisms (e.g. bans and restrictions, SFMP's etc.). Bans and restrictions are reportedly not enforced consistently across the region and the approach to compliance between agencies needs to be tightened. A state-wide compliance training program should address this issue to some extent.

Climate change increasingly threatens water availability. The Long-Term Water Resource Assessment (LTWRA) (DELWP 2020) determined that there has been an average decrease of 14% in available water for all users across the region over the assessed time period (1997-current) compared to the historical record. Competition between demand for consumptive use and the water for the environment is unfavourable for the environment in all systems other than the Bunyip catchment and the Bass River, where sharing of the available water between consumptive and environmental uses has stayed the same over the assessable period. Accelerated rates of climate change mean that the recovery volumes are already insufficient to meet required flow regimes. As part of the Mid-term Evaluation, the Science Inquiry has identified that this threat is greater than planned for when the Strategy was developed in 2018. This threat can also be exacerbated by periods of drought in the future.

The PO evaluation also highlighted that there is a lack of guidance and policy around the use of alternative water for environmental water. This includes aspects such as substitution/reallocation of consumptive use vs direct use, water quality of recycled water, roles and responsibilities, cost sharing arrangements, increased costs, reliance on third-party acceptance, substitution of future desalinated water for Environmental Water.

The HWS SCPOs in 53 of 69 sub-catchments relating to maintaining or enhancing flow regimes in unregulated water systems to protect environmental values were difficult to evaluate because HWS annual reports provide only narrative descriptions, lacking specific performance metrics or targets. While there are no numerical targets, the LTWRA indicates that water availability is declining across all systems in the region and therefore the overall trajectory is likely to be similar to the quantitative SCPO detailed above.

The mechanism for tracking progress involves area-specific management plans such as Streamflow Management Plans, Local Management Plans, and Environmental Water Action Plans (EWAPs). EWAPs are developed by Melbourne Water in collaboration with various stakeholders to manage environmental water in specific areas. Presently, there are 15 EWAPs, but there's limited information available about the status of actions within these plans. Furthermore, there are no performance expectations for EWAP actions in order to assess their effectiveness. There is a need to consolidate information in these action plans to enable regular tracking of progress, create clear linkages to the SCPOs and better evaluate the likelihood of achieving Strategy targets.

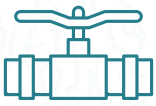
The progress of the equivalent SCPO aimed at achieving ecological watering objectives for the preservation of wetland values was assessed based on whether the objective has been initiated or is labelled 'Not Started in HWS annual report,' indicating it's at risk of not meeting the 10-year target if the latter applied. The evaluation revealed that 27 wetlands across four catchments are at risk, with the Dandenong and Werribee catchments having over 60% of priority wetlands where work has not yet begun.

One of the key barriers is resourcing for planning and implementation of actions across the various delivery partners. Another key barrier identified during the evaluation was that active watering of wetlands and billabongs requires the use of an entitlement or licence. These can be difficult to obtain when all entitlements are in use.

The synthesis of the Water for Environment PO group has identified the following opportunities to improve implementation:

Increase reserve volume

- Stormwater/Manufactured water (IWM) - an opportunity to return water to the environment (appropriate quality and quantity).
- Environmental water representatives from Melbourne Water need to be included when water resources are planned so that water for the environment is considered.



Maintain/improve flow regime

- Consistency is needed in the use of existing mechanisms (e.g. bans and restrictions, SFMP's etc.) and greater alignment between waterway and water resource managers.
- Development of criteria to track progress of qualitative POs or develop quantitative targets.

Improved collaboration

- CGRSWS supports greater collaboration across multiple agencies.
- Collaborate on climate change adaptation.
- Planning and implementing the use of alternative water sources together.
- Examine what instruments are working well.
- Increase senior leadership/board commitment across agencies.

Optimise existing Environmental Water entitlements

- Implement CGRSWS actions to improve the efficient and effective delivery of the available allocation in Werribee and Maribyrnong.

Recommendations

4 Water for the environment

Regulated systems (environmental water entitlements) Werribee, Jacksons/ Maribyrnong, Yarra and Tarago

I- 4.1 Prioritise creating an environmental water entitlement for the Maribyrnong catchment to protect the values in Jacksons Creek. Potential water sources could include the Sunbury IWM scheme and smaller existing reservoirs in the catchment.

I- 4.2 Improve efficiency and outcomes by ensuring environmental water representatives are involved in water resource planning.

I- 4.3 Melbourne Water and partners to continue to actively participate, collaborate and advocate for environmental water recovery through the IWM forums and seek to influence state-level strategies and policies.

I- 4.4 Progress outcomes for environmental water in regulated systems by focusing collaboration across agencies on key actions outlined in the CGRSWS including:

- ***Action 8-11****: increase the effectiveness of environmental water releases and address constraints to their delivery by exploring options to: upgrade Rosslynne Reservoir outlet to allow larger releases of environmental water.*
- ***Action 4-1****: Investigate options to return water to the environment and Traditional Owners as manufactured water sources are planned for Greater Melbourne and Geelong.*
- ***Action 4-2****: Commitment to consider how river entitlements can be reduced via water efficiency, IWM and substitution with manufactured water sources.*
- ***Action 4-11****: Investigating optimisation of Yarra system passing flow arrangements.*
- ***Action 8-10****: Improve fish passage in the Wirribi Yaluk (Werribee River).*

Unregulated systems (farm dams and diversions)

I- 4.5 Relevant delivery partners including, Melbourne Water, Southern Rural Water, Water Authorities and DEECA to work together in **unregulated** focus sub-catchments to progress improvements to environmental water management.

I- 4.6 Increase the protection of flow regimes through consistent application of available instruments and guidance (e.g. GED, SFMPs, metering, Bans and Rosters, compliance) are being applied consistently and adequately across the region.

I- 4.7 Explore new approaches and mechanisms to address flow stressed waterways especially in light of climate change.

I-4.8 Progress outcomes for environmental water in unregulated systems by focusing collaboration across agencies on key actions outlined in the CGRSWS including:

- ***Action 4-13****: Review of water resource risks in small, dry, peri-urban catchments.*
- ***Action 4-18****: Updating groundwater management arrangements and implementing*
- *priorities for reform.*
- ***Policy 4-6****: The Victorian Government will work with Melbourne Water and Southern Rural Water to ensure that license holders and the community have access to consistent and accessible information about water.*
- ***Policy 7-1****: Maximising water efficiency in agriculture.*
- ***Action 8-3****: Improve flows in Stony Creek.*

Dwarf galaxias *(Galaxiella pusilla)* Credit: Rhys Coleman

Stormwater

Urban stormwater run-off is the most critical threat to the ecological health of Melbourne's waterways. The Healthy Waterways Strategy sets aspirational, place-based targets for stormwater harvesting and infiltration aiming to maintain the natural water cycle and protect the ecological health of our waterways. These targets have been set in response to the Melbourne community's strong support for stormwater harvesting and infiltration to halt further degradation to waterways.

The Science Inquiry highlighted several key issues relating to this PO group:

- Urban development is one of the top three threats that has increased since 2018, and
- The biggest threat to wetlands and headwater streams in our region is urban development.

Strategy Targets

The Strategy sets out five RPOs to address the threat of urban development ranging from protection of natural wetlands and headwater streams to policy, guidance and capacity building objectives. The SCPOs focus on managing runoff from impervious surfaces from new development and, in some areas existing development (Table 14). The targets for rivers in particular, are based on volumes of stormwater that need to be harvested and infiltrated to maintain or restore flows to a more natural regime. The Strategy identifies Stormwater Priority Areas where stormwater management seeks to maintain the natural water cycle necessary to protect ecological health of waterways in these areas. These areas are primarily focused on greenfield areas with high environmental significance. It is recognised that development will occur outside these priority areas but narrowing the focus was required for the period of the Strategy. An implicit assumption is that by achieving the stormwater flow targets the current best practice water quality standards will also be met.

Table 14. List of Stormwater RPOs and SCPOs.

Waterway	PO Type	Typical Performance Objective wording	Target
Regional	RPO-13 (Standards and tools)	Industry capacity for whole of water cycle and stormwater management is increased to enable collaboration, improved access to information and knowledge, and a skilful and capable industry with strong established networks.	Qualitative
Regional	RPO-14 (Industry capacity stormwater)	Standards, tools and guidelines are in place and implemented to enable re-use and infiltration of excess stormwater, and protect and/or restore urban waterways.	Qualitative
Regional	RPO 15 (Planning system)	Victoria's planning system is used effectively to protect and enhance waterway values.	Qualitative
Regional	RPO-16 (Headwaters)	Protection mechanisms are in place for headwaters to ensure that they are retained as features in the landscape for environmental, social, cultural and economic benefits.	Qualitative
Regional	RPO-29 (Wetland vegetation protection)	Programs, standards, tools and guidelines are in place to protect wetland vegetation communities from urban and rural threats, including adequate planning controls.	Qualitative
Rivers	Harvest	For every hectare of new impervious area harvest x ML/y. This equates to x ML over the life of the Healthy Waterways Strategy.	Quantitative
Rivers	Infiltrate	For every hectare of new impervious area infiltrate x ML/y. This equates to x ML over the life of the Healthy Waterways Strategy.	Quantitative

Rivers	Treat existing development	Improve stormwater condition by treating existing and future urban development so directly connected imperviousness (DCI) is below x%.	Qualitative
Wetlands	Maintain systems	Maintain the stormwater treatment design intent.	Assessed as part of RPO-18 (Asset management)
Wetlands	Implement plans	Ensure appropriate planning controls are in place.	Assessed as part of RPO-15 (Planning system) and RPO-29 (Wetland vegetation protection)

Operating environment

State government agencies including DEECA, Department of Transport and Planning (DTP) and the EPA set the overall planning, policy and regulatory framework for stormwater and at present, stormwater assets and services are jointly managed by Melbourne Water and 38 councils. A number of key stakeholders are involved in the land development process including developers, peak bodies (e.g. UDIA), local Councils, Melbourne Water, Water Retail Companies and the Victorian Planning Authority (VPA). In addition, Stormwater Victoria provides leadership; advocacy and technical support and Clearwater provides a training and capacity building program for Melbourne's water sector, supporting skills, knowledge and networks in IWM. Other groups like the River Keepers also play a role in advocacy.

Managing stormwater is complex for several reasons and achieving the HWS flow targets requires transformative change for the stormwater industry. However, since the HWS was released there has been a number of enabling policy changes to support progress including Integrated Water Management (IWM) Forums which were established by DELWP (now known as DEECA) in 2018 to identify, prioritise and oversee the implementation of collaborative water opportunities. The targets in the IWM catchment plans align with the HWS. Other significant enabling changes include the release of the EPA stormwater guidance which sets out stormwater standards for development that align with the HWS stormwater targets and the CGRSWS which has a number of policy and actions that will drive the use of manufactured water (e.g. stormwater) and progress other necessary actions.

The new EPA stormwater guidance provides a mechanism for flow objectives to be addressed outside of the HWS priority areas. While they are a lower standard than the priority areas it is a step forward from the 1999 Best Practice standards.

With respect to protection of natural wetlands from the impacts of urban development, an interagency working group has been formed. In response to the first Annual Report, the HWS Region-wide Leadership Group (RLG) requested a discussion paper on the problem, the policy and planning context, and options for improved management. This paper found that the basic foundations of managing wetlands in urban and peri-urban environment is not developed (Melbourne Water 2020c). The issue is also discussed in the Science Inquiry Wetlands paper (*Wetlands: A Technical Report to Inform the Healthy Waterways Strategy Mid-term Evaluation)*.

Case Study – Building industry capacity and guidance

This case study summarises how flow-based stormwater assets can be used to restore the waterway health of Little Stringybark Creek and Dobsons Creek. Another example is the Monbulk Creek Smart Water Network. Further demonstration sites that apply to a broader range of scenarios would further benefit the industry's capacity to deliver. It would also reinforce to industry partners that these assets are "reasonably practicable" and are fundamental to complying with the GED. Melbourne Water is currently working on stormwater industry guidance relating to RPO 13 and 14, which will improve industry capacity more broadly. Further detail on how this information cascades down into the delivery of place-based targets is still lacking.

Strategy to implementation – restoring the health of Little Stringybark Creek and Dobsons Creek

The primary cause of urban stream degradation is uncontrolled runoff from impervious surfaces. through stormwater drainage networks. The resulting disturbances are both hydraulic, arising from larger, more frequent high-flow event and lower dry weather flows, and chemical, arising from the complex cocktails of pollutants associated with impervious runoff. In response to this, alternative drainage approaches have been advocated, that attempt to restore the natural hydrology of a catchment, through the installation of stormwater control measures (SCMs).

What did we do?

Over eight years beginning in 2009, over 600 dispersed stormwater control measures were constructed across two peri-urban catchments: Little Stringybark Creek and Dobsons Creek. These measures treated runoff from 4 km^2 of urban development across the two catchments. The aim was to improve both water quality and restore important elements of the natural flow regime, being designed to reduce contaminated stormflows via infiltration, harvesting and evapotranspiration.

What did we find?

The experiment has demonstrated that important aspects of stream ecosystem structure and function degraded by urban stormwater drainage can be restored. The project has also informed how stormwater control measures should be designed for stream protection and restoration. The project underscores the challenges in implementing such measures across catchments for stream protection, highlighting the need for large stormwater harvesting demand, and adequate space in appropriate parts of the catchment for stormwater management.

How does this work delivery on objectives in the Strategy?

The findings from this project support future projects by informing best practice approaches for stormwater harvesting and infiltration. This in turn aids the long-term progress towards objectives, such as "*For every hectare of new impervious area harvest/infiltrate X ML/year*."

Collaboration Case Study (Precinct Structure Plans and Sunbury)

The Strategy presents a co-designed target to increase stormwater harvesting and infiltration across the region, withthe contribution of 36 priority catchments to this target outlined in the Co-Designed Catchment Programs. It also presents two Region-wide Performance Objectives (RPOs 13 and 14) that respectively address stormwater industry capacity building, and standards, tools and guidelines to enable re-use and infiltration of excess stormwater to protect and/or restore urban waterways. There are no statutory accountabilities for stormwater harvesting and infiltration, with the achievement of these targets requiring collaboration from a range of government, council and industry stakeholders under a complex policy and regulatory framework.

For stormwater, the independent evaluation of collaboration and co-delivery focused on the role of the Strategy within Precinct Structure Plans (PSPs) and the Sunbury Stormwater Harvesting Scheme project. Commenced in 2016 and led by Melbourne Water, the Sunbury project has a Steering Group and an officer level working group with collaboration partners Greater Western Water, Hume City Council and DEECA.

The key findings of the independent evaluation of collaboration and co-delivery under the Stormwater PO group are that:

- Most internal Melbourne Water and partner interviewees described strong support for the Strategy's co-design process, the stormwater targets and the science supporting them, with some internal stakeholders feeling they were not adequately consulted in the co-design process and that the targets were too aspirational.
- This tension extends to internal and partner interviewees describing how there is no single Melbourne Water position on implementing the Stormwater targets in the Strategy. Multiple groups within Melbourne Water are seen to have important but conflicting roles and drivers in implementation. The absence of a clear governance process to resolve these conflicts and understand risks to manage them across the business has limited progress.

- Examples of effective collaboration are occurring at the officer level, specifically including the Sunbury Stormwater Project. Internal and partner interviewees described how the officer level working groups and strong relationships between individuals were the key elements contributing to the collaboration's effectiveness.
- These have, however, only contributed limited progress in co-delivering the Strategy targets – with significant additional barriers for partner buy-in to co-delivery identified as:
  - The complexity of the policy environment
  - The lack of statutory accountabilities for stormwater harvesting
  - The limited 'co-ownership' of the Strategy across partner stakeholders, with many internal and partner stakeholders considering the Strategy to be 'owned' by Melbourne Water
  - The absence of implementation plans and clear accountabilities with stakeholders unclear on their role in co-delivery, and
  - The limited influence of the Strategy on stakeholder decisions related to the VPA planning scheme.

Regional Performance Objective Evaluation

Of the six RPOs relating to stormwater, one is on-track and five are slightly off-track (see Table 15). Appendix 2 set out the rubric used to evaluate the likelihood of meeting performance expectations by the end of the Strategy.

Table 15. Stormwater RPO assessment summary.

Regional Performance Objective	Evaluative Reasoning
RPO-13: Industry capacity for whole of water cycle and stormwater management is increased to enable collaboration, improved access to information and knowledge, and a skilful and capable industry with strong established networks.	⚠ **Slightly off-track – At risk of not meeting performance expectations by end of Strategy** The performance expectations of this RPO were redefined in March this year due to the need to clarify the foundational elements needed to support the implementation of the sub-catchment stormwater PO targets. The four main themes for the performance expectations are: • Capacity has increased • Collaboration is evident • Strong established networks, and • Improved access to information and knowledge The HWS Annual reporting has focused on two of the performance expectations for capacity building and strong established networks through the work and events delivered by Clearwater. However, certain aspects still need to be covered, such as how networks have strengthened over time or how feedback from capacity-building events demonstrates increased knowledge and awareness of stormwater implementation practices (e.g., infiltration and harvesting targets). While improved access to information and knowledge has been progressed through the Online Navigator Tool Resource Portal to assist planning system users in identifying stormwater management requirements set out in the Victoria Planning Provisions, it is unclear how information channels about stormwater management (e.g. Clearwater Website, DEECA IWM webpage) have been improved or the extent they support collaboration.
RPO-14: Standards, tools and guidelines are in place and implemented to enable re-use and infiltration of excess stormwater and protect and/or restore urban waterways.	⚠ **Slightly off-track – At risk of not meeting performance expectations by end of Strategy** The performance expectations of this RPO were redefined in March this year due to the need to clarify the foundational elements needed to support the implementation of the sub-catchment stormwater PO targets. Several documents have recently been published that contribute to this RPO. The EPA published publication 1739.1: Urban stormwater management guidance in July 2021. The Healthy Waterways Strategy Stormwater Targets: Practitioner's Note was also published by Melbourne Water. These two pieces align to provide consistent flow targets and information for practitioners about harvesting and infiltration targets. An update to the MUSIC guidelines is in development and has included industry consultation. The update is being staged in two parts and it is unclear when the releases are expected. A Stormwater Industry Guidance Plan is in development and close to completion. While there is evidence of several guidance notes being developed, it is unclear if work is underway to strengthen policy and planning frameworks to regulate the new stormwater standards and this needs to be addressed in future HWS Annual reports.

RPO-15: Victoria's planning system is used effectively to protect and enhance waterway values.	⚠ **Slightly off-track – At risk of not meeting performance expectations by end of Strategy** HWS annual reporting outlines several different planning initiatives, guidelines and policies that are either indevelopment or have been finalised to protect and enhance waterways, such as: • Port Phillip and Westernport Catchment Management Authority's Regional Catchment Strategy • Environmental Protection Authority Urban Stormwater Management Guidance • Victorian Governments Planning Framework for Land Use and Development • Victorian Governments Precinct Structure Plan Guidelines • Victorian Governments Sustainable Water Strategy for the Central and Gippsland Region. • Victorian Governments Waterways for West Action Plan • Council Alliance for Sustainable Built Environments Sustainable Subdivisions Guidelines • Melbourne Water Waterway Corridor Guidelines for Greenfield Areas • Planning controls to protect the urban reaches of the Yarra River from inappropriate development, and Melbourne Urban Stormwater Institutional Arrangements Review (MUSIA). However, as it is still being determined how effectiveness is defined for this RPO or the extent to which some of these documents help to protect and enhance waterway values, this RPO has been evaluated as slightly-off-track.
RPO-16: Protection mechanisms are in place for headwaters to ensure that they are retained as features in the landscape for environmental, social, cultural and economic benefits.	⚠ **Slightly off-track – At risk of not meeting performance expectations by end of Strategy** While there is evidence of multiple projects and initiatives underway or completed to provide important foundational information that meets some of the performance expectations of this RPO, more than half of the performance expectations are yet to progress and hence it is slightly off-track. New Precinct Structure Plan Guidelines were released on 21/22 and have been used in Craigieburn Precinct Structure Plan to retain the headwaters of a waterway. DELWP released Waterway identification guidelines in 2002 that assist in interpreting the Water Act definition for waterways, and a new designated waterways layer has been developed that includes headwater streams. It needs to be clarified from HWS Annual Reporting if these are being used in all aspects of planning yet (e.g. PSPs, DSSs, and other referral processes by all delivery partners). Research is underway to improve knowledge of the role of headwater streams in different land uses to mitigate nutrient and stormwater impacts. On the basis that approximately 51 km of headwater streams are proposed to be piped, 192km proposed to be channelised and 17 km planned to be removed or re-directed in Precinct Structure Plans and Developer Services Schemes, more progress is needed to meet the remaining performance expectations by 2028. The importance of headwaters were flagged in the focus sub-catchments highlighted in the Science Inquiry.
RPO-18: Critical waterway health assets including stormwater treatment systems, fishways and erosion control structures, are maintained for their designed purpose or the same outcomes are delivered by alternative means.	⚠ **Slightly off-track – At risk of not meeting performance expectations by end of Strategy** HWS Annual reporting for this RPO has focused on outputs, and as such, the Performance Objectives relating to outcomes have yet to be addressed, so progress on these is unknown. Melbourne Water has an asset management plan that supports the maintenance and renewal of assets such as fishways, erosion control structures and stormwater quality wetlands. There is reported evidence of regular maintenance and renewal of all three asset classes. No evidence has been provided where softer bank protection structures have been implemented to seek better environmental outcomes or examples where existing wetlands have been retrofitted to contribute towards Strategy infiltration and harvesting targets. While there is reported involvement in research, it does not relate to the performance expectation of understanding how asset performance has improved waterway conditions and values.
RPO-29: Programs, standards, tools and guidelines are in place to protect wetland vegetation communities from urban and rural threats, including adequate planning controls.	✓ **On track to meet performance expectations** The Wetland MEP has been developed and monitoring results are provided online at the HWS report card website. Research has enabled the database and mapping of natural wetlands to be improved and this information has been shared with HWS partners and is available on the HWS website. A collaborative approach by HWS partners through a working group is currently underway on developing guidance and mechanisms for natural wetland protection. A decision risk tool has been developed to support priority setting and action planning for natural wetlands, particularly on private land. However, four natural wetlands have been lost since the beginning of the Strategy and approximately 14 priority wetlands have been identified of being at risk due to urban development. This is clearly not 'on track' but the performance expectations do not mention maintaining the number of natural wetlands and hence this RPO performance objectives urgently need to be addressed for the evaluation result to reflect this significant issue.

Rivers Evaluation (Harvest and Infiltration)

The current status as reported in 2021-22 is shown in Figure 17. For the objective of 'Harvest', the Maribyrnong and Werribee catchments are currently on-track, and Westernport and Yarra catchments are slightly off-track. For the objective of 'Infiltrate', all catchments where the targets apply are significantly off-track except in the Maribyrnong catchment, which is currently on-track. The Dandenong catchment is not presently included in annual reporting as these areas are focused on disconnecting existing development.

Figure 17. Summary of HWS Annual Report 21/22 results for stormwater harvest & infiltration at catchment scale.

Progress towards the stormwater targets is based on what is built as well as what is planned over the life of the strategy. Figure 18 shows the progress towards the target for both harvest and infiltrate. The Maribyrnong catchment is progressing well but has a relatively small target. In comparison, the Yarra catchment has a large target and is a significant gap between what is planned and the 2028 target. Both Werribee and Westernport catchments have yet to make any progress towards infiltration targets over the past five years, and so achieving these targets are an area of concern.

Figure 18. Volumes of stormwater harvested and infiltrated based on reported data from 2021-22. Data labels indicate the required volumes to meet the target in 2028.

To understand the likelihood of the SCPOs being met by 2028, we need to understand status at a sub-catchment scale. Figure 19 shows the current status of SCPOs for stormwater as reported in 2021-22. There are 26 sub-catchments where quantitative targets for stormwater apply, which are the same for both 'Harvest' and 'Infiltrate' SCPOs. Most of these sub-catchments are off-track to some degree. Note that the target for Jacksons Creek sub-catchment is currently under review, as the rate of development has been greater than anticipated.

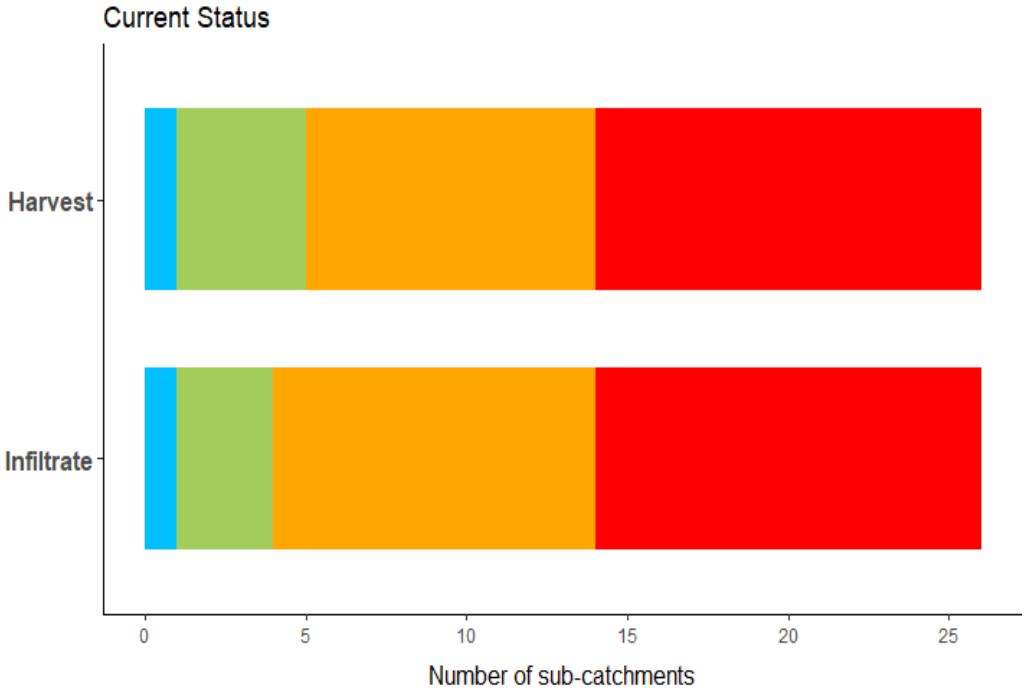


Figure 19. Current status of quantitative SCPOs for stormwater as reported in 2021-22. Green – On-track, Orange – Slightly off-track, Red – Significantly off-track, Blue – Under review.

A total of 20 sub-catchments were identified as currently at risk of not meeting one or more stormwater targets (Figure 20). Note: the target for Jacksons Creek is under review and likely to increase because the rate of development has been faster than was predicted in 2018.

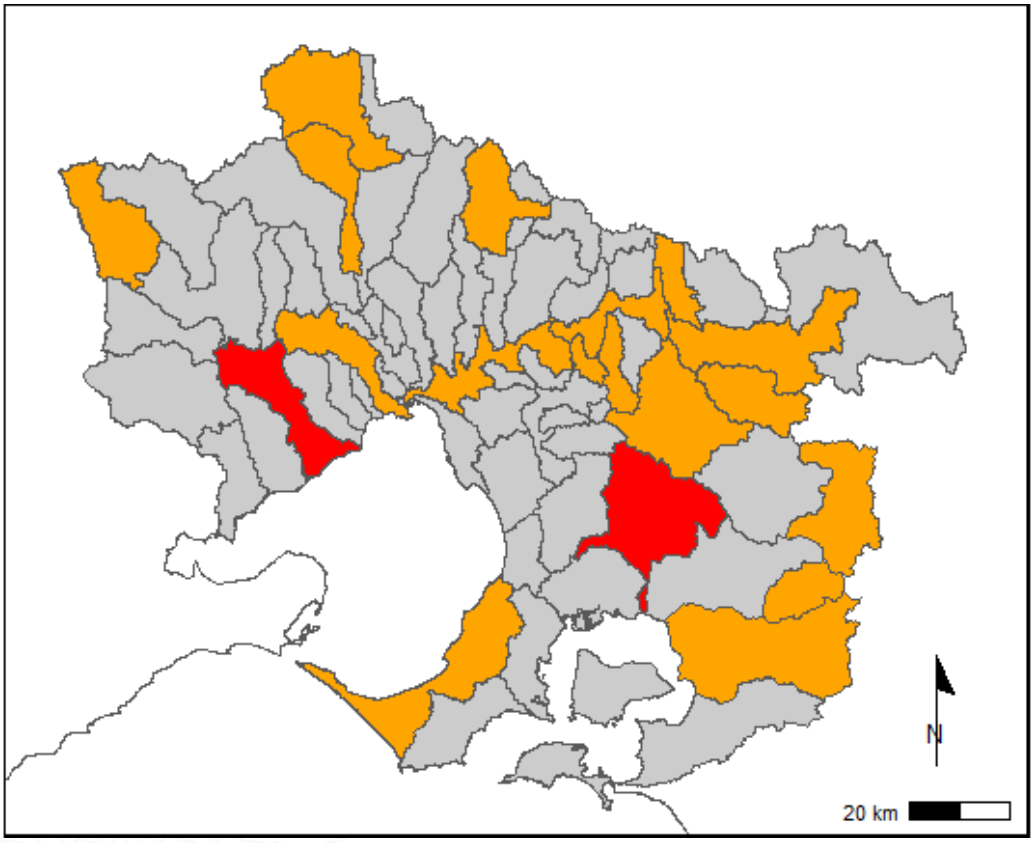


Figure 20. River sub-catchments identified as at risk of not meeting target/s for stormwater.

Factors Influencing Implementation

The following factors influencing implementation include:

- **Timing of delivery** – Implementation of large-scale stormwater projects is typically beyond the timeframe for SCPOs in the Strategy. It takes many years from initiating a business case to delivering on-ground infrastructure. For example, the Sunbury Stormwater Harvesting Scheme and Upper Merri Creek Stormwater Harvesting Scheme are two regional-scale Melbourne Water projects that were at the business case phase at the start of the Strategy. These schemes currently contribute to the Strategy targets for Emu Creek, Jacksons Creek and Merri Creek Upper sub-catchments based on what is currently planned, even though they may not be actually delivered until 2028 or beyond. In other sub-catchments where proposals may still be in preliminary development, the target is unlikely to be met within the 10-year timeframe. Township-scale projects are able to be progressed at a faster rate (~3-5 years), however these are generally more suited for Council asset ownership and therefore have a different funding and delivery mechanism.
- **Clear linkages between guidance and statutory obligations** – The EPA stormwater guidance sets stormwater standards for the industry and aligns with the HWS targets. It addresses critical environmental risks associated with generating new impervious surfaces for waterway health. However, the guide is not a compliance document. While it forms a 'state of knowledge' as part of the General Environmental Duty (GED), there is no obligation or statutory requirement to implement these controls. The guide states, "*It is your responsibility to ensure your operations comply with all applicable laws*". Therefore, the mechanism for how this guidance is embedded into stormwater management for future developments is unclear and open to interpretation. The planning scheme currently references the previous BPEM (CSIRO, 1999) and this needs to be updated to reflect the new guidance. Furthermore, Melbourne Water's nitrogen offsets program is currently aligned with protecting the receiving waters (for example Port Phillip Bay and Western Port Bay) rather than the waterways. This allows offsets at a regional scale to be paid in lieu of local stormwater treatment, which can result in some stormwater priority areas not being protected.
- **Early planning** – It is critical that stormwater management controls are considered at the concept planning phase so that volumes for harvesting or infiltration can be incorporated into the overall design and cost of large-scale development. Similarly, adequate space needs to be set aside for these stormwater controls, which ideally should be done early in the planning process. Subject matter experts have indicated that often there is not enough time during the planning process for these stormwater initiatives to be discussed and incorporated into concept plans. In particular, the short timeframes of the Precinct Structure Plan (PSP) process with VPA-led projects potentially limit opportunities for the inclusion of any new natural wetland, stormwater harvesting/infiltration assets. Furthermore, consideration of stormwater management controls also needs to occurs for infill developments at the lot and subdivision scale. Some sub-catchments (such as Middle Yarra, Upper Yarra) do not contain PSPs and development is expected to be lower density and distributed. Yet, planning for stormwater controls in these smaller projects are just as essential in managing impacts to waterways.
- **Clarity on roles and responsibilities (governance across all levels):**
  - **External** – SME's have reported a willingness from industry partners to undertake stormwater harvesting/infiltration initiatives. However, there is a need to have clear accountabilities and responsibilities for all parties (Melbourne Water, developers, retailers, councils). Furthermore, there needs to be some surety that agreed stormwater harvesting/infiltration plans will be delivered. A clear pathway for mandating stormwater harvesting and infiltration initiatives once agreed upon at the concept stage and associated accountabilities for delivery of the on-ground assets.
  - **Internal (Melbourne Water)** – Clarity is needed on how these Performance Objectives relating to stormwater harvesting and infiltration should be implemented across teams and associated accountabilities within Melbourne Water. There seems to be a disconnect between groups involved in the process about who is responsible for ensuring the delivery of these assets in a new development. A better understanding and clarity of the authorising environment within Melbourne Water is required. The Sunbury Stormwater Harvesting Scheme and Melton Regional Harvesting Scheme were highlighted by Subject Matter Experts as examples of where the authorising environment was complex to navigate.
  - It may be beneficial to trial an 'interim governance arrangement' to define roles and responsibilities initially prior to any ongoing implementation. This will enable testing the proposed arrangements for pilot projects. Then following an initial iterative-learning trial phase and review, the roles and responsibilities can be refined and further defined and eventually embedded into BAU.

- **Internal funding mechanisms** – An investment framework with clear roles and responsibilities is required to support the delivery of stormwater targets. Funding has been made available for stormwater harvesting/ infiltration but largely has not been used. The authorising environment to approve the spending of funds also needs clarity. In addition, better understanding of the funding mechanisms is also required, including the requirements for CAPEX (i.e. funding for new assets) vs. OPEX (i.e. funding via incentives).
- **Further technical guidance and tools for asset design and maintenance** – SME's highlighted that both stormwater harvesting and infiltration are relatively new approaches to stormwater management, in particular, less is known about infiltration (e.g. groundwater interactions, different soil types). There is limited understanding and awareness of the types of assets that can deliver the targets and flexibility for these assets to integrate into the PSP and Melbourne Water's Developer Services Scheme (DSS) process. Much of the background technical papers have been completed for these new asset types (e.g. land required, design, modelling etc.), but have not yet been operationalised. There is a need for Melbourne Water to finalise an approved set of stormwater assets (with associated standard designs and maintenance regimes) that can enable the delivery of the stormwater targets.
- **Building industry capacity: shared learning from pilots and case studies** – Improvements can be made on how learnings from previous case studies are incorporated into industry guidance. Melbourne Water has worked with industry partners to develop Stormwater Industry guidance to improve capacity to regulate and implement new assets. This collaborative effort serves as a roadmap for the industry, emphasising the importance of unified actions and shared objectives.

Refinement of Performance Objectives

The method used to assess whether POs needed to be updated is outlined in Appendix 5, with detailed results in Appendix 12. For the stormwater targets there is a need to update the 10-year estimates for the Maaribyrnong catchment and also the Middle Yarra sub-catchment.

Rivers Evaluation (Treat Existing Development)

This SCPO aims to treat existing urban development to reduce or limit increases to directly connected imperviousness (DCI) along waterways and improve stormwater condition. There are only five of these SCPOs across the region: one in Dandenong, one in Yarra and three in Maribyrnong catchment. This SCPO is currently qualitative which limits the detailed tracking of progress. Furthermore, current wording of the HWS Annual Report makes it unclear how these SCPOs are progressing. For example, the 2021-22 annual report for the Maribyrnong catchment states, "Further work is required to evaluate the progress towards disconnection targets". For the next Strategy, it would be beneficial to transition this PO into numerical targets to enable better tracking and flag where further controls on DCI are required.

Factors Influencing Implementation

These were not discussed specifically as part of the evaluation, however as solutions (i.e. a range of WSUD treatment systems) are essentially the same, the factors influencing implementation would be similar to those discussed above.

Refinement of Performance Objectives

The method used to assess whether POs needed to be updated is outlined in Appendix 5 for review with detailed results in Appendix 12.

While there are no specific refinements proposed there is a need to develop more quantified targets.

Wetlands Evaluation

The intent of this SCPO is to implement urban stormwater treatment measures in the catchment to reduce the threat of poor water quality and modified flow regimes in priority wetlands. Note these relate to 'natural' wetlands that are defined in the Strategy, as opposed to constructed stormwater treatment wetlands. This SCPO is only directly applicable to six wetlands in the Yarra catchment. Of these six, one wetland is in progress (Lilydale Lake), one is not started (Ringwood Lake) and the other four wetlands are under review (Growling Grass Frog Reserve ponds, Chandon Billabongs, Westgate Park Wetlands, Willsmere Billabong). Note that in Westernport catchment this SCPO is reported regionally via RPO-32 'Biodiversity significance'. Given that progress has commenced in only one wetland so far and in other areas is reported regionally, further investigation is required to consolidate information about what works are required to mitigate this risk to priority wetlands.

A broader issue is the loss of wetlands from urban development which was highlighted as a key threat in the Science Inquiry. The Science Inquiry highlighted that four natural wetlands have been effectively lost since the HWS was launched in late 2018, amounting to 114 ha of natural wetland habitat. A further 14 regional priority wetlands were reported to be under imminent risk of degradation through Precinct Structure Plans or Developer Services Schemes. There is a need to strengthen the wording of POs for specific HWS priority wetlands that are under threat from urban development and improve reporting of their status. Collaborative work by the RLG was summarised as part of the independent review of collaboration (see box below).

While RPO 29 *(Programs, standards, tools and guidelines are in place to protect wetland vegetation communities from urban and rural threats, including adequate planning controls)* describes the need to focus efforts on wetland protection there is a need to update the 2028 performance expectation to better drive actions towards improved outcomes.

RLG Collaborative Work on Natural Wetlands

HWS Region-wide Leadership Group (RLG) collaborative work on natural wetlands has been highlighted as an example of effective region-wide collaboration by the RLG independent review. Details about this collaboration are provided below to offer additional context and support the forming of recommendations.

In response to the loss of natural wetlands identified in the HWS first (2019) Annual Report, the RLG requested a discussion paper on the problem, the policy and planning context, and options for improved management. The paper was provided to the RLG in July 2020 and also circulated to senior staff at DEECA and the Victorian Planning Authority. The paper found that the basic machinery of managing wetlands in urban and peri-urban environment is not developed.

Over the past two years, protection mechanisms for natural wetlands have been considered and were discussed by the RLG in April 2021. Foundational work was approved to understand the potential options available to Melbourne Water and HWS Partners for natural wetland protections. This has included the formation of a special HWS partner working group, chaired by DEECA's RLG representative. Members of the Wetland Working Group to the RLG include representatives from Melbourne Water, DEECA, Parks Victoria, Victorian Planning Authority, EPA, a Council in the growth area and, most recently, a representative of the Wurundjeri woi-wurrung RAP.

In consultation with scientists and planners, the group developed a decision/risk framework tool to support priority setting and action planning for natural wetlands, particularly those on private land. This is important because there is a current policy gap around protecting wetlands.

Other potential initiatives based on the collective tool-box available to RLG members to protect natural wetlands include:

- Exploring community willingness to pay to protect natural wetlands (Melbourne Water)
- Improve understanding of the status of natural wetlands under the Water Act 1989 (DEECA and Melbourne Water)
- Mapping all natural wetlands and making the map publicly available on the Regional Catchment Strategy web site (Melbourne Water)
- Exploring the inclusion of guidance on the opportunity to retain and protect natural wetlands in the Precinct Structure Plan Guidelines (Victorian Planning Authority), and
- Strong advocacy for the protection of Hannah Swamp, resulting in a softer flood engineering response approach (Wurundjeri woi wurrung Cultural Heritage Aboriginal Corporation and Nature Glenelg Trust).

Factors Influencing Implementation

A number of factors have influenced implementation including:

- **State-wide wetland mapping** – DEECAs state-wide Wetland GIS layer which is used for planning decision-making, currently does not include the updated regional priority wetlands in the HWS
- **Internal resourcing** – Resourcing is hampering the ability to plan and implement wetland actions, and
- **Policy and guidance** – There is a lack of policy to require protection of wetlands impacted by stormwater runoff in urban growth areas and a lack of guidance on approaches to protect flow regimes. There is the opportunity to explore avenues for protection under existing legal instruments now that Melbourne Water and the Port Phillip and Western Port CMA are integrated.

Refinement of Performance Objectives

The method used to assess whether POs needed to be updated is outlined in Appendix 5, with detailed results in Appendix 12.

While there are no specific refinements proposed there is a need to develop more quantified targets.

Summary

The 2028 targets for harvesting and infiltration of stormwater are ambitious but are nevertheless critical in preventing an irrevocable decline in waterway health across the region. Achieving the targets calls for a major step change from both the enabling environment and industry partners to deliver the required outcomes.

In summary, the reasons for Performance Objectives relating to Stormwater are off-track are outlined in Figure 21. While these factors were based on the Subject Matter Expert workshops, they are reflective of the collaboration evaluation findings. Also, it is not an exhaustive review of the challenges facing the stormwater industry, rather it seeks to summarise issues raised through the implementation of the HWS. This section summarises the key barriers presented above. Opportunities for improvements over the next five years are detailed in Appendix 11.

Figure 21. Summary of key barriers to implementation of SCPOs relating to Stormwater.

The PO and Collaboration evaluations established that there is strong support by Melbourne Water and HWS partners for the Strategy's stormwater targets and the science underpinning them.

However, the PO evaluation demonstrated that POs for both Harvest and Infiltrate have significant gaps between what is currently planned and the 10-year target. The majority (20/26) of sub-catchments were identified as currently at risk of failing to meet one or more stormwater harvesting and infiltration targets. While significant advances have been made, such as the release of the updated 'Urban Stormwater Management Guidelines' (EPA Victoria, 2021), several barriers continue to make translating the stormwater targets to on-ground action challenging.

One of the key barriers identified in the PO and Collaboration evaluations was uncertainty about roles and responsibilities**.** The PO evaluation highlighted that while there was a willingness from industry partners to undertake stormwater harvesting/infiltration initiatives, there is a need to have clear accountabilities and responsibilities for all parties (Melbourne Water, developers, retailers, councils) at the concept stage and associated accountabilities for delivery of the on-ground assets. This was supported in the collaboration evaluation, which found that some stakeholders were unclear on their role in co-delivering the strategy and were reluctant to go beyond their remit or current approach to waterway management to progress the Strategy's targets.

This theme of role and accountability was echoed internally for Melbourne Water, with greater clarity needed on how stormwater harvesting and infiltration should be implemented across different teams. A good example presented in the PO evaluation highlighted the conflicting roles and drivers between two teams essential in delivering the targets - one responsible for development services and the other for healthy waterways. Different views were identified between teams involved in the process about who is responsible for ensuring the delivery of these assets in a new development. This is causing knock-on effects in obtaining internal approvals to access allocated funding for delivery. Funding has been made available for stormwater harvesting/infiltration but broadly has not been used. The authorising environment to approve the spending of funds needs clarity, and the PO evaluation suggested an investment framework with clear roles and responsibilities is required to support the delivery of stormwater targets.

The stormwater RPOs relating to industry capacity and standards, tools and guidelines were identified in the PO evaluation as also slightly off-track. A particular issue raised during the evaluation was the urgent need for clear linkages between guidance and statutory obligations. While the EPA stormwater guidance sets stormwater standards for the industry and aligns with the HWS targets, it is not a compliance document and so there is no obligation or statutory requirement to implement these controls. Its inclusion as a reference document in the planning scheme was identified in the PO and collaboration evaluation as an insufficient driver for industry collaboration. The mechanism for how this guidance is embedded into stormwater management for future developments is unclear and open to interpretation. As the planning scheme currently references the previous BPEM (CSIRO, 1999), statutory requirements to apply these guidelines is needed to ensure that these types of controls are considered.

Linked to this issue is the complexity of scales at which stormwater treatment can be applied – from lot scale through to regional systems. Place based IWM solutions are needed that require collaboration between authorities and are mindful of the water for the environment targets in certain systems (e.g. Jacksons Creek).

The theme of tools and guidance for infiltration and harvesting was explored in the Science Inquiry intervention stocktake and identified that both are relatively new approaches to stormwater management for some techniques, such as constructed wetlands which have been largely designed to maximise water quality treatment. This was supported in the PO evaluation, which outlined the issue of limited understanding and awareness of the types of assets at the regional scale that can deliver the targets and flexibility for these assets to integrate into the PSP and DSS process. Much of the background technical papers have been completed for these new asset types (e.g. land required, design, modelling etc.), but have not yet been operationalised. There is a need for Melbourne Water to finalise an approved set of stormwater assets (with associated standard designs and maintenance regimes) that can enable the delivery of the stormwater targets.

Linked to this is the finding from the PO evaluation of the need to demonstrate what stormwater harvesting and infiltration look like on the ground and show external partners that these assets are possible, beneficial and cost-effective. There are only limited examples available in the region, and further demonstration sites that apply to a broader range of scenarios would increase the industry's capacity to deliver. As outlined in the Science Inquiry there is an urgent need to mitigate the impacts of climate change as well as urban development in order to protect stream health in our region. This will require the use of new and innovative solutions such as 'smart tanks' and 'riparian sponges' which can provide ways to maintain baseflows in a drying climate.

The urgency of removing some of these barriers is emphasised in the Science Inquiry which found that strategy implementation has not kept up with the pace of development as directly connected imperviousness (DCI) has increased in many of the stormwater priority areas. This is largely because the current constructed and planned stormwater control systems in growth areas are not designed to meet the stormwater volume targets. The Science Inquiry evaluation showed that unmitigated urbanisation has driven declines in multiple values.

A broader issue is the loss of wetlands and headwater streams from urban development which was highlighted as a key threat in the Science Inquiry. In response the first HWS Annual Report the HWS Region-wide Leadership Group (RLG) requested a wetlands discussion paper on the problem, the policy and planning context, and options for improved management. An interagency working has since been formed. While RPO 29 focuses efforts on wetland protection, there is a need to update the 2028 performance expectation to better drive actions towards improved outcomes. In addition, the science inquiry flagged that the list of priority wetlands in the region has been updated since 2018 however they are not included in the HWS Co-designed Catchment Programs. This poses an additional risk to their protection as their status in the HWS is not clear. They have been included in the Wetlands MEP and are also on the HWS website map.

The synthesis of the Stormwater PO group has identified the following opportunities to improve implementation:

- Establish clear linkages between guidance and statutory obligations by strengthening policy and planning frameworks to regulate the new stormwater standards including protection of headwater streams and natural wetlands.
- Greater clarity on roles and responsibilities to improve governance and co-ownership of targets across all levels for internal and external stakeholders.
- Improve Melbourne Water's authorising environment to facilitate approvals for stormwater harvesting and infiltration initiatives.

- Develop further technical guidance and tools for asset design and maintenance, such as an approved set of stormwater assets (with associated standard designs and maintenance regimes), that can enable the delivery of the stormwater harvest and infiltrate initiatives.

- Continue to build industry capacity, including investing in built stormwater assets (as per above) to demonstrate how technical guidance translates into delivering place-based targets.

Recommendations

5 Stormwater

Urban development is moving faster than we can mitigate the degradation of waterways. New approaches for stormwater are needed to shift the focus to reducing stormwater volumes as well as water quality that reflect the state of knowledge, updated guidelines and practice standards. While there have been some policy changes (e.g. CGRSWS, IWM forums), Melbourne Water and HWS partners (such as DEECA, DTP, EPA, local government, and water retailers) need to work together to accelerate the shift IWM solutions that address the stormwater volume threat.

I- 5.1 Accelerate on-ground infiltration and harvesting projects to mitigate impacts of urban development.

I- 5.2 Expedite piloting and trialing the use of simple cost-effective infiltration systems such as riparian sponges and passively watered street trees in stormwater priority areas.

I- 5.3 Promote and showcase new and existing stormwater harvesting and infiltration projects to demonstrate different options, feasibility, multiple benefits and cost effectiveness.

I- 5.4 Foster effective and efficient collaboration across governance groups on aligned plans and strategies (e.g. CGRSWS and IWM action plans, EPA stormwater guidance).

I- 5.5 Clarify roles, responsibilities and mechanisms (e.g. Melbourne Water Developer Services Schemes, investment frameworks and authorising environments) for mitigating the impacts of urban development through application of the new EPA stormwater guidance.

I- 5.6 Maintain focus and transparently report on progress of CGRSWS policies and actions that will support the achievement of HWS stormwater target (refer to Appendix 14 for full wording of policies and actions):

- ***Policy 3-2****: Clarifying roles and responsibilities for delivering IWM outcomes*
- ***Policy 3-3****: Achieving the targets in IWM plans*
- ***Action 3-4****: Investigate options for large-scale recycled water and treated stormwater networks*
- ***Action 3-8****: Use of recycled water and stormwater for greener, open spaces*
- ***Action 3-12****: Improving stormwater regulations to support increased capture and use, and*
- ***Action 3-13****: Implement Melbourne Urban Stormwater Institutional Arrangements (MUSIA).*

I- 5.7 Ensure the Melbourne Water stormwater offsets program is reviewed in light of the CRGSWS:

- ***Action 3-15****: Develop a stormwater offsets framework.*

I-5.8 Build capacity and technical guidance for construction and maintenance of stormwater assets to enable the delivery of the stormwater harvesting and infiltration initiatives including the finalisation of an approved set of stormwater assets (for Melbourne Water).

7 Natural wetlands and headwater streams loss

The Strategy is the first-time wetlands in the region have been included as a separate waterway, or asset class, to be managed with targets for values and conditions. Headwater streams have also been more clearly recognised in the HWS for their importance in the overall stream network. The biggest threat to wetlands and headwater streams in our region is urban development. In response to the first HWS

Annual Report, where wetlands were reported as lost or under imminent threat, the HWS Region-wide Leadership Group (RLG) requested a discussion paper on the problem, the policy and planning context, and options for improved management. While work has been progressing to improve protection of wetlands and headwater streams urgent efforts are required to:

I- 7.1 Identify and implement further protections (e.g. land acquisition during the development process) for wetlands and headwater streams at risk in key locations.

I- 7.2 Strengthen the wording of existing POs for specific HWS priority wetlands that are under threat from urban development and improve reporting of their status. Update the 2028 performance expectation of RPO 29 *Programs, standards, tools and guidelines are in place to protect wetland vegetation communities from urban and rural threats, including adequate planning controls* to better drive actions towards improved outcomes.

I- 7.3 Update state-wide wetlands mapping to reflect the best available information for the Port Phillip and Westernport region, which aligns with information on the 2018 Healthy Waterways Strategy and Regional Catchment Strategy websites.

I- 7.4 Melbourne Water, DEECA and councils to explore the use of the *CALP Act 1994,* land use planning tools and guidelines to improve wetland and headwater stream protection.

I- 7.5 Investigate the opportunity to improve natural wetland and headwater stream protections through the next iteration of the Victorian Waterway Management Strategy through a planning and policy framework that recognises the need for the protection of function and form, not just for managing condition.

I-7.6 Update Melbourne Water and other delivery partners asset information systems with latest headwater stream mapping and ensure development referral and planning processes consider headwater streams in decisions.

Water Quality

Water quality is a critical waterway condition that underpins the environmental and social values of the Strategy. The HWS sets out several POs related to water quality, primarily to limit or reduce pollutant inputs such as excess sediment and nutrients, pathogens, and industrial contaminants to waterways. Both Port Phillip Bay and Western Port are enclosed embayments and are susceptible to pollution inputs from the catchments. Therefore, maintaining good water quality is also important to the ecological health of these coastal waters and the adjacent estuaries. There is strong alignment between this PO group and the previous stormwater section. While the previous section focused on the impact of urban development on flow regimes, this section focuses on pollution. In many cases the solutions are the same.

Strategy Targets

The water quality PO group consists of 6 SCPO categories for rivers, one for wetlands, four for estuaries and six Regional Performance Objectives (RPOs).

The RPOs are focused on addressing complex and diffuse water quality issues through the following objectives:

- RPOs 17, 23 and 24 are focuses on mitigating sources of urban pollution
- RPO 25 focuses on rural pollution, and
- RPOs 26 and 27 address methods to assess litter and inform litter reduction programs, community awareness and knowledge of litter and illegal dumping.

The SCPO categories seek to limit or reduce pollutant inputs such as excess sediment and nutrients, pathogens, and industrial contaminants to waterways, Port Phillip Bay, and Western Port (Table 16).

Table 16. SCPOs relating to Water Quality.

Waterway	PO Type	Typical Performance Objective wording	Target
Regional	RPO-17 (Construction runoff)	Water quality in waterways and bays is improved by reducing inputs of sediment and other pollutants from urban construction and development.	Qualitative
	RPO-23 (Emerging contaminants of concern)	The potential impacts of emerging contaminants of concern such as microplastics, pesticides and pharmaceuticals, and toxic chemicals are better understood and mechanisms to respond collaboratively developed.	
	RPO-24 (Urban pollution programs)	Risk-based programs are in place to mitigate sources of urban pollution (licenced and unlicensed discharges) to protect bays and waterways.	
	RPO-25 (Rural land runoff)	Programs, standards, tools and guidelines are in place to manage nutrients, sediments and other pollutants from rural land in priority areas.	
	RPO-26 (Litter framework)	Methods are in place to assess volume and source of litter to inform and promote litter reduction programs.	
	RPO-27 (Litter incidence)	Incidence of littering and illegal dumping is reduced through raised community awareness and knowledge, infrastructure and enforcement.	
Rivers	Reduce agricultural run-off	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.	Quantitative

Rivers	Maintain STPs loads	Protect water quality for Port Phillip Bay and waterways by maintaining the current quality of discharges from sewage treatment plants (and reducing volumes where possible), whilst ensuring they are released in a manner that ensures environmental values are supported in the waterway.	Quantitative
Rivers	Recreation	Maintain/protect recreational water quality in key recreation areas (suitable for secondary contact, support existing recreational activities).	Quantitative
Rivers	Reduce septic impacts	Investigate and mitigate where required potential impacts from septic tanks.	Qualitative
Rivers	Reduce construction run-off	Protect water quality for environmental values by managing sediment loads from construction activities to ensure no pollutant or sediment laden run-off enters drains and waterways.	Assessed as part of RPO-17 (Construction runoff)
Rivers	Reduce industrial run-off	Protect water quality of Port Phillip Bay and waterways from industrial activity by reducing industrial pollutant levels detected in waterways. Identify and mitigate sources of industrial pollution.	Assessed as part of RPO-24 (Urban pollution programs)
Wetlands	Reduce agricultural run-off	Implement urban stormwater and rural land management improvements to reduce water quality threats including nutrients and sediment to the wetlands.	Assessed as part of Rivers PO equivalent above
Estuaries	Reduce agricultural run-off	Implement rural land program in catchment to minimise sediment and nutrient loads to the estuary.	Assessed as part of Rivers PO equivalent above
Estuaries	Reduce construction run-off	Monitor and reduce the threat of catchment sediment impacts on the estuary.	Assessed as part of Rivers PO equivalent above
Estuaries	Monitor	Continue to monitor estuary water quality through the Estuary Watch program and Melbourne Water monitoring sites.	Qualitative
Estuaries	Maintain for amenity	Artificial estuary mouth openings are only undertaken when a risk assessment concludes that opening conditions are low risk for the environment.	Qualitative

Operating Environment

Melbourne Water, Water Retailers, EPA, Councils, Sustainability Victoria and DEECA are the main organisations involved in managing water quality supported by volunteers, community groups and landholders. Other sectors that have a role include the development industry, commercial industry and agriculture with NGOs such as Westernport Biosphere, River Keepers and Environment Victoria focusing on specific projects to improve water quality in the receiving waters, Port Phillip Bay and Western Port.

Additional context for the urban environment is provided in the stormwater section above and a case study is provided below.

Strategy to implementation – Mitigating water pollution from industrial areas

What's the issue?

There is growing evidence that industrial areas contribute more pollutants to local waterways than other land-uses, such as residential areas. Numerous sources of pollutants arise from industrial areas via direct runoff into stormwater drains, poor onsite practices, accidental spills, illegal dumping, illegal drainage connections, and damaged infrastructure. Common pollutants from these areas include heavy metals, hydrocarbons, oil and grease, faecal matter, solvents, detergents and pesticides.

What did we do?

Melbourne Water's Aquatic Pollution Prevention Partnership (A3P) with RMIT University have been investigating effective ways to reduce pollution from industrial estates in Greater Melbourne by trialling various treatment and control options. Based on a comprehensive literature review, different media were assessed based on the potential to adsorb common industrial pollutants such as Zinc. In addition, to better characterise the types of pollutants coming from several industrial estate across Melbourne, water quality and toxicology testing was conducted in 2020 and 2021.

What did we find?

The research found that the most successful practices for industrial estate management are a multi-faceted approach, focusing on small to medium businesses, that combines a mix of non-structural and structural stormwater strategies. There is no "one size fits all" approach. Instead, strategies to mitigate pollution for industrial areas need to be tailored to each site.

How does this work deliver on objectives in the Strategy?

These findings support the implementation of objectives in the Strategy relating to reducing industrial run-off "*Protect water quality of Port Phillip Bay and waterways from industrial activity by reducing industrial pollutant levels detected in waterways. Identify and mitigate sources of industrial pollution.*"

Collaboration Case Study (Litter and Pollution)

For water quality, the independent evaluation of collaboration and co-delivery explored two types of examples:

- The Litter Labs demonstrated a process led by the Region-wide Leadership Group and facilitated by Melbourne Water, where partners co-defined the problems relating to litter at the regional scale and co-developed a Litter Action Plan to address them.
- The Lower Dandenong Creek Litter Collaboration, Enhancing our Dandenong Creek Collaboration, and Chain of Ponds Litter Working Group are all multi-partners sub-catchment scale 'place-based' collaborative projects that address different issues and use different operating structures.

The external evaluation of collaboration and co-delivery under the water quality PO group found several common findings across all four examples:

- Each was seen to have built strong consensus around the nature of the relevant issues and the evidence base for action. While they had employed different methods to achieve this, all had brought partners together to co-define the 'problems' and identify responses - which was identified as a key enabler.
- All relied on strong leads to drive collaboration, by coordinating operating processes as well as maintaining a sense of momentum within the collaboration.
- For the place-based examples in particular, the Healthy Waterways Strategy was not generally considered a key driver for partner collaborators. They were more often driven by aligned strategies or priorities of their own groups or organisations, or by strong personal interest.

At the place-based level, the success of the respective collaborations has been underpinned by:

- capitalising on enabling conditions and opportunities to respond to a critical issue
- strong shared vision and buy-in from passionate, committed stakeholders
- the use of skilled facilitators, especially during the establishment phase
- the allocation of responsibility for, and resourcing of, implementation
- the ability to leverage the resources, skills, and knowledge of partners, and
- the establishment of trusting relationships between collaborators.

At the regional scale, the RLG was considered an appropriate vehicle to drive collaboration, and Litter Labs were seen to have effectively built consensus around the nature of the problems through a structured co-definition process. To date, however, the Litter Action Plan has not been approved and there is evidence that the project did not achieve sufficient buy-in or ownership at senior levels of participating organisations.

Regional Performance Objective Evaluation

Of the six RPOs relating to water quality, four are on-track and two are slightly off-track, with the evaluative reasoning outlined in Table 17 below. The details of the rubric used to evaluate the likelihood of meeting performance expectations by the end of the Strategy are outlined in Appendix 2.

Table 17. Water Quality Regional Performance Objective Valuation Summary for Water Quality PO Group.

Regional Performance Objective	Evaluative reasoning
RPO-17: Water quality in waterways and bays is improved by reducing inputs of sediment and other pollutants from urban construction and development.	⚠ **Slightly off-track – At risk of not meeting performance expectations by end of Strategy** HWS Annual reporting outlines evidence of new guidance developed by EPA (1834) includes information about risk management of construction working near waterways. No evidence has been provided about determining that quantum of sediment being delivered to Western Port Bay to set the baseline from construction sites. HWS Annual report doesn't cover many of the performance expectations outlined in the Regional MEP but covers other items. This indicates the need for further information to be provided in future annual reports.
RPO 23: The potential impacts of emerging contaminants of concern such as microplastics, pesticides and pharmaceuticals, and toxic chemicals are better understood and mechanisms to respond collaboratively developed.	✓ **On track to meet performance expectations** Risk assessments of emerging chemicals of concern have been reported each year of the HWS Annual Report. Potential hotspots have been identified, and journal articles are being written (with some delay due to Covid). It is unclear how agencies and communities use the information to manage the risk collaboratively and proactively. This needs to be the focus of future annual reporting.

RPO 24: Risk-based programs are in place to mitigate sources of urban pollution (licenced and unlicensed discharges) to protect bays and waterways.	**On track to meet performance expectations** The majority of Performance Expectations are well underway with Officer for the Protection of Local Environment (OPLEs) transitioned from pilot program (linked to RPO 17) to ongoing EPA program, research into urban pollution patterns within Dandenong Creek undertaken by university and industry using low-cost sensors to identify pollution sources. It is unclear if this research is now being used to manage major pollution sources – this should be focus of future annual reporting. A joint Quantitative Microbial Risk Assessment (QMRA) project has been initiated during 2018/19 to support risk-based prioritisation for sewerage. Future annual reports should provide update on how this research has been used to reduce impacts for sewerage discharges.
RPO-25: Programs, standards, tools and guidelines are in place to manage nutrients, sediments and other pollutants from rural land in priority areas.	**Slightly off-track – At risk of not meeting performance expectations by end of Strategy** The number of properties enrolled in programs to manage sediment and nutrients from rural land has decreased from the 2017 baseline, according to information in HWS Annual reports. This may be due to lockdown impacts from COVID-19. No evidence was provided in HWS Annual Reporting that existing programs will be reviewed and evaluated as per the performance expectation for this RPO. HWS Annual reporting content in the future needs to be more specific to the Performance Objectives to avoid repetition of previous years' reports. The future focus should also be directed to providing information on how updated guidelines and new tools have been used by landholders.
RPO 26: Methods are in place to assess volume and source of litter to inform and promote litter reduction programs.	**On track to meet performance expectations** Half of the PEs have been met with others in progress. Research project has developed a framework and litter monitoring method which has been trialled across different sites. A MERI for the litter program has provided baseline information of catchment litter condition in 6 sub-catchments. Some information by Melbourne Water is provided on the Litterwatch Mapping Portal but it is unclear how much of community group and EPA data is shown on portal. The Case Study on Stony Creek indicates PE to have collaborative, whole of catchment approach to understand, prioritise and co-ordinate litter management is underway. Unclear how PE is progressing for Melbourne Water to adopt a level of service for litter management for different catchments or if internal roles and responsibilities have been clarified. This should be addressed in future annual reports.
RPO 27: Incidence of littering and illegal dumping is reduced through raised community awareness and knowledge, infrastructure and enforcement.	**On track to meet performance expectations** Enforcement of litter offences is publicised on the EPA website, and the number of infringement notices reported has reduced in the past few years. This could be partly due to impacts related to the Covid lockdowns in 2020 and 2021. While several activities to increase community awareness have been undertaken, it is still being determined if an increase in awareness has occurred (or if it is being measured). A litter baseline has been established for some sub-catchments through RPO 26; future reporting needs to provide details of litter monitoring results for these sub-catchments. A container deposit scheme for Victoria will be in place in 2024.

Rivers, Wetlands and Estuaries - Reduce agricultural runoff

Reducing agricultural run-off reduces inputs of nutrients, sediments and pesticides from rural land. Actions include fencing and revegetation of riparian areas and headwater streams to reduce erosion and run-off, remediating stock crossing and feed pads, and reducing pesticide usage. Most of these works are delivered through Melbourne Water's Rural Land Program (RLP). This PO is assessed at catchment scale, based on data collected in 26 sub-catchments. The status as reported in 2021-22 is shown in Figure 22. All catchments are currently "on-track", except for Westernport where the target is currently under review.

Figure 22. Summary of HWS Annual Report 21/22 results for agricultural runoff at catchment scale.

While the above metric indicates that this target is likely to be met at the catchment scale, the likelihood evaluation has identified 11 sub-catchments at risk of not meeting the 10-year targets. This was based on <10ha of target attainment over the last five years (Figure 23). While this is important to identify areas where only a small number of project have been delivered to date, it is not necessarily cause for alarm because targets for reducing ag run-off were deliberately set at catchment scale (rather than sub-catchment scale) to support flexibility in the delivery of the program.

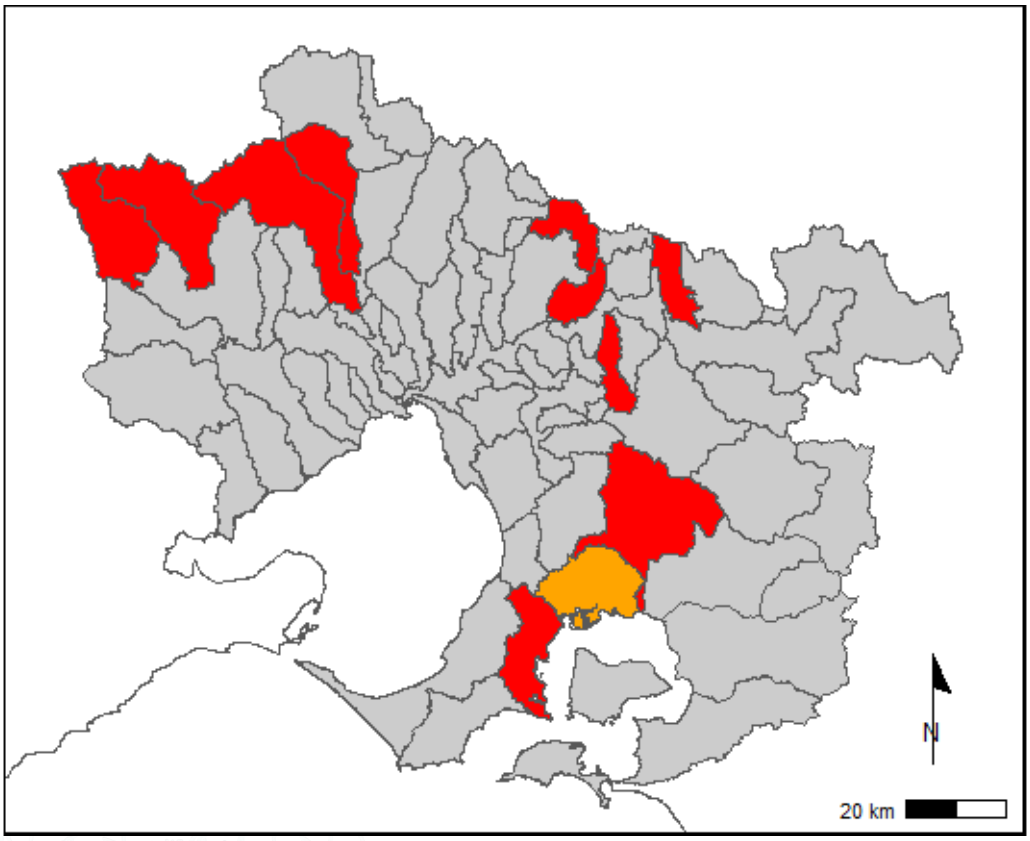


Figure 23. River sub-catchments that were identified as at risk of not meeting target/s to reduce agricultural runoff.

Factors Influencing Implementation

The following factors influencing implementation include:

- **Alignment of CMA and MW functions** – In 2022, the Port Phillip and Westernport Catchment Authority (PPWCMA) was integrated into Melbourne Water. The transition into one organisation is underway, but further opportunities exist to combine CMA and Melbourne Water functions for an integrated catchment management approach. This would involve working with rural landowners to improve multiple environmental outcomes (e.g.water quality and riparian vegetation, across various aspects of land management via whole farm planning). A pilot in the Watts Creek sub-catchment uses this integrated catchment management approach. By combining resources from multiple programs, these approaches could be applied at a larger scale.
- **Integration of data management and reporting** – There are differences in method between how Strategy counts hectares of land improvement compared to CMA data from the National Landcare Program (NLP). The Regional Land Program (RLP) uses a set of mapping principles to define the area of land improved. Some opportunities to use monitoring tools to determine the outcome of the CMA program to attribute hectares of land. Other datasets from other programs (e.g. Landcare, Agriculture Victoria, and other key partners) could be integrated into the reporting framework.
- **Internal resourcing** – There is plenty of demand for the RLP, but the main limitation is human resourcing to process and assess applications, particularly in areas with high interest (e.g. Nillumbik Shire). There is a need for more resources to think strategically, advertise and then process the applications. There is also a need to manage expectations for new areas vs servicing existing areas. Conversations with subject matter experts highlighted several opportunities to increase the impact of the RLP (e.g. targeting different land uses and industries, targeting certain areas of a particular sub-catchment i.e. upper areas of Cardinia, Toomuc, Deep and Ararat Creeks to protect existing platypus populations) but internal resourcing currently limited the amount of time available to progress these.
- **Relationship development** – Engaging with landholders and building trust takes time and resources. In particular, landholder interest in new sub-catchment areas may be relatively low. It takes time to build relationships, which may take even longer in sub-catchments that are relatively new to the program. Areas with smaller subdivisions and diverse land use can make it difficult to recruit landholders because there is limited affiliation with specific industry types. Tapping into communities with strong existing networks and/or industry sectors may be the most effective way to build the program over the next 5 years.
- **Incorrect target** – The original data set for Westernport upon which the target was set had been incorrectly mapped and calculated. The original target set in 2018 was 16,000Ha. The Rural Land Program team in Melbourne Water went back to the original 2015-2017 data set, checked all of the mapping and updated it based on the agreed mapping principles. This indicated that the correct target is 7,000Ha.

A summary of barriers to the agricultural runoff sub-group is outlined in Figure 24.

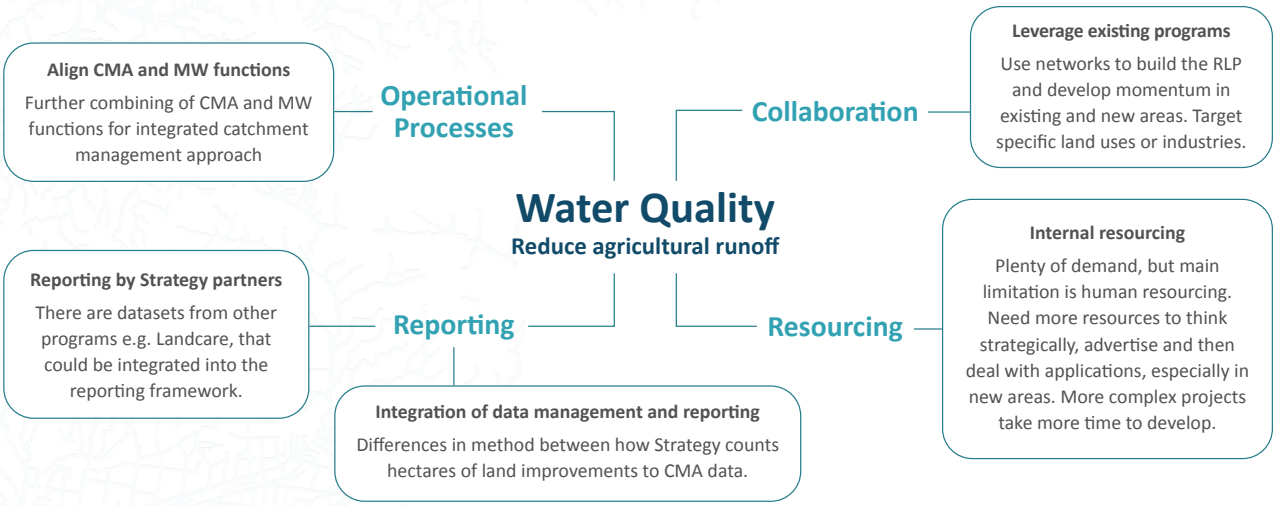


Figure 24. Summary of key barriers to implementation of SCPOs relating to reducing agricultural runoff.

Refinements to Performance Objectives

The method used to assess whether POs needed to be updated is outlined in Appendix 5, with detailed results in Appendix 12.

In summary the target for Westernport has been reviewed and should be updated through the mid-term response process. Also, there were two rural land priority areas identified during the strategy process which were not translated into actual POs (i.e. Diamond Creek rural and Plenty River Source sub-catchments). These two priority areas will now be included in the Rural Land Program for delivery.

Rivers - Sewage Treatment Plant Loads and Septic Tanks

There are seven sub-catchments where discharges from sewage treatment plants (STPs) to waterways form the basis of Strategy objectives for the purposes of capping pollutant loads to Port Phillip Bay. These quantitative water quality targets are based on the amount of nitrogen and phosphorus discharged annually and were established in consultation with the relevant water corporations. Data reporting over the last five years indicate that these levels have mostly remained steady. The Jacksons Creek sub-catchment was slightly off-track in 2021-22 because the annual load of nitrogen discharged was marginally above the established baseline (Figure 25). Acceptable limits for these discharges are specified in operating licences administered by EPA Victoria. The likelihood evaluation found that none of these sub-catchments were identified at risk of not meeting the 10-year target and no further investigation was required.

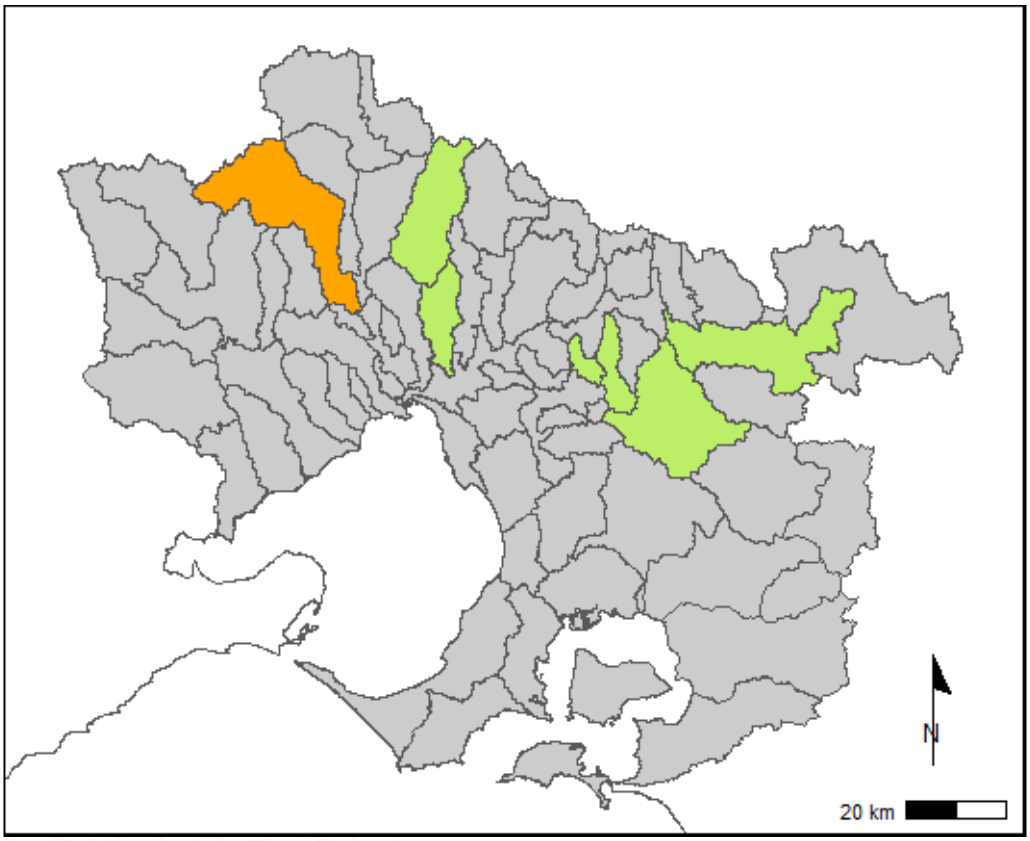


Figure 25. Current status of SCPOs for maintaining STPs loads as reported in 2021-22. Green – On-track, orange – Slightly off-track, grey – Not applicable.

A related qualitative SCPO to reduce impacts from septic tanks in Dandenong, Yarra and Werribee was evaluated to be in progress with several rolling inspection programs of septic systems in place and construction of a new pressure sewer system in the Belgrave, Belgrave Heights and Selby areas of the Dandenong catchment by South East Water.

Factors Influencing Implementation

As implementation is largely on-track, no further investigation was undertaken.

Refinements to Objectives

The method used to assess whether POs needed to be updated is outlined in Appendix 5, with detailed results in Appendix 12.

In summary, there is one sub-catchment (Werribee River Lower) where a new STP Performance Objective is required. Surbiton Park Wastewater Treatment Plant was not included in HWS development mainly because it is planned to be fully used for the provision of recycled water. However, discharges are released to the river from time to time when storage onsite capacity is exceeded. Therefore, it is important to include it in the HWS annual reporting.

Rivers - Recreational Water Quality

Activities in and on the water, such as swimming (primary contact), and boating (secondary contact), provide an important recreational value as well as connection to the waterway. There are seven sub-catchments that POs for recreational water quality, typically because these areas have sites of local importance for recreational users (e.g. National Water Sport Centre). The targets are assessed at the catchment scale using a qualitative rubric outlined in the Rivers MEP for rivers.

The presence of water-borne microbes is a potential risk to human health. Microbes occur naturally in the environment but some, especially those from human and animal faecal sources, can be pathogenic and cause illness. The bacteria *E.coli* is the recommended water quality indicator for the presence of pathogens and faecal pollution in waterways. Data from the previous five years are assessed against objectives in the Environment Reference Standard (ERS) (2021). At the catchment scale, the Werribee River and Dandenong Creek catchments are currently on-track to meet POs. The Yarra River catchment is slightly off-track, and the Maribyrnong River catchment is 'Significantly Off Track' (see Figure 26).

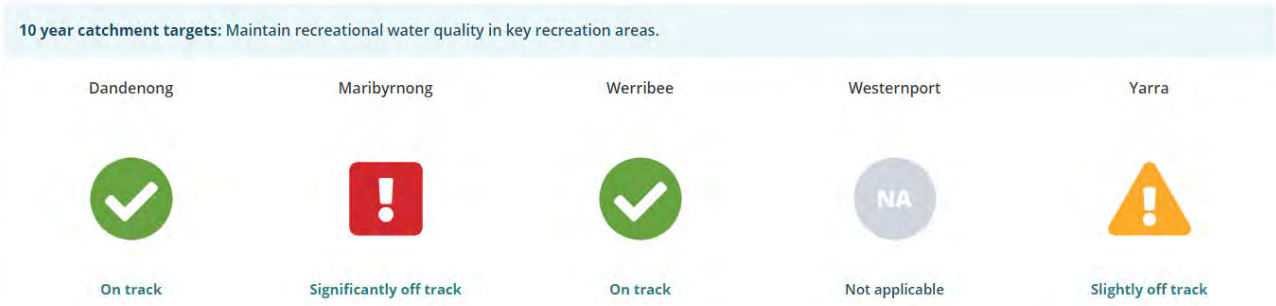


Figure 26. Summary of annual report 21/22 results for recreational water quality at catchment scale.

A catchment is deemed to be "on-track" for the HWS Annual Report if all monitoring sites in that catchment meet the required objective for the designated level of contact with the water for recreational use; either primary (swimming) or secondary (boating, wading). Each SCPO typically has a recreational use nominated in the wording. For example, the objective for the site at Patterson River states "*Maintain recreational water quality at National Water Sports Centre (suitable for secondary contact)*". All sites meet the long-term standard for **secondary contact**, except Kananook Creek which meets this standard during dry weather only. Stormwater runoff is the most common cause of water pollution and elevated levels of *E.coli* can frequently occur during and immediately after rainfall. As such, the Environment Reference Standard (ERS) enables microbial assessment to be undertaken in both all-weather and dry weather (<1mm rainfall) conditions. Four sites do not meet the long-term standard for **swimming** and therefore both the Maribyrnong and Yarra catchments are considered "off-track" (Table 18).

Table 18. Monitoring sites for recreational water quality and associated suitability for recreation based on annual results reported 2021-22. Tick indicates that this recreational use is specified in the SCPO. Green – meets long-term standard. Orange – Does not meet long-term standard.

Catchment	Sub-catchment	Monitoring Location	Primary contact (swimming)	Secondary contact (boating)
Dandenong	**Kananook Creek**	Kananook Creek at Wells St	✗	✓*
	Dandenong Creek Lower	Patterson River at the National Water Sports Centre	✗	✓
Maribyrnong	**Maribyrnong River**	Maribyrnong River at Brimbank Park	✓	✓
		Maribyrnong River at Canning St Ford	✗	✓
		Maribyrnong River at Ascot Vale West	✗	✓
Werribee	**Cherry Creek**	Cherry Lake at Millers Rd	✗	✓
	Werribee River Lower	Werribee River at Riverbend Park	✓*	✓
Yarra	**Yarra River Lower**	Yarra River at Chandler Hwy	✓	✓
		Yarra River at Warrandyte	✓*	✓
	Yarra River Upper (Rural)	Yarra River at Healesville	✓	✓
		Yarra River at Launching Place	✓	✓

**During dry weather only.*

Factors Influencing Implementation

The following factors influencing implementation include:

- **Managing existing stormwater issues** – stormwater runoff is one of the main issues at the locations where the long-term water quality standard for primary contact is not being met.
- **Recreational water quality indicators** – Melbourne Water is working with key partners to investigate sources of faecal pollution in the Yarra River and Maribyrnong River. A Quantitative Microbial Risk Assessment (QMRA) has been undertaken to examine sources of pathogens in the Yarra River and the associated health risks. This research was led by Monash University and funded by the Australian Research Council, EPA Victoria, and Melbourne Water. A QMRA estimates human health risks through examining the actual pathogens present (e.g. viruses, *Campylobacter* spp., *Salmonella* spp.), their number and infectivity, and the potential exposure to recreational users. Findings from the Yarra QMRA indicated that the current ERS standards that use *E.coli* as the primary indicator of recreational water quality are likely to overestimate the potential health risks in the Yarra River. In 2022-23, these research findings were used to apply a site-specific monitoring program at five recreation swimming locations in the Yarra and Maribyrnong Rivers. Results from this recent study are currently being collated. While it is likely that the SCPOs relating to primary contact will continue of be "off-track" over the next five-years, it is envisaged that these continuing investigations will support future decision-making and risk-based monitoring of recreational water quality.

Refinements to Performance Objectives

The method used to assess whether POs needed to be updated is outlined in Appendix 5, with detailed results in Appendix 12.

In summary, the POs in the Yarra sub-catchments were incorrectly located. The Upper Yarra source PO should be in the Yarra River rural sub-catchment and the Middle Yarra River PO should be in the lower Yarra sub-catchment.

Rivers, Wetlands and Estuaries - Reduce Industrial Runoff

There are only three SCPOs relating to this PO group including the lower and upper Merri Creek sub-catchments which are known hot spots for industrial runoff impacts. It is unclear why Emu Creek was singled out for a specific Performance Objective when little industrial area currently exists.

There is also an RPO which was designed to help guide region-wide initiatives including improved coordination and collaboration between agencies. It was difficult to evaluate the SCPOs as they are qualitative and do not have any clear performance expectations to measure success against and the reports in the HWS annual reporting refer to RPO 24 for further information. RPO 24 was assessed as being on-track due to the formalisation of the EPA Officer for the Protection of the Local Environment (OPLE) program and the significant work underway in the Dandenong Creek catchment. However, very limited information was presented on progress of reducing industrial pollution runoff in the Lower and Upper Merri Creek sub-catchments, highlighting the gap in reporting.

Factors Influencing Implementation

The following factors influencing implementation include:

- **RPO performance expectations** – the performance expectations of RPO 24 do not refer to the three SCPOs for reducing industrial runoff. This gap means that even through the RPO was evaluated as on-track, it is unclear what activities have been undertaken in these sub-catchments to reduce industrial runoff.
- **Incorrect location for Emu Creek SCPO** – the requirement for a SCPO to reduce industrial runoff in this sub-catchment is confusing as there is no evidence in planning or on ground of new industrial areas in the Emu Creek catchment.

Refinements to Performance Objectives

The method used to assess whether POs needed to be updated is outlined in Appendix 5, with detailed results in Appendix 12.

In summary the location of POs for managing run-off from industrial areas and associated water quality impacts needs to be reviewed. In particular, the need for one in Emu Creek sub-catchment which could potentially be transferred to another, more relevant sub-catchment.

There is also a need to develop indicators, targets and/or quantitative metrics for assessing progress, including the required actions necessary to achieve sub-catchment targets. The spatial mapping of existing and future hotspot areas for industrial pollution could also be progressed. There is also an opportunity to consider the development of a 'toolkit' for structural and non-structural management options in industrial estates based on the research from The University of Melbourne and RMIT University.

Rivers, Wetlands and Estuaries - Reduce Construction Runoff

In addition to the RPO-17: *Water quality in waterways and bays is improved by reducing inputs of sediment and other pollutants from urban construction and development,* there are 33 SCPOs. These are predominately located in Westernport due to the priority of protecting seagrass in Westernport Bay.

It was difficult to evaluate the SCPOs as they are qualitative and do not have any clear performance expectations to measure success against. The HWS Annual SCPO reporting refers to RPO-17 for further information. The RPO was assessed as being slightly off-track due to the limited evidence of progress in translating research (via the Waterways Practice Partnership) on the quantum of sediment from construction sites to best industry practice. While the EPA Officer for the Protection of the Local Environment (OPLE) program is in operation there is very limited information on activities relating to this RPO.

It is well known that there are many challenges associated with tackling the problem of construction runoff. It is a diffuse issue and requires resources to address non-compliance. There are also added challenges associated with soil types (e.g. sodic soils) which are prevalent in the north and west of the region.

Factors Influencing Implementation

The following factors influencing implementation include:

- **Unclear performance expectations** – the SCPOs are qualitative and there is minimal reporting against these SCPOS via the annual report.

Refinements to Performance Objectives

The method used to assess whether POs needed to be updated is outlined in Appendix 5, with detailed results in Appendix 12.

The assessment found that there is a need to develop indicators and rubrics for construction runoff to ensure progress can be more quantitatively assessed for these POs.

Estuaries

There are four POs that specifically relate to water quality in estuaries:

- Monitor estuary water quality through the Estuary Watch program, and
- Artificial estuary mouth openings.
- Reduce ag run-off
- Reduce construction

The Estuary POs for monitoring and estuary mouth opening only apply to two estuaries in the Westernport catchment: Merricks Creek and Balcombe Creek. These POs are qualitative and therefore do not have numerical targets that are tracked annually. However, Estuary Watch groups have actively monitored water quality and estuary mouth openings at these locations. Reducing ag and construction run-off PO's apply in Westernport estuaries where impacts from agriculture, urbanisation and erosion have potential to impact seagrass communities. There are related sub-catchment performance objectives in the rivers sub-catchments up-stream of these estuaries. Reduce ag run-off PO's are tracked via a quantitative Westernort catchment scale target through the Rivers performance objectives. Reduce construction run-off is tracked qualitatively and is also reported through the Rivers performance objectives.

There are 21 estuaries in the Port Phillip and Western Port region that have been assessed using the Statewide Index of Estuary Condition (IEC) (see Figure 27 DELWP, 2021). One of the five sub-indices of the IEC relates to water quality, specifically turbidity, chlorophyll-a and dissolved oxygen. In the IEC, 10% of the estuaries in the region were assessed as having excellent water quality (including the Yarra River), 20% were in good condition 25% were moderate, 10% were poor and 35% were assessed as having very poor condition as ranked against other estuaries in Victoria. Elevated turbidity was generally more of an issue than chlorophyll a for estuaries entering Western Port. While limited, this data is currently the only available data on estuary water quality condition for the region and it was used alongside other catchment data sources to set the HWS strategy targets. With improved data collected over the remaining part of the strategy there is opportunity to improve the water quality performance objectives for estuaries for the next Strategy.

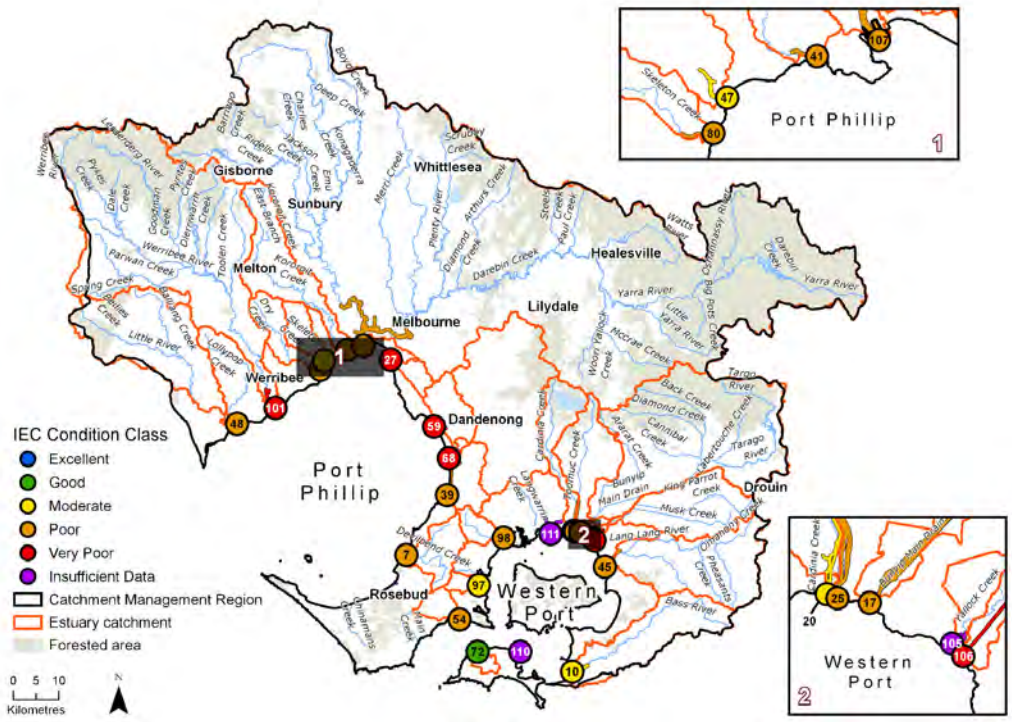


Figure 27. Map showing IEC condition classes for estuaries in the Port Phillip and Western Port region (Source: DELWP 2021). This map does not represent the likelihood that HWS estuary water quality performance objectives will be met.

Factors Influencing Implementation

No barriers to implementation were identified however several data and knowledge gaps were identified.

Refinements to Performance Objectives

The method used to assess whether POs needed to be updated is outlined in Appendix 5**,** with detailed results in Appendix 12.

In summary there are no Performance Objective changes proposed for this PO group.

Summary

A summary of the factors influencing implementation for the water quality PO group is provided in the discussion below.

One of the main challenges with achieving the rural land targets is balancing the high level of demand and interest by landholders in legacy RLP sub-catchments with the need to take the time to engage and build trust with landholders in new sub-catchments (e.g. Cardinia, Toomuc, Deep and Ararat Creeks, Dalmore Outfalls, Emu Creek). The limited resourcing available to service this is constraining the potential to bring new landholders into the program. This presents a growing issue as there is an increasing need to focus energy and resources in new sub-catchments to meet the end of strategy target. Efficiencies could be made through leveraging existing networks and targeting specific land uses or industries to offset the additional resourcing required to enable this. Furthermore, the recent integration of Port Phillip and Westernport Catchment Authority (PPWCMA) into Melbourne Water provides an opportunity to apply an integrated catchment management approach to achieve multiple outcomes for water quality, vegetation and habitat through whole farm planning.

Ensuring existing rural land programs improve over time is the focus of RPO 25 and this was evaluated as being slightly off-track at mid-term as there was limited evidence in HWS annual reporting that improvements had been made. The evaluation of the effectiveness and appropriateness of management interventions undertaken as part of the science inquiry highlighted several improvements that could be adopted particularly regarding the design of riparian buffers and gully erosion control.

The review of POs also identified that the Westernport target for reducing agricultural runoff through improved management of 16,000 Ha of land was unreasonably high because of incorrect mapping and calculations based on 2015 -17 data. Recalculation of the rectified data found the target should be set at 7,000Ha and this suggests that the PO wording should be changed to reflect a modified Westernport target.

The evaluation of SCPOs for maintaining the quality of discharges from sewage treatment plants in seven sub-catchments to protect water quality for Port Phillip Bay found that the levels of nitrogen and phosphorus have mostly remained steady for the past 5 years. It was reported that Jacksons Creek sub-catchment was slightly off-track in 2021-22 because the annual load of nitrogen discharged was marginally above the established baseline. While this does need to be monitored over the next few years to ensure it doesn't increase further, none of the six remaining sub-catchments were identified at risk of not meeting the 10-year target.

The SCPOs to reduce industrial runoff to protect the water quality of waterways and Port Phillip Bay are reported via RPO 24 (Urban pollution programs) for HWS Annual reporting. The issue with this approach is that the SCPOs are focused on place-based qualitative targets to protect water quality from industrial activity by reducing industrial pollutant levels detected in waterways whereas RPO 24 is focused on foundational regional aspects such as resourcing of risk-based programs (e.g. such as the OPLE EPA programs) and research into urban pollution patterns. This means that reporting on place-based issues is very limited via the RPO and represents a gap in tracking the progress of reducing industrial pollutants. This needs to be addressed either by the rewording performance expectations of the RPO to link to the industrial SCPOs more clearly at a site scale or developing quantitative targets and rubrics for the SCPOs. As recommended in the Science Inquiry, additional priority areas also need to be developed using the latest research and monitoring from the Waterways Practice Partnership.

This issue is also reflected in the construction runoff SCPOs, which are currently reported via RPO 17. Reporting via an RPO doesn't adequately address the progress of managing construction runoff at known hotspots, as the RPO is focused on research and best practices. Additionally, RPO 17 was evaluated as being slightly off-track as the HWS Annual reporting has not addressed several of the performance expectations, including quantifying the sediment delivered from construction sites in the Westernport catchment or if analysis of total suspended solids data has been undertaken as part of tracking the target for Western Port in the Port Phillip Bay Environment Management Plan. This needs to be addressed in the next five years of HWS implementation.

A new issue related to construction runoff about the levels of the insecticide bifenthrin (currently used for termite control in new housing estates) was highlighted inthe Science Inquiry through recent research in the region. Monitoring of sediment-borne pollutants detected bifenthrin in wetlands downstream of some housing estates at levels that may be toxic for invertebrates and also detected traces of Bifenthrin in waterways. Research indicates that bifenthrin is transported via surface runoff and dust particles, so improved management of sediment loads may prevent some bifenthrin from entering the waterways. However, research also indicates that bifenthrin application needs to be changed or the chemical substituted for termite control use in housing estates.

The presence of water-borne microbes is a potential risk to human health; the bacteria *E.coli* is the recommended water quality indicator for the presence of pathogens and faecal pollution in waterways. A Quantitative Microbial Risk Assessment (QMRA) has recently been undertaken to examine sources of pathogens in the Yarra River and the associated health risks. Findings indicated that the current ERS standards that use *E. coli* as the primary indicator of recreational water quality are likely to overestimate the potential health risks in the Yarra River. While it is expected that the SCPOs relating to primary contact will continue to be "off-track" over the next five-years, it is envisaged that these continuing investigations will support future decision-making and risk-based monitoring of recreational water quality.

Litter in waterways has been a critical water quality issue for the community for many years. The HWS has been progressing solutions through several different avenues. One avenue is through RPO 26 in developing a consistent framework and litter monitoring method to measure and quantify litter in waterways, which has been developed and trialled in several sub-catchments. This needs to be expanded into other areas to validate threat ratings and identify litter hotspots.

Another avenue is through RPO 27 by reducing the incidence of littering and illegal dumping through raised community awareness and knowledge, infrastructure and enforcement. Several litter reduction initiatives by the River Keepers, Melbourne Water, EPA and councils have progressed over the past few years. However, the Collaboration evaluation found while there was a strong alignment on the issue of litter by agencies, several challenges are hampering the progress of solutions. Although the Litter Labs (workshops designed to identify issues and collaboratively develop solutions) were seen to have effectively built consensus around the nature of the problems through a structured co-definition process, the Litter Action Plan that was created has not been approved and there is evidence that the project did not achieve sufficient buy-in or ownership at senior levels of participating organisations.

There are 21 estuaries in the Port Phillip and Western Port region that have been assessed using the Index of Estuary Condition (IEC) and this found that many of these were either in poor condition (52%) or very poor condition (24%). Yet, other than general objectives relating to agricultural and construction run-off, there are only two estuaries (e.g. Merricks Creek and Balcombe Creek) in the region with specific SCPOs relating to water quality condition. While these were found to be on-track, there is currently limited capacity to track activities more broadly across the region for these important aquatic ecosystems. This presents a future opportunity to expand SCPOs to include activities for other estuaries across the region.

The synthesis of the Water Quality PO group has identified the following opportunities to improve implementation:

- Work strategically and proactively with rural landowners to improve multiple environmental outcomes for water quality, vegetation and erosion in priority areas.
- Identify efficiencies between existing programs for rural land and address need for additional resourcing for processing applications.

- Ensure guidance for construction sites and obligations relating to the General Environmental Duty are being adopted in key hotspot areas.
- Build on technical knowledge for mitigation of industrial and construction run-off and bring this information into place-based interventions at sub-catchment scale.

- Apply findings from recent investigations into recreational water quality to better understand human health risks at key locations.
- Establish a clear governance framework for actions relating to litter, and work in partnership to progress solutions.

Recommendations

6 Pollution

The importance of maintaining good water quality is reflected in several Performance Objectives relating to pollution from various sources such as sewage and septic tanks, agricultural areas, industrial land-use and construction activities. Overall, the current Performance Objectives in the Strategy relating to water quality are making progress towards the 10-year targets, but implementation could be further improved by the following:

I- 6.1 Investigate and implement appropriate controls for industrial areas in line with the Interventions Stocktake report.

I- 6.2 Further advance spatial mapping of existing and future hotspot areas for industrial pollution to support the review of PO locations for managing run-off from industrial areas. Develop indicators and rubrics to enable quantitative assessment and guide targeted action in these hotspot areas.

I- 6.3 Advocate for changes in bifenthrin application for termite control in housing estates to mitigate the impacts to water quality from this contaminant during urban development.

I- 6.4 Continue to work across multiple agencies to investigate sources of faecal pollution in the Yarra and Maribyrnong Rivers. Use findings to support future decision-making and risk-based monitoring of recreational water quality.

I- 6.5 Investigate and implement appropriate controls for construction areas in line with the Interventions Stocktake report and develop indicators and rubrics for evaluating impacts from construction runoff.

I-6.6 Update the metrics used to assess the likely benefits of interventions to reduce agricultural run-off and align methods across all programs for rural land management.

11 Litter

Litter is rated highly by the community as it has an impact on social values as well as environmental values, however, its management is complex because it requires multi-agency interventions and coordination. While there is strong consensus between agencies on the importance of this issue, action could be further strengthened by the following:

I- 11.1 Establish a clear governance framework for actions relating to litter and work in partnership to progress solutions, including a review of roles and responsibilities for actions outlined in the Litter Action Plan.

I- 11.2 Use data from the implementation of the new litter monitoring method to validate threat ratings and identify litter hotspots. Continue to fill data gaps and identify any additional data requirements.

I-11.3 Develop methods that support the prioritisation and reporting of litter hotspots. Assess the need for additional sub-catchment POs or priority areas for litter to drive action at a local scale over the next five years.

8 Working with private landowners

A subset of recommendations that relate to water quality are outlined below:

I- 8.2 Identify efficiencies between existing programs for rural land management (e.g. Melbourne Water's rural land program and our CMA programs) and address the need for additional resourcing to improve timeliness of assessing applications.

I- 8.3 Review partnership approaches and engagement mechanisms for the key programs such as the stream frontage management and rural land programs to increase participation in focus areas.

Vegetation and pests

Vegetation along rivers, estuaries and in and around wetlands is a key value in its own right and plays a critical role in supporting other key values. Restoring riparian areas is a major focus of the HWS.

Performance Objectives POs) focus on priority areas to establish vegetation, maintain existing vegetation and protect high quality vegetation along river reaches, around wetlands and estuaries. Examples of interventions include revegetation, fencing to exclude stock or pests, and weed and pest management. This PO group also includes the management of pests to protect vegetation as well as other values (e.g. managing predators to birds).

While the strategy targets for vegetation are ambitious, there was an assumption that collaboration and co-delivery would enable these to be delivered.

The Science Inquiry highlighted several key areas for consideration in the Implementation inquiry including:

- Deer was recognised as one of the top three threats that has increased since 2018 and that greater effort was needed to address the threat.
- Additional areas of high-quality vegetation along rivers found through recent monitoring data should be considered for inclusion in the Vegetation Maintain PO.
- Maintenance is important as shown from case studies that vegetation condition improved where sites were being actively maintained.
- Updated guidance is required for managing areas based on current climate projections, the HSMs predictions and latest research into climate vulnerable species.

This section provides an overview of the POs relating to vegetation and pests and presents the current status of targets. The likelihood of achieving the 10-year targets by 2028 is then evaluated along with a discussion on the barriers to implementation.

Strategy Targets

The vegetation and pest PO group consists of four RPOs, three SCPO categories for rivers and wetlands and two categories for estuaries (Table 19). For rivers the SCPOs include priority reaches within a sub-catchment where action is required. For wetlands and estuaries, the SCPOs relate to an individual priority wetlands or a specific estuary.

It should be noted that RPO 29 which is about protecting wetland vegetation from urban and rural threats is predominately discussed in the stormwater section.

Table 19. RPOs and SCPOs relating to vegetation and pests.

Waterway	PO Type	Typical Performance Objective wording	Target
Regional	RPO - *Seasonal Herbaceous Wetlands*	RPO 28: Seasonal Herbaceous Wetland vegetation communities are identified and a management program is in place to protect them on public and private land.	Qualitative
	RPO - *Wetland vegetation protection*	RPO 29: Programs, standards, tools and guidelines are in place to protect wetland vegetation communities from urban and rural threats, including adequate planning controls.	
	RPO - *Climate change resilient vegetation*	RPO 30: Climate change resilient revegetation management practices are understood and implemented by selecting plant species, provenances and vegetation communities that are suited to projected future climatic conditions.	
	RPO - Pest risk-based approach	RPO 31: A risk-based approach is adopted to prevent, eradicate and contain pest plants and animals (including deer) and protect waterway assets.	
	RPO-32 - Biodiversity significance	Programs are in place to protect and enhance sites of biodiversity significance associated with the region's waterways, such as through Melbourne Water's Sites of Biodiversity Significance Strategy.	
Rivers	Establish buffers	Establish a continuous riparian vegetated buffer (x km, x ha) along priority reaches.	Quantitative
Rivers	Maintain existing vegetation	Maintain existing vegetation (x km, x ha) along priority reaches.	Quantitative
Rivers	High-quality vegetation	Maintain or achieve high and very high-quality vegetation (Vegetation Quality level 4 and 5 - currently x 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.	Quantitative
Wetlands	Establish buffers	Improve the floodplain, riparian and wetland buffer to cover 50% of the wetland perimeter.	Qualitative
Wetlands	Protect/maintain/ improve	Protect, maintain, or improve wetland vegetation to support habitat values.	Qualitative
Wetlands	Manage pests	Reduce the threat from invasive flora (weeds) and fauna (foxes, cats, dogs).	Qualitative
Estuaries	Protect/improve vegetation	Protect / maintain/ enhance remnant estuarine vegetation communities	Qualitative
Estuaries	Manage pests	Protect estuary roosting sites from excessive disturbance from humans, vehicles, dogs, foxes and cats.	Qualitative

Operating Environment

Melbourne Water, Councils and Parks Victoria are the main organisations with programs to establish, maintain and protect vegetation and manage pests. Many volunteers, community groups and landholders are also heavily involved in managing vegetation and pests.

Melbourne Water invest significantly in improving riparian areas through a mix of delivery mechanisms from grants to capital works and maintenance programs. The Stream Frontage Management Program has been in operation for more than 20 years engaging private landowners in managing riparian areas.

Natural wetlands across the region are predominately on private land, however there are many managed by Parks Victoria and councils. Melbourne Water directly manage a small number of wetlands, typically on Melbourne Water land through the Sites of Biodiversity Significance Program (SoBS). However, Melbourne Water also work collaboratively with delivery partners to support management of other priority wetlands in the region and have a focus on improving the health of billabongs.

The riparian land along estuaries is typically owned by Parks Victoria and councils and Melbourne Water provides some support through incentive programs.

The high-quality vegetation typically occur in areas with surrounding forest which often requires a catchment wide approach to management and as such Melbourne Water often work with Parks Victoria and DEECA on coordinating interventions such as deer culling.

Collaboration Case Study – vegetation and pests (deer)

The independent evaluation of collaboration and co-delivery under the vegetation and pests PO group surfaced a number of challenges. These were associated with moving beyond coordination or incentive mechanisms to achieve more collaborative partnerships when partners have limited resources, limited motivation to co-deliver or are not located in the Strategy priority areas. The findings under this PO group largely emerged from the analysis of the DEECA-led Central Highlands Eden project (pest management) and engagement with private landowners and different land-managers to revegetate riparian areas.

These two programs relate to:

- HWS RPO 31: A risk-based approach is adopted to prevent, eradicate and contain pest plants and animals (including deer) and protect waterway assets, and
- Over 300 Sub-Catchment Performance Objectives (SCPOs) that relate to the establishment of vegetation buffers for rivers and wetlands and the protection, maintenance and improvement of vegetation for rivers, estuaries and wetlands.

The achievement of these RPO and SCPOs significantly relies on collaborative and coordinated effort between Melbourne Water, government land managers and private landowners, enabled primarily through grant or incentive mechanisms.

Melbourne Water and other delivery partners were found to broadly support the Strategy. Examples of partners delivering activities that align with the Strategy without Melbourne Water's involvement were also identified. There is, however, no evidence that these activities are directly motivated by the Strategy and limited evidence that partners currently consider themselves 'co-owners' of the Strategy.

Successful collaborations were shown to be enabled through collaboratively aligning agendas, sharing decision making and establishing long-term relationships, be that with government agencies in formal committees for pest and weed control, or with private landholders for riparian revegetation works. The importance of continuous improvement and trialling different ways of working was also mentioned by one interviewee.

A tension in the co-delivery of riparian revegetation works with land managers and private landowners was identified between focusing on the Strategy priority areas with lower levels of collaborative effectiveness, or collaborating with motivated land-owners who may not be in priority areas.

Interviewees also mentioned several other limitations to the successful co-delivery of the Strategy under this PO group, including:

- The absence of intentional co-delivery implementation planning
- The challenges of Melbourne Water's recent restructures and staff changes
- A perceived risk averse culture in Melbourne Water
- The difficulty in pooling resources across departments, or providing funding to co-delivery partners for particular initiatives under Melbourne Water's financial and administrative systems, and
- Limited communication with the broader community.

Regional Performance Objective Evaluation

As outlined in Table 20, several Regional Performance Objectives (RPOs) for wetland vegetation (RPO-28: Seasonal Herbaceous Wetlands and RPO-29: Wetland vegetation protection) are on track at this stage of strategy implementation, having progressed over half of the performance expectations (e.g. what success looks like by 2028). However, this does contrast with the issue of wetland loss (outlined in stormwater section) and highlights the need to review the performance expectations of these RPOs to better address the issue of wetland protection. The details of the rubric used to evaluate the likelihood of meeting performance expectations by the end of the Strategy are outlined in Appendix 2.

Table 20. Regional Performance Objective evaluation summary for Vegetation and Pests PO group.

RPO	Evaluative reasoning
RPO 28: Seasonal Herbaceous Wetland vegetation communities are identified and a management program is in place to protect them on public and private land.	**On track to meet performance expectations** Several examples are provided in the HWS Annual Report of Seasonal Herbaceous Wetland vegetation communities being identified and mapped in different regions of the urban growth area. Management plans appear to be in place for several wetlands.
RPO 29: Programs, standards, tools and guidelines are in place to protect wetland vegetation communities from urban and rural threats, including adequate planning controls.	**On track to meet performance expectations** The Wetland MEP has been developed and monitoring results are provided online at the HWS report card website. Research has enabled the database and mapping of natural wetlands to be improved and this information has been shared with HWS partners and is available on the HWS website. A collaborative approach by HWS partners through a working group is currently underway on developing guidance and mechanisms for natural wetland protection. A decision risk tool has been developed to support priority setting and action planning for natural wetlands, particularly on private land. However, four natural wetlands have been lost since the beginning of the Strategy and approximately 14 priority wetlands have been identified of being at risk due to urban development. This is clearly not 'on track' but the performance expectations do not mention maintaining the *number* of natural wetlands and hence this urgently needs to be addressed for the evaluation result to reflect this significant issue.
RPO 30: Climate change resilient revegetation management practices are understood and implemented by selecting plant species, provenances and vegetation communities that are suited to projected future climatic conditions.	**On track to meet performance expectations** A research project is underway to model likely impacts of climate change on the distribution of 31 key species, including impacts on critical life stages (e.g. germination) for 6 revegetation species and identification of potential seed source locations for 10 species. Investigations are also underway to apply adaptive management approach to build resilience in revegetation programs. On-ground pilot projects are planned for next year to trial this approach. It is unclear if the performance expectation of researching the distribution of ecologically important weeds has been progressed.

Rivers Evaluation

The current status of the above quantitative SCPOs as reported in 2021-22 HWS Annual Report is shown in Figure 30 which forms the starting point for the likelihood evaluation. Many sub-catchments are currently on-track and the future operating environment will continue to enable delivery, thus no further evaluation is required.

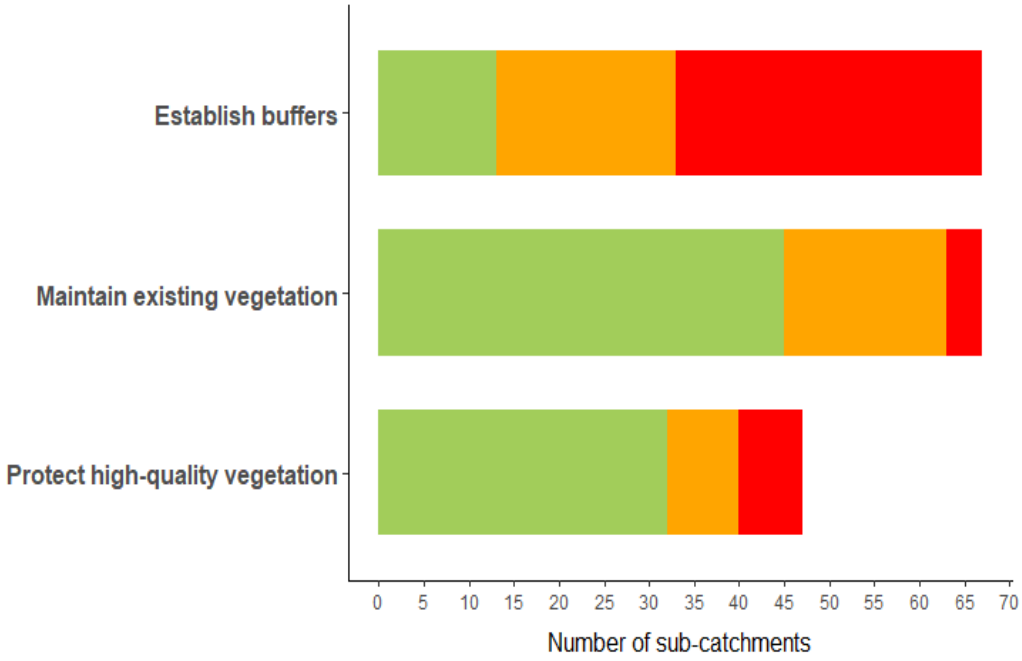


Figure 28. Current status of quantitative SCPOs for vegetation as reported in 2021-22. Green – On-track, orange – Slightly off-track, red – Significantly off-track.

The likelihood evaluation method described in Appendix 3 was applied to vegetation-specific SCPOs and a summary of the results is presented in Figure 29. A total of 18 sub-catchments were identified as currently at risk of not meeting one or more vegetation targets. Further details provided in Appendix 11.

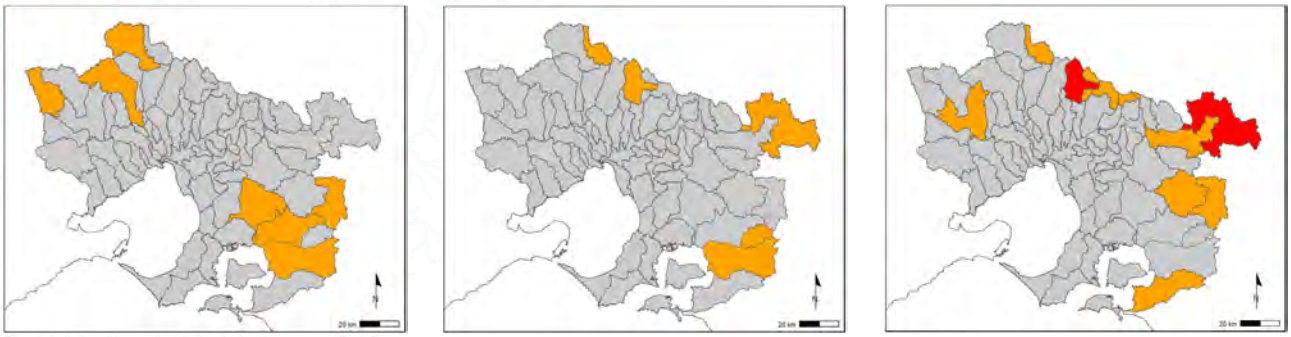


Figure 29. River sub-catchments that were identified as at risk of not meeting target/s for vegetation. Left = establish vegetation, middle = maintain existing vegetation, right = protect high quality vegetation.

With respect to establishing vegetation buffers, this PO is on-track in the Dandenong catchment, with the Corhanwarrabul, Monbulk and Ferny Creeks sub-catchment already meeting and exceeding the 2028 target. Likewise, sub-catchments in the Yarra catchment appear to be on track. Note that these areas have the lowest targets; Dandenong for instance has only 2% of the total target despite being one of the five major river basins. However, seven sub-catchments in the Maribyrnong, Werribee and Westernport catchments were identified as at risk of not meeting the target. Notably, this included four sub-catchments in Westernport, in particular, the Lang Lang River has only achieved 5% of the target with 731ha remaining. The Lang Lang sub-catchment has the largest targets of any sub-catchment, followed by Deep Creek Upper, and therefore not surprising that it has been more challenging to reach these targets.

Around 24,585 hectares vegetation has been maintained over the past four years across the region and 45/67 sub-catchments are on-track including all sub-catchments in the Werribee and Dandenong catchments. Only five sub-catchments were considered as at risk of not meeting the target.

Of note is that 21 of the 67 sub-catchments have exceeded the annual target on average since 2018 (see Appendix 10), suggesting that the targets in these sub-catchments are too low or that resources could be redirected in the future to sub-catchments significantly off-track from meeting the targets.

Maintaining high quality vegetation is a sub-set of the Maintain Vegetation PO. The intent is to prevent possible decline in the condition of high-quality vegetation from known threats such as grazing by pest animals (e.g. deer) and increased weeds. A key assumption is that areas of high-quality vegetation have been identified and mapped, but the Science Inquiry has demonstrated that this may not always be the case.

The Protect High-quality Vegetation PO is at risk of failing to meet strategy targets in 15 out of 47 sub-catchments, of which several in the Yarra and Werribee catchments were prioritised as needing urgent attention due to large targets. The Science Inquiry identified a further 25 sites of high-quality vegetation areas outside of the priority areas. As these additional sites are not covered by SCPOs, they may not be appropriately protected and should be considered alongside the existing priority areas.

Factors Influencing Implementation

The following factors influencing implementation include:

- **Relationship development** – (establish vegetation) Engaging with landholders takes time and resources to develop on-ground projects, especially in areas with high numbers of private frontages. For example, one project in a rural area of the Jacksons Creek sub-catchment has 17 separate landholders along a 2.5km priority reach, making engagement a highly time-consuming process. Furthermore, some landholders are difficult to engage and reluctant to commit to the required setbacks. In some cases, landholders are unwilling to allow Melbourne Water to undertake any work on their property or even allow Melbourne Water to access their land. Time availability and competing priorities also constrain the level of effort that personnel can give to relationship development.
- **Internal resourcing** – (protect/maintain vegetation) In the past, maintenance activities for vegetation management were targeted in areas of public land but works on private land also contribute towards the target. The internal resource effort is higher on private land due to required documentation (i.e. preventative maintenance) and arrangements for access. Further resourcing to facilitate these projects was flagged as a possible opportunity to increase the likelihood of meeting the target.
- **Reporting and data management** – (establish and protect/maintain vegetation) Works undertaken by other agencies are not currently captured effectively via the existing reporting process. While additional works could behappening, this is not being recorded unless Melbourne Water fund part of it. These equivalent works by other organisations such as DEECA, Parks Victoria and Councils could be captured and counted towards the outputs of the Strategy as a whole, even if they have not been funded through Melbourne Water grants.
- **Application of priority areas** – (establish buffers) Consultation with subject matter experts indicated that engaged landholders outside priority areas would be willing to undertake beneficial projects. But the current funding model does not allow these works to be counted towards the target. Where these projects enhance riparian buffers along a waterway corridor and would contribute towards a long-term ecological outcome, some flexibility within the current funding model could be considered.
- The priority areas were carefully determined in 2016 using a rigorous methodology that translated into focus areas for the Strategy in 2018. However, this does not mean that the delineation is 100% accurate.
- **Alignment with co-delivery partners** – (protect/maintain) Consultation with SMEs indicated that better alignment with external partners, such as DEECA, Parks Victoria and Councils, could improve delivery and recording of required maintenance works. For example, a coordinated broad-scale approach with multiple agencies could improve outcomes across the catchment for activities such as deer control.
- **Internal 'Remote working policy** – (protect/maintain) Many sites with high-quality vegetation are in remote areas, which limits accessibility and requires additional safety protocols to deliver the necessary on-ground works. The upper catchment areas of Plenty River (Source) and Yarra River (Source) have large targets and are more than 30mins from a road, so trigger the remote working policy. These upper catchment areas were identified in the evaluation as unlikely to meet the targets. The higher costs and added working time in these

remote areas are known barriers to delivering the required work. If the required works in remote areas cannot be completed safely, these Performance Objectives are effectively unachievable under the current arrangement and need to be reviewed. It is also worth noting that there are a range of approaches to working in remote areas across agencies which can make collaboration challenging.

- **Maintenance target** – (protect/maintain vegetation) The maintenance target is for existing priority areas. The PO specifications currently do not consider the maintenance of newly established vegetation. Due to how the PO targets are linked to the Melbourne Water vegetation investment plan, this limits the extent to which newly established vegetation is maintained, arguably at a critical time when maintenance is needed to improve survival rates.

Refinements to Performance Objectives

The method used to assess whether POs needed to be updated is outlined in Appendix 5, with detailed results in Appendix 12.

In summary, priority areas for protecting high quality vegetation may need to be updated based on new monitoring data presented in the Science Inquiry.

Wetlands and Estuaries Evaluation

There are three types of SCPOs for wetlands that relate to vegetation management including establishment of buffers, managing existing vegetation and pests.

An assessment of whether progress had commenced for these SCPOs was undertaken to identify wetlands where actions had 'Not Started'. Findings are summarised in Table 21. Note that works on Barnbam Swamp were identified as not started at the time of the evaluation, however, consultation with subject matter experts has revealed that Parks Victoria have commenced a background hydrology study that will help to inform future works towards the Strategy target. In addition, planning and coordination for the wetland at Domain Chandon is underway with external partners such as Greening Australia, even though it is currently reported as not started.

Table 21. Summary of SCPO progress for vegetation management in priority wetlands.

Catchment	Establish buffers	Protect/maintain/improve
Dandenong	Not started in 1 wetland (out of 10 wetlands). *Barnbam Swamp*	Not started in 1 wetland (out of 6 wetlands). *Hallam Valley Floodplain Wetlands*
Maribyrnong	In progress	Not applicable in this catchment
Werribee	Not started in 9 wetlands (out of 23 wetlands). *Paynes Road North Swamp, Holden Road Wetland, Baths Swamp, The Spit Nature Conservation Reserve, Greens Road East Wetland No. 3, West Quandong Swamp, Balls Wetland Complex, Live Bomb Wetland, Rabbiters Lake & Swamp*	In progress
Westernport	Not started in 3 wetlands (out of 6 wetlands). *Yallock Creek Floodplain Wetlands, Lang Lang Floodplain Wetlands, Coolart Wetlands*	Not started in 2 wetlands (out of 3 wetlands). *Yallock Creek Floodplain Wetlands, Lang Lang Floodplain Wetlands*
Yarra	Not started in 4 wetlands (out of 13 wetlands). *Kalkallo Common, Domain Chandon Billabongs, Banyule Billabong, Westgate Park Wetlands*	Two POs will be reported on at the end of strategy in 2028.

Targets for pest animal and weed management in priority wetlands are currently on-track in all five catchments, as reported in 2021-22 (Figure 30). Many of these targets are delivered through external partners and stakeholders such as Parks Victoria (PV) and Councils undertaking pest plant and animal control at wetlands they manage. This performance objective is measured by the number of hectares of land actively managed for invasive flora and fauna within 50 m of a wetland (for weed control) or 200 m (for pest animal control).

The Wetlands MEP uses the percentage of land (hectares) actively managed to track progress annually, with the target percentage treated ramping up over the life of the strategy. Consequently, this SCPO is currently 'on track' but there are very large increases needed to achieve the target in coming years.

Managing disturbance from dogs, people, foxes and vehicles at estuary roosting sites in the Werribee and Westernport catchments is currently reported qualitatively. No progress has been reported since the start of the strategy and no programs appear to currently be in place across any of the HWS partner agencies, local government authorities or community groups.

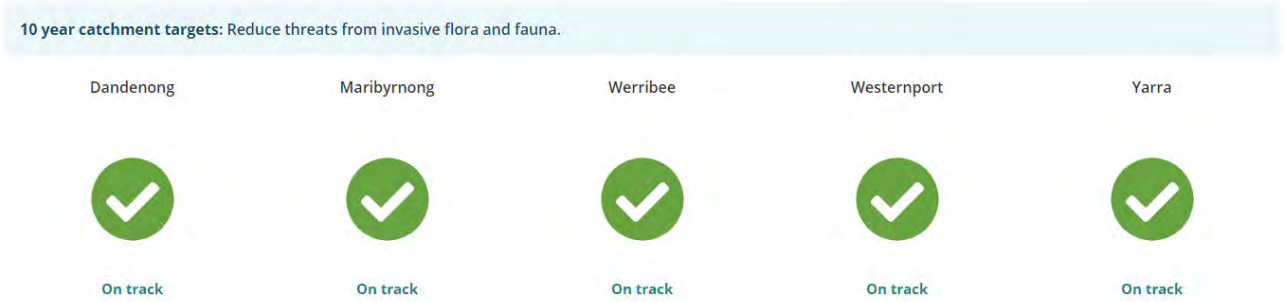


Figure 30. Summary of HWS Annual Report 21/22 results for managing pests in priority wetlands at catchment scale.

An assessment of whether progress had commenced for these SCPOs was undertaken to identify wetlands where pest management actions had 'Not Started'. Findings are summarised in Table 22. Whilst the targets are on-track at the catchment scale indicating good progress at this midway point of the Strategy, some wetlands have not yet started for various reasons, mostly because these are in private ownership and agencies have no ability to undertake or influence works.

Table 22. Summary of SCPO progress for pest management in priority wetlands.

Catchment	Manage pests in priority wetlands
Dandenong	Not started in 3 wetlands (out of 12 wetlands). *Braeside Park, Tamarisk Waterway Reserve, Barnbam Swamp*
Maribyrnong	In progress
Werribee	Not started in 14 wetlands (out of 26 wetlands). *Deanside Marsh, Paynes Road North Swamp, Holden Road Wetland, Baths Swamp, Richmonds Grass Swamp, WTP - Ryans Swamp, Greens Road East Wetland No. 3, Balls Wetland Complex, Black Swamp, Rabbiters Lake & Swamp, Jensz Swamp, Bingham's Swamp (Rolling Thunder Wetland), Laverton RAAF Swamp, Cunninghams Swamp*
Westernport	Not started in 2 wetlands (out of 5 wetlands). *Yallock Creek Floodplain Wetlands, Lang Lang Floodplain Wetlands*
Yarra	Not started in 2 wetlands (out of 13 wetlands). Hays Paddock Billabong, Yarra Bridge Streamside Reserve

Factors Influencing Implementation

The following key factors influencing implementation were identified:

- **Wetlands on private land** – (relates to all sub-groups) For the POs relating to Establishing Buffers and Pests, there were nine wetlands in the Werribee catchment where projects had not yet started. These wetlands are all privately owned and engagement has been difficult due to concerns from landowners about the required buffers. Melbourne Water has been unable to access these wetlands to assess condition. Four other wetlands in this catchment have been identified for possible inclusion of the Western Grassland Reserve, yet the creation of this reserve has not been secured. Therefore, at least 10 of these wetlands are potentially unlikely to meet the current targets even though targets are currently on-track at the catchment scale.

- **Relationship development** – (relates to all sub-groups) Projects relating to Yallock Creek Floodplain Wetlands and Lang Lang Floodplain Wetlands had not yet started for both POs relating to vegetation management at the time of evaluation. In these sub-catchments, the boundaries of the natural watercourse are not always clear. Billabongs that would have been part of the river floodplain have been incorporated into the wider farming landscape making it more difficult to identify and negotiate the required buffers and setbacks with private landholders.
- **Reporting and data management** – (relates to all sub-groups) Tracking of SCPOs for wetlands could be aided by improved metrics and integrated reporting. Quantitative information about wetland buffers (i.e. mapping) is available, however, the required reporting tool is not yet operational. External partners deliver a large proportion of required pest management works, therefore, coordination on data management and reporting is essential to effectively track progress for these SCPOs.
- **Lack of established program** – POs to protect estuary roosting from disturbance were set for 19 estuaries in the Werribee and Westernport catchments. No evidence of action to specifically achieve these outcomes has been found since the Strategy began in 2018. Programs are known to be in place to protect specific birds on beaches but none that focus on protecting estuary habitat particularly. Discussion will be required to rank how important this action is compared with other actions in the strategy.

Refinements to Performance Objectives

The method used to assess whether POs needed to be updated is outlined in Appendix 5, with detailed results in Appendix 12.

Overall, there are a number of wetlands where the wording of the PO needs to be updated, largely, to clarify the values at the site that need protecting.

Summary

In summary, the reasons for POs relating to Vegetation and Pests are off-track are outlined in *Figure 31*. These factors were based on the subject matter expert workshops and are reflective of the collaboration evaluation findings.

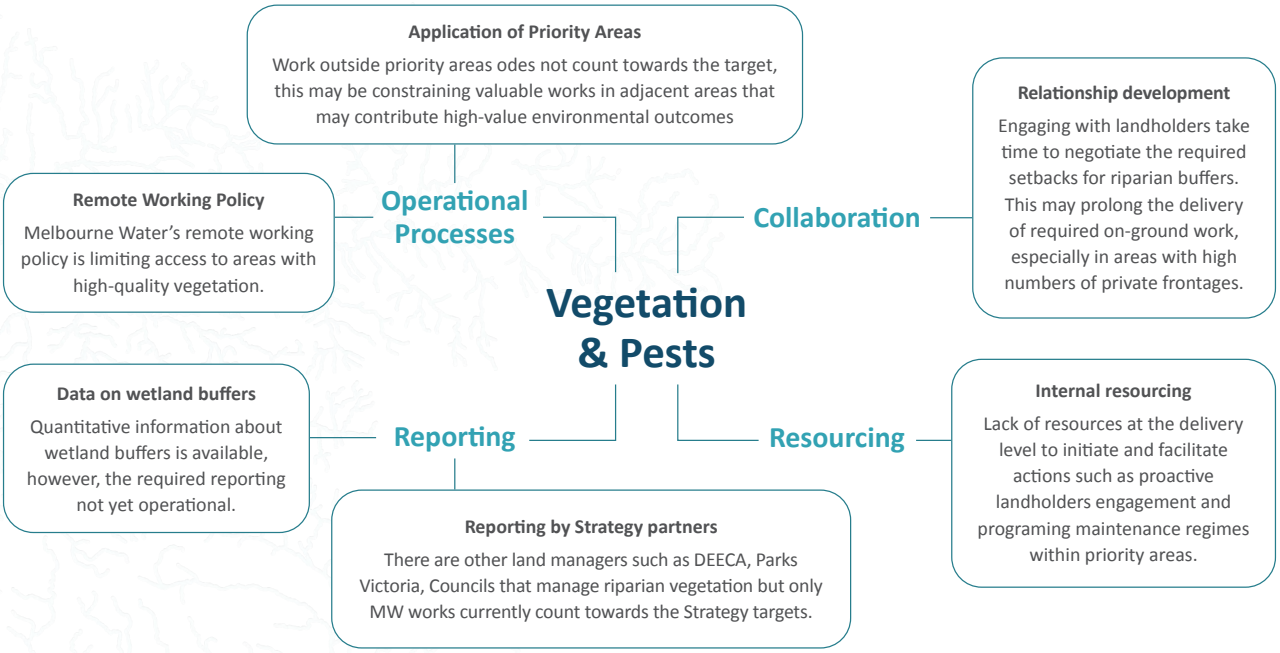


Figure 31. Summary of key barriers to implementation of SCPOs relating to Vegetation.

Time and resources required to develop relationships with private landholders in new priority areas and the limitations of working in remote areas were identified as key factors in the PO evaluation limiting progress in the high-risk sub-catchments. This was expanded further in the collaboration evaluation which surfaced the challenges associated with moving beyond coordination or incentive mechanisms to achieve more collaborative partnerships when partners have limited resources, limited motivation to co-deliver or are not located in the Strategy priority areas. Successful collaborations were shown to be enabled through aligning agendas, sharing decision making

and establishing long-term relationships. Some of these factors apply to both government agencies and private landholders for riparian revegetation works. It was concluded that collaboration for this PO group is driven not specifically by the Strategy but by where objectives are aligned. This aligns with the commitments made in the Strategy by agencies.

Melbourne Water personnel attributed the issue of working in remote areas to health and safety protocols based on risks of potential injury in remote areas where mobile phone communication is poor and access to emergency services would require air lift. This issue was also raised in the collaboration evaluation, where some interviewee's referred to a risk-averse culture and the challenge this provides in accessing remote areas.

Locations where remote areas apply also coincide with the emerging threat of deer to vegetation, further impacting on the ability to protect high quality and newly established vegetation. The deer threat is increasing in almost half the sub-catchments across the region, particularly those in the south and east in the Yarra and Westernport catchments. The Science Inquiry highlighted that modelled deer densities based on on-ground data are greatest at close proximity to large water bodies and intermediate levels of forest cover, indicating that vegetation in closed catchments will potentially be most impacted in the future and should be the focus of deer management.

Data quality and the ability to report on the progress of vegetation SCPOs came up as a theme. For example, woody weeds are present in some of the vegetation establishment priority reaches and are being actively removed and revegetated. While these works are counted towards the vegetation establish targets, they are not recognized in the Habitat Suitability Models as new vegetation because the model input data (attenuated forest cover) did not distinguish between native vegetation and weeds. Also, a wetland buffer mapping tool has been developed however is not fully operational. These will be important tools to finalise for the end-of-Strategy review to use to move beyond qualitative evaluations.

The Science Inquiry, in particular the background technical Riparian vegetation: A Technical Report to Inform the Healthy Waterways Strategy mid-term review and associated research fact sheets summarized key research undertaken through the Waterways Research Practice Partnership into the impacts of climate change on riparian vegetation. It has identified a suite of species to use in revegetation to ensure climate resilience into the future. There is a need to ensure guidelines for managing vegetation are updated with the latest knowledge on how to improve resilience under new climate change projections.

The synthesis of the vegetation and pests evaluation has identified the following key opportunities to improve implementation.

Vegetation extent

- Exploring other delivery options for working with private landholders.
- Investigate implications of allowing some target contribution from outside priority areas - improve flexibility of delivery (e.g. 80:20).
- Finalise the wetland buffer reporting tool to enable quantitative tracking of progress.

Vegetation maintenance

- Explore options to count maintenance on private land undertaken by landholders.
- Document and count on-ground works by other organisations (not funded by MW).

Manage high quality vegetation

- Coordinated, broad-scale, multi-agency approaches could improve outcomes such as deer control.
- Exploring other options to work in forested remote areas could help maintain high-quality areas.

Recommendations

8 Working with private landowners

Working with private landowners is critical to achieving HWS outcomes, especially along waterway frontages where vegetation establishment targets in high risk sub-catchments are significantly off-track. Melbourne Water and other delivery agencies (e.g. local government) have been engaging with landowners for many years, and mature incentive programs are in place. However, due to several factors (e.g. time, resources, priorities, landowners' willingness), achieving on-ground outcomes for habitat protection, wetland management, vegetation improvements and rural water quality is becoming more challenging. There is a need to increase investment and engagement with private landowners and establish new approaches that support integrated catchment and waterway management outcomes.

I- 8.1 Investigate and implement new approaches in focus sub-catchments for relevant POs (e.g. vegetation establish and maintain, rural land and wetlands on private land).

I- 8.2 Identify efficiencies between existing programs for rural land management (e.g. Melbourne Water's rural land program and our CMA programs) and address the need for additional resourcing to improve timeliness of assessing applications.

I- 8.3 Review partnership approaches and engagement mechanisms for the key programs such as the stream frontage management and rural land programs to increase participation in focus areas.

I- 8.4 Ensure outcomes delivered by all co-delivery partners are captured and reported.

9 Deer and working in remote areas

Deer are an increasing threat and managing them is challenging, particularly in remote forested areas. Many high-quality vegetation sites in remote areas also need weed and other pest management interventions. Limited accessibility requires additional safety protocols, which increases the costs of delivering the necessary on-ground works. Delivery partners, including landowners and agencies (Melbourne Water, Parks Victoria, DEECA and local governments) need to work together to coordinate efforts to improve efficiencies.

I- 9.1 Identify and implement alternative options and different ways of working in remote areas (e.g. partnerships and co-delivery models).

I- 9.2 Update high-quality vegetation priority areas based on new information from the Science Inquiry.

I-9.3 Further refine priority areas for deer based on latest modelling, research and consideration of appropriate spatial extents and timing of works.

I- 9.4 Ensure continued support for implementation of the Peri-urban Deer Control Plan (2021-2026) for Melbourne.

I- 9.5 Improve annual tracking through the development of metrics and rubrics (e.g. ha/y deer management).

Habitat

While all the PO groups above aim to improve conditions that ultimately lead to improved habitats for key values, this PO group focuses on managing the physical form of waterways, improving instream connectivity and specific habitat requirements for species not captured adequately covered in other SCPOs. For example, certain frog species require very specific habitats.

The top three threats identified in the Science Inquiry (i.e. urbanisation (unmitigated stormwater), decreased water availability, and pest animals (mainly deer)) all impact the conditions and values related to the habitat group.

The Science Inquiry also flagged that the updated list of priority wetlands is not included in the HWS Co-designed Catchment Programs, which poses a risk for their protection. They are included in the Wetlands MEP and also on the HWS website map.

Strategy Targets

The Habitat PO group consists of 4 SCPO categories for rivers, one for wetlands, three for estuaries and two Regional Performance Objectives (RPOs) (Table 23). Many of the targets in these SCPOs are qualitative and were difficult to evaluate without performance expectations outlining what success looks like in 2028. Similar to other PO groups, the quantitative SCPO was easier to evaluate in comparison. This PO group is related to the Vegetation and pests group, particularly the RPOs which are relevant across Vegetation and Habitat.

Table 23. Habitat Regional (RPOs) and sub-catchment Performance Objectives (SCPOs).

Waterway	PO Type	Typical Performance Objective wording	Target
Regional	RPO-18 (Asset management)	Critical waterway health assets including stormwater treatment systems, fishways and erosion control structures, are maintained for their designed purpose or the same outcomes are delivered by alternative means.	Qualitative
Regional	RPO-32 - Biodiversity significance	Programs are in place to protect and enhance sites of biodiversity significance associated with the region's waterways, such as through Melbourne Water's Sites of Biodiversity Significance Strategy.	Qualitative
Rivers	Improve fish passage	Increase instream connectivity by providing fish passage through removal of barriers.	Quantitative
Rivers	Physical form	Investigate and mitigate threats of erosion along waterways.	Qualitative
Rivers	Protect specific habitat	Conserve priority species and communities through habitat protection, research and monitoring.	Qualitative
Rivers	Re-engage floodplains	Improve vegetation and capacity to retain nutrients and sediments in the floodplain to protect and enhance biodiversity.	Qualitative
Wetlands	Protect specific habitat	Undertake activities that will protect specific habitat.	Qualitative
Estuary	Re-engage floodplains	Identify opportunities to re-engage estuarine floodplains.	Qualitative
Estuary	Physical form	Ensure that estuary mouth management considers acid sulfate soil risk.	Qualitative
Estuary	Improve fish passage	Improve longitudinal connectivity and tidal exchange in estuary.	Assessed as part of Rivers PO equivalent above

Operating Environment

Several organisations in addition to Melbourne Water support the delivery of these SCPOs including DEECA, Parks Victoria, Councils, Water Retailers, peak bodies (e.g. Native Fish Australia), community groups, volunteers and landowners.

Regional Performance Objective Evaluation

As outlined in Table 24, RPO 32 relates predominately to Melbourne Water's SOBs program and is assessed as being on-track. RPO 18 is slightly off-track as while Melbourne Water have asset management plans, the annual reporting against the RPO is at a very high level and is difficult to evaluate if adequate maintenance is occurring across the region. The details of the rubric used to evaluate the likelihood of meeting performance expectations by the end of the Strategy are outlined in Appendix 2.

Table 24. Regional Performance Objective evaluation summary for Habitat PO group.

RPO	Evaluative reasoning
RPO 32: Programs are in place to protect and enhance sites of biodiversity significance associated with the region's waterways, such as through Melbourne Water's Sites of Biodiversity Significance Strategy.	**On track to meet performance expectations** There is evidence of regular site management plan renewal for Sites of Biodiversity Significance (SoBS) with 17 sites with new management plans since July 2018. The tracking of management plan implementation has also been enhanced to provide better oversight of the SoBs program. It is unclear from information provided if all management plans are less than seven years old. Information provided in the HWS Annual Report indicates that additional sites are under consideration for inclusion in the SoBS program. It is unclear of the progress in reviewing all listed sites by 2023 to ensure they still meet the eligibility criteria, this needs to be addressed in the next Annual Report. Regular flora and fauna threatened species/communities monitoring has been conducted at 19 SoBS sites. A project investigating habitat improvement measures for the threatened Southern Toadlet has progressed to implementing on-ground improvement measures at Sugarloaf Reservoir. The Ramsar Protection Program overseen by DELWP/DEECA has implemented priority management actions in Western Port and Port Phillip Bay, Bellarine Peninsula and Edithvale-Seaford wetlands. A project is underway to explore potential impacts of long-term trends of climate change and urbanisation on SoBS sites and a feasibility study has been commissioned for the possible use of recycled water from the Eastern Treatment Plant.
RPO-18: Critical waterway health assets including stormwater treatment systems, fishways and erosion control structures, are maintained for their designed purpose or the same outcomes are delivered by alternative means.	**Slightly off-track – At risk of not meeting performance expectations by end of Strategy** HWS Annual reporting for this RPO has focused on outputs, and as such, the Performance Objectives relating to outcomes have yet to be addressed, so progress on these is unknown. Melbourne Water has an asset management plan that supports the maintenance and renewal of assets such as fishways, erosion control structures and stormwater quality wetlands. There is reported evidence of regular maintenance and renewal of all three asset classes. No evidence has been provided where softer bank protection structures have been implemented to seek better environmental outcomes or examples where existing wetlands have been retrofitted to contribute towards Strategy infiltration and harvesting targets. While there is reported involvement in research, it does not relate to the performance expectation of understanding how asset performance has improved waterway conditions and values.

Rivers - Improve Fish Passage

The current status of the quantitative SCPO for improving fish passage, as reported in 2021-22, is shown in Figure 32, which forms the starting point for the likelihood evaluation. Several fishways have already been completed. For example, the old fishway at Pillars Crossing in Dandenong Creek has now been replaced, See strategy implementation following.

10 year catchment targets: Provide connectivity for fish along major waterways through the removal of barriers.

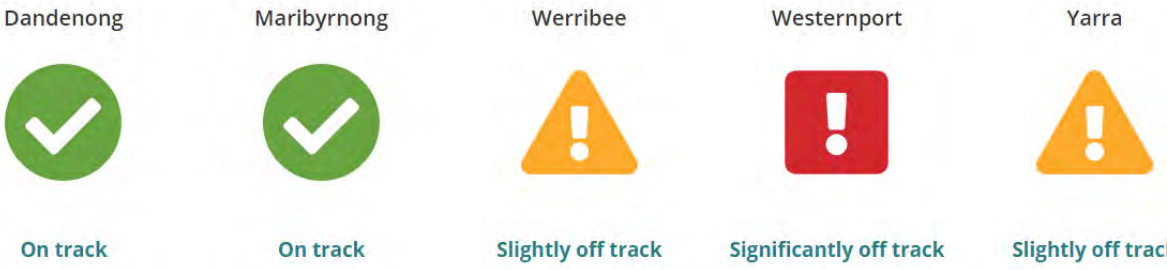


Figure 32. Summary of HWS Annual Report 21/22 results for fish passage at catchment scale.

The evaluation found that the quantitative targets for improved fish passage will likely be met for Dandenong and Maribyrnong catchments. Two fishways have been assessed at high risk of failing the targets, one in the Werribee River Lower sub-catchment and another in the Lang Lang River sub-catchment (Table 25). These locations represent complex issues that need to be resolved across various stakeholders and environmental conditions.

Table 25. A short-list of SCPOs for fish passage identified as at risk of not meeting the 10-year targets. Colours indicate rating: Orange – HIGH risk of not meeting the 10-year target.

Catchment	Sub-catchment	Improve fish passage
Werribee	**Werribee River Lower**	Lower Werribee Diversion weir
Westernport	**Lang Lang River**	Heads Road Weir

Some sub-catchments may be "slightly off-track", but the future operating environment will continue to enable delivery. For example, the weir at Armstrong Creek has not started, but design options for potential fish passage over this weir were investigated in 2021-22 to inform decision-making.

Strategy to implementation – Improving fish passage in Dandenong Creek

What's the issue?

Some native fish species migrate between fresh water and the sea to spawn, feed and disperse. Stream connectivity and habitat diversity are critical components of healthy rivers and creeks and fish require free movement along the length of rivers and streams and between estuarine and freshwater environments.

Impeding fish passage through the construction of dams, weirs, floodgates and waterway crossings can negatively impact native fish by interrupting spawning or seasonal migrations, restricting access to preferred habitat, increasing susceptibility to predation and fragmenting continuous communities potentially leading to genetic bottlenecks.

What did we do?

In January 2021, Melbourne Water commenced construction to replace the old fishway at Pillars Crossing in Dandenong Creek with a new one. The purpose of the new fishway is to enable free passage of the native migratory fish community in the lower reaches of Dandenong Creek, which flows into the Patterson River and into Port Phillip Bay. The project includes installation of a cone fishway to bypass the weir and installation of a downstream random rock fishway to raise the water at the fishway entrance.

How does this work deliver on objectives in the Strategy?

This project supports the Performance Objectives in the Healthy Waterways Strategy by providing habitat connectivity for fish along major waterways through improving fish passage at Pillars Crossing in the Dandenong Creek Lower sub-catchment.

Source - HWS Annual Report case study

Factors Influencing Implementation

The following key factors influencing implementation include:

- **Complexity** - The fishway at the Lower Werribee Diversion weir is complex and has interdependencies with other projects for improved water management. Southern Rural Water is the asset owner and the final design needs to incorporate a range of stakeholder requirements. The project is currently in design phase and if funding is secured the construction of this fishway expected after 2027. Therefore, it is unlikely to be achieved over the life of the Strategy.
- **Costs** - The fishway at Heads Road weir is also delayed due to its high cost. Melbourne Water is the asset owner and designs have been completed for this project. Currently, it is off-track because the original expected date of delivery (20/21) has passed. This project remains a high priority and planning for delivery within the next five years is continuing.

Refinements to Performance Objectives

The method used to assess whether POs needed to be updated is outlined in Appendix 5, with detailed results in Appendix 12.

In summary there are no proposed changes to the POs in this sub-group.

Rivers and Estuaries - Physical Form

Physical form refers to the size, shape and form of the bed and banks of a waterway, which is influenced by factors such as geology, soils, vegetation, flows, sediment and topography. Defining the condition of the physical form for waterways can be complex, as condition in this context may require consideration of several different elements of channel form, such as degree of naturalness, the presence of large woody debris and erosion potential.

A region-wide prioritisation process has been undertaken to identify the location of priority works for rivers to inform future planning for the next five years. The Maribyrnong and Westernport catchments are critical because more than 50% of the sub-catchments have this PO (Table 26).

This SCPO is currently qualitative, and reporting is via short descriptive reports, which limits the detailed tracking of progress. The progress described in the reports broadly relates to planning with the delivery of works anticipated in the next few years. The exception to this is the Dandenong catchment SCPO which has had erosion works completed in Ferny Creek and Upway Creek. However, for 17 of the 30 physical form SCPOs, there is no indication of the next step now that the prioritisation process is complete or if non-asset solutions for capturing stormwater could be considered to prevent erosion from getting worse.

Table 26. Number of SCPOs relating to Physical Form per catchment. Orange: >50% of sub-catchments within the catchment have this Performance Objective.

Catchment	Number of SCs with this PO	Percent of total No. SCs (%)
Dandenong	1	13
Maribyrnong	6	60
Werribee	6	43
Westernport	9	75
Yarra	8	32

For estuaries, this SCPO relates specifically to managing acid sulfate soils in the Kananook Creek estuary. Risk assessments conducted as part of dredging works at this location concluded that the risk of Acid Sulfate Soils (ASS) and Potentially Acid Sulfate Soils (PASS) was low.

Factors Influencing Implementation

- **Qualitative POs** - Performance expectations (for example what does physical form success look like in 2028) are unclear which may be contributing to lack of progress.
- **Resourcing -** There has been limited dedicated resource for the physical form asset protection program at Melbourne Water in the past few years.

Refinements to Performance Objectives

The method used to assess whether POs needed to be updated is outlined in Appendix 5, with detailed results in Appendix 12.

While no specific improvements to this PO group are proposed, improving the ability to evaluate physical form POs via the development of clear performance expectations and a rubric would be useful for annual reporting and final of strategy evaluation. More quantitative POs are needed for the next HWS.

Rivers and Wetlands - Protect Specific Habitat

This group of qualitative SCPOs relate to protecting and improving habitat for specific species. For example, the Dandenong catchment POs for habitat improvement works to support populations of the Southern Toadlet in two sub- catchments are currently in progress. Similarly, in the Maribyrnong catchment habitat improvement for Yarra pygmy perch in two sub-catchments are underway. The Werribee catchment objectives for habitat improvement for the Brown Toadlet are under review because the current SCPOs have been incorrectly applied. For example, in the Kororoit Creek Lower and Kororoit Creek Upper sub-catchments, investigations have shown no suitable habitat enhancement/protection opportunities for the Brown Toadlet, with no recent confirmed records of this species in these sub-catchments. Therefore, these SCPOs will be amended as part of this Mid-term Evaluation (see section below on POs for review).

Factors Influencing Implementation

The following key factor influencing implementation was identified:

- **Guidance and distribution** - One of the main barriers is lack of guidance on specific habitat requirements for frog species in particular and also a lack of knowledge of their distribution across the landscape.

Refinements to Performance Objectives

The method used to assess whether POs needed to be updated is outlined in Appendix 5, with detailed results in Appendix 12.

In summary there are a number of wetlands where the wording of the PO needs to be updated, largely, to clarify the values at the site that need protecting.

Rivers and Estuaries - Re-engage Floodplains

For rivers, this SCPO is only applicable to the Yarra catchment. Mapping was undertaken on the Yarra floodplain between Warrandyte and Healesville. This work identifies billabongs along the river and analyses the connections to the Yarra River. The results can help identify sites for potential rehabilitation working with partners.

For estuaries, habitat related SCPOs are only applicable to Dandenong (Kananook Creek estuary) and Westernport (15 estuaries) catchment. Investigations in both regions to determine opportunities to re-engage floodplains and wetlands have now been completed. However, at present there is no specific Melbourne Water funding for work to re-engage floodplains either in estuaries or in riparian zones. However current incentives and capital programs for vegetation and rural land are being utilised to progress works in riparian floodplains. Exploration of a dedicated floodplain re-engagement bid could be considered during the next Price Submission to service both estuarine and riparian floodplains.

Many of the floodplain wetlands are on private land that is currently part of agricultural activities. If estuarine floodplain wetlands are to be re-engaged landholders would have to be in agreement to do so. However, work in riparian floodplains and vegetation areas indicates that private landholder participation can sometimes be a barrier to implementation.

Factors Influencing Implementation

While many of the factors identified above also relate to this sub-group additional key factors are summarised below:

- **Relationship development** – Projects relating to Yallock Creek Floodplain Wetlands, and Lang Lang Floodplain Wetlands have not yet started. In these sub-catchments, the boundaries of the natural watercourse are not always clear. Billabongs that would have been part of the river floodplain have been incorporated into the broader farming landscape making it more challenging to identify and manage these habitats. A targeted campaign in the Lang Lang sub-catchment to engage landholders in this area could support the delivery of the target over the next five years.
- **Private land** – Seeking agreement from landowners to re-engage floodplains is challenging due to conflicting needs.
- **Funding** – There is currently no dedicated funding program to re-engage floodplains other than through incentives.

Refinements to Performance Objectives

The method used to assess whether POs needed to be updated is outlined in Appendix 5, with detailed results in Appendix 12.

In summary, there are no refinements proposed for these POs.

Summary

In summary, the reasons for POs relating to Habitat are off-track are outlined in Figure 33.

Figure 33. Summary of key barriers to implementation of SCPOs relating to Habitat.

The likelihood of physical form SCPO targets being met is unclear as reporting of progress is via short descriptive reports, which limits the detailed tracking of progress when no performance expectations have been set. For 17 of the 30 physical form SCPOs, there is no indication of the next step following prioritisation process or if non-asset solutions for capturing stormwater could be considered to prevent erosion from getting worse. Furthermore, the current wording of the HWS Annual Reporting needs to be clarified if the SCPOs are off-track, in progress or complete. This needs to be reviewed and improved as part of the mid-term review response. For the next Strategy, it would be beneficial to transition this objective into numerical targets based on required works identified through the prioritisation process.

The Science Inquiry was also unable to evaluate the physical form condition of waterways due to a lack of new data since 2017. This suggests that knowledge and evaluation of physical form require further attention over the next five years of Strategy implementation.

Linked to physical form is creating physical habitat through techniques such as large woody debris reintroduction, which increase localised hydraulic complexity through scour pools and sediment bars. The Science Inquiry intervention stocktake assessed the potential benefits of large woody debris for environmental values such as fish, platypus and macroinvertebrates and how long periods are often required before impacts to these values can be realised. Several LWD projects were installed in the region 20 - 30 years ago that would benefit from monitoring to understand the potential impacts and inform future projects.

To date, seven fishways have been constructed since the beginning of the Strategy. The evaluation found that the quantitative targets for improved fish passage will likely be met for Dandenong and Maribyrnong catchments. Two fishways have been assessed at high risk of failing the targets, one in the Werribee River Lower sub-catchment and another in the Lang Lang River sub-catchment.

These locations represent complex issues that need to be resolved across various stakeholders and environmental conditions. Evidence from Science Inquiry demonstrated that fishways are an effective management intervention for fish with immediate effects, indicating that these two fishways should still be prioritised.

The Science inquiry highlighted the importance of maintenance of existing fishways to support ongoing asset function. This is particularly important under climate change scenarios where the hydraulic operation of the fishway can change. The Intervention Stocktake within the Science Inquiry documents how this is being demonstrated on older fishways such as Pillars Crossing, where monitoring found reduced functionality and effectiveness led to a small range of fish species and sizes that could pass through the fishway. Several fishways are now being upgraded to maintain functionality, and monitoring of fishways needs to be incorporated as part of asset management to support decision making for fishway upgrades.

A broader issue for wetlands is the loss of habitat and the implications for environmental values such as frogs, birds and wetland vegetation. This is discussed in more detail in the Stormwater section. The Science Inquiry highlighted that four natural wetlands have been effectively lost since the HWS was launched in late 2018, amounting to 114 ha of natural wetland habitat. A further 14 regional priority wetlands were reported to be under imminent risk of degradation through Precinct Structure Plans or Developer Services Schemes.

Given the habitat of frogs and platypus is increasingly vulnerable to the threats identified in the science inquiry some POs have been identified for review to improve the wording or location to strengthen how these habitats are managed.

The synthesis of the Habitat PO group evaluation has identified the following opportunities to improve implementation. These have been further outlined in Appendix 11:

- Ensure that priority fishways identified in the HWS are built, maintained and monitored to retain effectiveness.
- Implement priority works for physical form to protect habitat and water quality.

- Progress water for environment and stormwater POs to improve habitat for key values such as frogs and platypus.

- Update SCPOs with more appropriate locations for frog habitat interventions and improve guidance for management.
- Progress the research gaps and recommendations related to habitat outlined in the Science inquiry.

Recommendations

1 Refocus effort

I- 1.3 Prioritise interventions that have immediate outcomes such as fishways for Lang Lang River and Lower Werribee River and stormwater infiltration measures.

I- 1.4 Investigate options and implications of providing flexibility in target contribution that reflect the intent of the Performance Objectives (e.g. establishing vegetation outside of priority areas).

I-1.5 Ensure Melbourne Water and other delivery partners where appropriate update guidelines (e.g. managing vegetation) to improve on-ground outcomes (e.g. latest knowledge on how to improve resilience under new climate change projections).

Community

As humans we appreciate waterways in many different ways. Waterways provide settings for leisure and restorative places. They give us a sense of community, where people come together for social interactions, where we can learn from the environment, engage with art and culture. Importantly for our region, they provide a way of connecting with people and nature, particularly in the urban areas. As people start to appreciate waterways more, they care more, and this can lead to better environmental outcomes. There can also be tension between social and environmental needs, and this requires careful consideration in how management occurs.

The Science Inquiry found:

- Safety is a common concern for access along waterways, and
- Social values framework requires further development.

Strategy Targets

The large number of RPOs for the community PO group is an indication of the breadth that the Strategy covers for social values. These relate to initiatives like daylighting pipes to developing improved metrics for the social values of wetlands in our region. The Sub-catchment Performance Objectives (SCPOs) relating to the Community PO group aim to increase access and participation for people to connect socially and with nature, thereby supporting the social values of amenity, community connection and recreation. It should be noted that recreational water quality is also an important social value and this PO is discussed in the Water Quality PO group.

The RPOs and SCPOs relevant to the Community PO group are listed in Table 27.

Table 27. List of Community Regional Performance Objectives (RPOs) and sub-catchment Performance Objectives (SCPOs).

Waterway	PO Type	Typical Performance Objective wording	Target type (regional value)
Regional	RPO-19 (Reimagine your creek)	RPO-19 Options to transform modified waterways by creating more natural, community-loved spaces are identified and implemented.	Qualitative
	RPO-20 (Wetland social values)	RPO-20 The amenity, community connection and recreation values of wetlands are better understood. Performance Objectives are developed to enhance these values.	
	RPO-22 (Urban cooling)	RPO-22 Cooler, greener and more liveable urban environments are created through revegetation and as part of managing excess stormwater.	
	RPO-37 (Participation rates)	RPO-37 Participation rates in education, capacity building, incentive programs and citizen science activities have increased and enable greater levels of environmental stewardship for our waterways.	
	RPO-38 (Stories and resources)	RPO-38 Key messages, stories and resources for waterways and waterway health are collaboratively developed and broadly distributed, increasing community knowledge and engagement around waterways	
	RPO-39 (Systems for knowledge sharing)	RPO-39 Systems and pathways to share knowledge and information between communities and stakeholders have been developed and expanded to empower communities to participate and influence waterway management (for example, digital portals, social media, Communities of Practice, signage programs).	
	RPO-40 (Profile of waterways)	RPO-40 The profile of waterways is lifted, local connections to waterways are increased, and leaders in waterway management are celebrated and fostered.	
	RPO-43 (Social values framework)	RPO- 43 The social values framework, information and methods used to develop values assessments, targets and Performance Objectives are further developed and improved during the life of the Strategy	

Rivers	Access (increase)	Increase or improve access to and along waterways from x% to x% (about x km) by filling gaps and improving connections to existing path networks.	Quantitative (202 km)
Rivers	Increase participation	Increase participation rates from x to x; support community groups; connect with growth area communities; build capacity; promote participation in citizen science and high value areas.	Quantitative (44,560)
Wetlands	Access (foundational)	Develop understanding of the amenity, community connection and recreation values of wetlands and develop Performance Objectives to enhance the values.	Reported regionally via RPO 20
Estuaries	Access (maintain)	Maintain and support existing opportunities for access and recreation.	Qualitative - Unable to assess

Operating Environment

The interventions required to meet the access PO targets include constructing new pathways, canoe platforms, bridges or ramps near waterways or improving access by upgrading or resurfacing existing paths, widening paths for shared users and replacing steps with ramps. These are typically delivered by Councils, Parks Victoria, DEECA, VicRoads, Developers, and Melbourne Water. Recreational peak bodies (such as Bicycle Victoria, Victoria Walks, and Canoeing Victoria) regularly advocate for increase for improved access along waterways.

The interventions required to meet the participation PO targets include citizen science, education, incentives, events, social media and digital engagement. Melbourne Water, Parks Victoria, Councils, DEECA, NGOs (e.g. River Keeper, Merri Creek Committee) and conservation peak bodies (e.g. Birdlife) regularly undertake participation-related activities along and for waterways. In recent years, Friends of Groups (e.g. Friends of Moonee Ponds Creek) have been undertaking activities to increase participation in waterways.

Collaboration Case Study

The external evaluation of collaboration and co-delivery for the community PO group focused on the Moonee Ponds Creek (Chain of Ponds) collaboration. Chain of Ponds is a partnership of four local governments, three water utilities, Parks Victoria, an artist and three community groups working together to transform the Moonee Ponds Creek into an iconic waterway for Melbourne and enhance its cultural, social and environmental values. Through its work program, Chain of Ponds contributes to:

- HWS Regional Performance Objectives 1, 3, 4, 6, 15, 19, 26 and 27 which respectively relate to:
  - Aboriginal and Traditional Owner expertise, support, training and partnerships (RPOs 1, 3, 4 and 6)
  - the effective use of the planning system to protect and enhance waterways (RPO 15)
  - the transformation of modified waterways to more natural, community-loved spaces (RPO 19), and
  - litter reduction (RPOs 26 and 27).
- HWS Sub-catchment Performance Objectives that relate to access, vegetation, participation and physical form.

The Chain of Ponds collaboration is widely regarded as a highly effective example that demonstrates what a 'step-change' in collaboration might look like at the sub-catchment level. Its effectiveness has largely been enabled by its ability to capitalise on enabling conditions, sufficient resourcing, and the deliberate establishment of a robust collaborative culture.

Enabling conditions for this collaboration have included:

- Highly engaged, active community groups with deep local knowledge, organising capacity and strategic nous, and a strong connection to the Creek
- Strong buy-in to an inspiring and well-articulated shared vision
- Sufficiently resourced stakeholder organisations whose representatives are motivated to collaborate
- Pre-existing relationships between key stakeholders and a history of collaboration along the Creek, and
- Time-sensitive drivers for collective action in the form of two major development proposals that posed both threats and opportunities for the Creek.

Factors and elements that have contributed to a strong collaborative culture include:

- The intentional approach that was used to establish the collaboration
- A fit-for-purpose operating model that combines structure and responsiveness
- Distributed leadership that is supported and sustained by a dedicated coordinating role
- Trust, accountability, and transparency
- The right people, skill sets and mindsets, and
- A focus on 'getting things done' and making tangible progress.

The place-based approach used in the CoP was widely regarded as effective and appropriate for its context. The enabling conditions have underpinned its success, and there was a general view that it may not be suitable for contexts where those enabling conditions are not in place.

Regional Performance Objective Evaluation

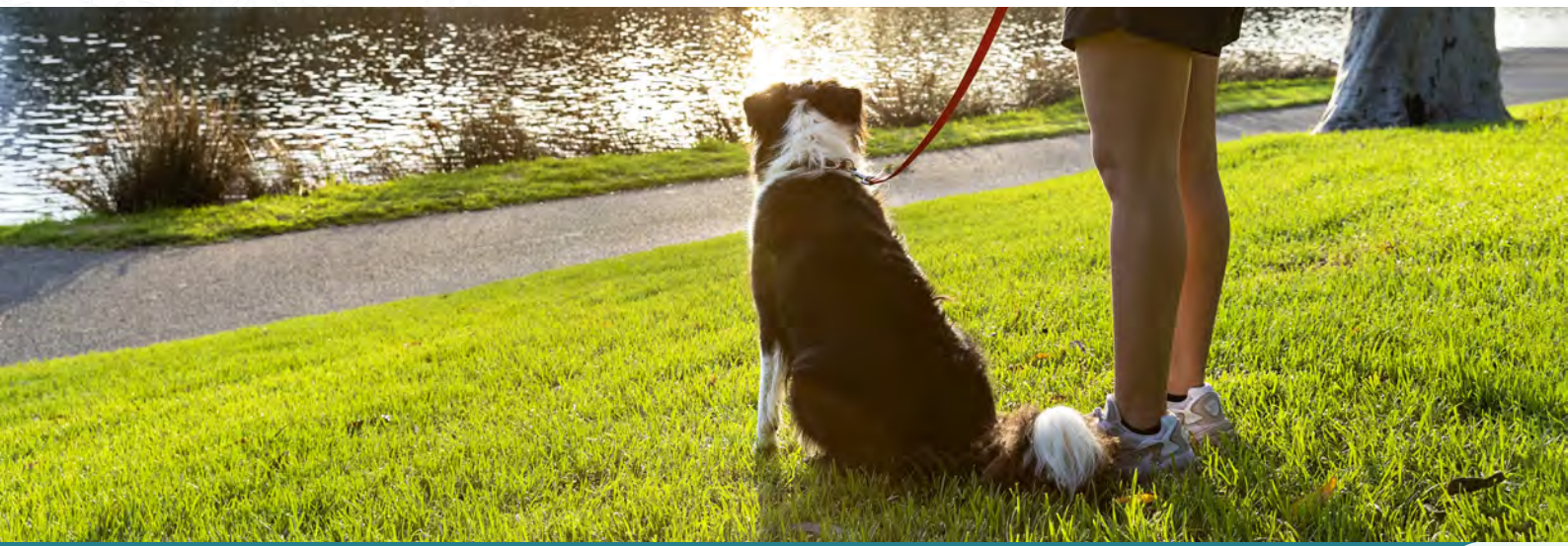
While most of the RPOs relating to community are on-track, RPO-20 (Wetland social values) and RPO-43 (Social values framework) are slightly off-track because the conceptual model development, piloting of social values for wetlands and guidance on addressing conflicts between environmental and social values are behind schedule. The RPO-40 (Raise profile of waterways) was evaluated as significantly off-track as no performance expectations have been set, largely due to uncertainty of RPO accountability within Melbourne Water. This needs to be resolved and performance expectations developed with HWS partners relating to raising the profile of waterways and celebrating the local community leaders that champion improving waterway health. The evaluative reasoning is provided in Table 28 and details of the rubric used to evaluate the likelihood of meeting performance expectations by the end of the Strategy are outlined in Appendix 2 METHODS RPO evaluation.

The Science Inquiry via the *Social Values: A Technical Report to Inform the 2018 HWS Mid-term Evaluation* confirmed that the progress of RPO-20 (Wetland social values) and RPO-43 (Social values framework) had been delayed and recommended that the existing social values framework, including metrics, methodologies and rubrics be further investigated and reviewed by the end of the Healthy Waterways Strategy.

Table 28. Regional Performance Objective evaluation summary for Community PO group.

RPO	Evaluative reasoning
RPO 19: Options to transform modified waterways by creating more natural, community-loved spaces are identified and implemented.	**On track to meet performance expectations** This RPO is being delivered via the Reimagine Your Creek Program (RYC). HWS annual reporting indicates that a number of RYC naturalisation projects are underway and are at varying levels of delivery. RYC website (https://www.melbournewater.com.au/services/projects/reimagining-your-creek-project) provides videos, photos and plans demonstrating evidence of construction. The restoration of these creeks will activate open space and provide improved access to waterways in highly urbanised areas for community benefit. The projects have delivered a series of walking paths, boardwalks and bridges that connect the community to nature and each other and has improved pedestrian and cycling connections with other transport links.
RPO-20: The amenity, community connection and recreation values of wetlands are better understood. Performance objectives are developed to enhance these values.	**Slightly off-track – At risk of not meeting performance expectations by end of Strategy** Annual reporting indicates the performance expectations in the Regional MEP outlining the need for conceptual models for social values of wetlands to be developed, is underway with the models drafted, but requiring further development. Work is currently underway to identify which wetlands need social value POs. The performance expectation of the piloting approach to determine social value status and conditions for priority wetlands appears to be behind schedule.
RPO 22: Cooler, greener and more liveable urban environments are created through revegetation and as part of managing excess stormwater.	**On track to meet performance expectations** Several examples provided in HWS Annual Reports and case studies of different approaches to creating cooler, green and move liveable urban environments along waterway. Some of these are part of pilot projects. Case studies are available via HWS website. It is unnclear if presentations have been shared with HWS partners to encourage learning and wider application so this should be addressed in future annual reports.

RPO 37: Participation rates in education, capacity building, incentive programs and citizen science activities have increased and enable greater levels of environmental stewardship for our waterways.	**On track to meet performance expectations** Several quantitative examples provided in HWS Annual Reports of participation rates increasing in most categories, despite the potential impacts of lockdowns during COVID-19. Future annual reporting needs to focus on the performance expectations, particularly demonstrating increased participation rates in urban growth areas.
RPO 38: Key messages, stories and resources for waterways and waterway health are collaboratively developed and broadly distributed, increasing community knowledge and engagement around waterways.	**On track to meet performance expectations** Future annual reporting needs to address the performance expectations, particularly the ones relating to stories with a personal element and connection to waterways are being shared by communities and stakeholders and are helping to increase community knowledge and connection.
RPO 39: Systems and pathways to share knowledge and information between communities and stakeholders have been developed and expanded to empower communities to participate and influence waterway management (for example, digital portals, social media, Communities of Practice, signage programs).	**On track to meet performance expectations** Over half of the performance expectations have been progressed. Future annual reporting needs to address the performance expectations, particularly - more community groups are involved in participating in waterway management due to more options (via systems and processes) being available to support the participation. Also need to report on evidence that the systems and processes have contributed to collective impact by some communities on their local waterways.
RPO 40: The profile of waterways is lifted, local connections to waterways are increased, and leaders in waterway management are celebrated and fostered.	**Significantly off-track – At risk of not meeting performance expectations by end of Strategy** Performance expectations for this RPO have yet to be agreed upon, and it needs to be clarified which Melbourne Water team is responsible for progressing this RPO. Information in HWS Annual reporting was provided for the first time in 2021/22. It highlighted different events that had been held in the region as well as media coverage to increase community connection. However, there are no indications or measures of how these initiatives have raised the profile of waterways or how leaders in waterway management are celebrated and fostered. Further work is needed to clarify responsibilities for progressing this RPO and to outline performance expectations so that an evaluation can be conducted in the future.
RPO-43: The social values framework, information and methods used to develop values assessments, targets and performance objectives are further developed and improved during the life of the Strategy.	**Slightly off-track – At risk of not meeting performance expectations by end of Strategy** A draft social values framework has been developed, and baseline data from 2018 has been applied. Information contained in HWS annual reporting indicates that there has been a focus on assessing the condition of litter as part of the framework. No evidence is provided in HWS annual reporting of when the social framework is due to be finalised or approvals sought from the RLG, suggesting that framework development may have been delayed. The communication of the status of social values to the community needs to be addressed in HWS Annual reporting. There is also no evidence of progress for the performance expectation that conflicts between social and environmental values of waterways are understood and guidance provided to practitioners on how to navigate this. This indicates the need for further information to be provided in future HWS Annual Reports.



Access

The current status of the access SCPOs for rivers, as reported in the 2021-22 HWS Annual Report at a **catchment** scale, is shown in Figure 34 and indicates that all catchments, except Maribyrnong (for access), are "on track". However, to understand the likelihood of the SCPOs being met by 2028, a sub-catchment scale assessment is required.

Figure 34. Summary of HWS Annual Report 21/22 results for Community at catchment scale.

Most access interventions have been undertaken by Councils, Parks Victoria, VicRoads, developers and the State government (through major projects such as Railway Crossing Removal and Westgate Tunnel). As of June 30 2022, 79.7 km of new or improved waterway access has been delivered in the region since June 2018. This is broken down as follows:

- Dandenong (target 26 km) – 14.7 km delivered.
- Maribyrnong (target 57 km) – 7.2 km delivered.
- Werribee (target 34 km) – 25.6 km delivered.
- Westernport (target 42 km) – 11.4 km delivered.
- Yarra (target 43 km) – 20.8 km delivered.

Some of the notable highlights in increasing waterway access to date include the delivery of 7 km of new waterway access along Diamond Creek filling a gap in the path network, 7 km of improved and new access along Kororoit Creek Lower, 8 km of new access along multiple waterways in Cardinia, Toomuc, Deep and Ararat Creeks sub-catchments due to greenfield development and improved on-water access to the Yarra River below.

Strategy to implementation – Improving canoe and kayak access to Yarra River

What's the issue?

Waterways provide popular spaces for recreation and connection to nature. With increased interest in paddling (canoeing and kayaking) across Melbourne, public agencies must provide the community safe access at appropriate locations. We also need to ensure the experience of accessing our waterways is suitable for a diverse range of users, such as people with mobility limitations. This is particularly important as Melbourne's population increases in size and density.

What did we do?

New mudstone steps have been installed to improve canoe and kayak access on the Yarra River beneath Fitzsimons Lane Bridge. Formalised seating areas adjacent to the bridge will host spectators and judges when competitions are held, and revegetation works will create a green and improved space for people to enjoy.

Melbourne Water, Manningham City Council and Parks Victoria, in consultation with Paddling Victoria, have partnered to improve the area's natural amenity and liveability and ensure the needs of paddlers were considered and understood.

How does this work deliver on objectives in the Strategy?

This project supports the Access Performance Objectives and ultimately, the key social values of Recreation, Community Connection and Amenity through constructing and improving facilities that support access in the Yarra River Lower sub-catchment. The work of Melbourne Water, Manningham City Council and Parks Victoria in consultation with Paddling Victoria is an excellent example of co-delivery to support the community's needs and the key values in the strategy.

Source - HWS Annual Report case study

The likelihood evaluation method described in Appendix 3 was applied to the SCPOs relating to the waterway access POs and a summary of the results is presented in Figure 35, with further details in Appendix 11. A total of 17 sub-catchments were identified as currently at risk of not meeting the 10-year access targets, leaving a potential collective target shortfall of 70 km (out of a total of 202 km).

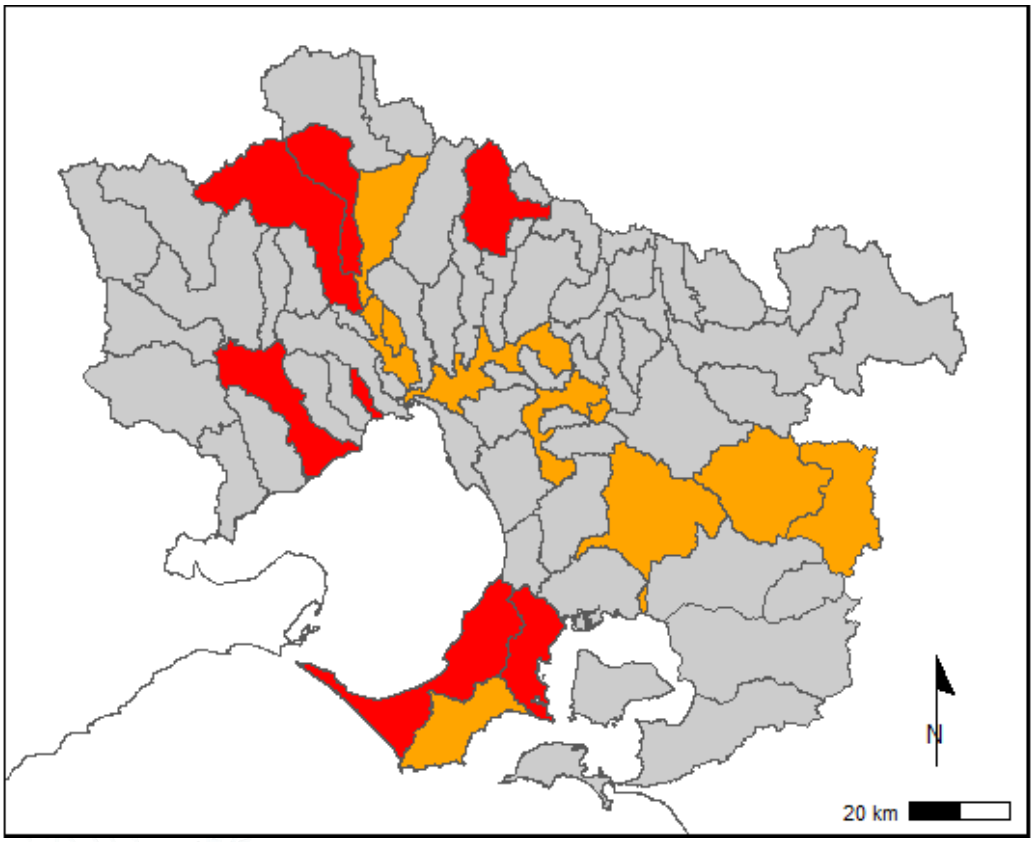


Figure 35. River sub-catchments that were identified as at risk of not meeting target/s for Access.

While all five major catchments have some sub-catchments at risk of not meeting the targets, Maribyrnong and Westernport have sub-catchments with large targets. The sum of the targets for Maribyrnong sub-catchments at risk is 45 km, with 2.4 km of access delivered as of 21/22. The sum of the targets for Westernport sub-catchments at risk is 37 km, with 9.2 km of waterway access delivered as of 21/22. The Dandenong, Werribee, and Yarra catchments have at-risk sub-catchments with smaller target sums (6, 8, 9 km consecutively) in comparison.

Estuaries access SCPOs have limited data available for assessment which relates to enhancing opportunities for access and recreation and maintaining existing assets. While the extent of access and recreational assets are identified through mapping, no maintenance information has been collected from HWS partners, so an analysis of the Estuary SCPOs could not be conducted. There is a future plan to engage with local government and other organisations on how best to report maintenance activities associated with Access and Recreation Performance Objectives in estuaries.

Wetlands access SCPOs are reported regionally via RPO 20 - *The amenity, community connection and recreation values of wetlands are better understood. Performance Objectives are developed to enhance these values*. The RPO evaluation found that RPO 20 is slightly off-track as although work is underway to identify the wetlands that require social value related POs, the pilot to determine social value status and conditions for priority wetlands appears to be behind schedule.

Factors influencing implementation

The following factors influencing implementation include:

- **Timing of access delivery** – As part of understanding the future operating environment, an assessment of all the potential waterway access projects proposed in Masterplans, Precinct Structure Plans, Suburban Park programs, Major Projects and Waterway Strategies and Action Plans highlighted that while some projects will not be delivered within the timescale of the HWS, they would eventually meet the target. This delay was typical for waterway access projects in greenfield development areas and part of Major Projects such as North East Link. This equates to a likely shortfall of 70 km (or 35%) of the overall 202 km target for the region. The assumption underpinning some targets that certain waterway access projects in Emu Creek, Jacksons Creek, Maribyrnong River, Werribee River Lower, Cardinia Toomuc, Ararat and Deep Creeks could be delivered within the 10-year timeframe is proving to be incorrect in some cases.
- **Limited public land** – some sub-catchments, such as Deep Creek and the Mornington Peninsula sub-catchments, have limited public land available to improve waterway access. The targets set for these areas assumed more public access was available than there is, so it is doubtful the targets will be met in these instances.
- **Funding** – the improvement or increase in waterway access requires a higher capital investment than other HWS interventions such as revegetation and is funded mainly by Councils, the Victorian Government, Parks Victoria, Federal Government grants and through major projects such as the Railway Crossing Removal. Melbourne Water does not have allocated funds to support improving waterway access directly, so it acts in a faciliatory role, encouraging collaboration and co-delivery for this PO. However, without Melbourne Water funds to contribute, there appears to be reduced incentive for other organisations to prioritise improving access in one sub-catchment over another for the Strategy - many organisations prioritise according to their own internal plans and strategies.
- **Potential impacts on environmental values** – improving waterway access can conflict with environmental values, particularly in upper sub-catchments where targets for maintaining high-quality vegetation exist or in the vicinity of wetlands with cryptic bird species. A good example is the Plenty River Upper sub-catchment, which aims to maintain 35 km of high-quality vegetation and increase waterway access by 5km. While the two can co-exist, the fact that this sub-catchment was also categorised as climate change vulnerable for environmental values in the Science Inquiry raises questions if the size of the waterway access target is appropriate in this circumstance, or alternatively, the need to plan works in a sensitive manner.
- **SCPO specification** – the specification for when access can be attributed as progressing towards a sub-catchment target is outlined in the Rivers MEP (2020). The specification currently does not count new or improved waterway access in sub-catchments that do not have the Access SCPO or 'excess' access one the sub-catchment target is reached. As the access targets are reported at a catchment scale, some flexibility in the specification could be considered to offset for the sub-catchments with targets that have since found the assumptions around timing to be incorrect.

Refinements to Performance Objectives

The method used to assess whether POs needed to be updated is outlined in Appendix 5, with detailed results in Appendix 12.

In summary, there are no proposed updates to the wording or targets of Access POs. The 10-year targets for the Maribyrnong and Westernport catchments will not be updated to reflect the more accurate assumptions discussed above. However, it is proposed that the incorrect assumption about the timing of development will be noted as part of HWS annual reporting and that the specification is updated to allow 'excess' waterway access delivered in sub-catchment with targets can be applied to offset shortfalls within the catchment.

Participation

This SCPO aims to increase participation rates from a baseline in 2018 to a desired higher value based on the assumption (outlined in the HWS social values conceptual models) that connection to nature positively influences behaviours to improve the environment.

Participation is defined as community (both the general public and engaged community (e.g. those groups funded through a grant) involvement in events and stewardship activities related to connecting with and caring for waterways.

Participation in events/activities includes:

- Citizen science programs (e.g. Melbourne Water activities, WaterWatch, Frog Census, environmental DNA sampling, Birdlife surveys)
- Incentives (e.g. funding for weed control and revegetation on stream frontages, rural land management, stormwater management, funding for community groups, Landcare grants)
- Events (e.g. festivals, stalls, inflatable regatta)
- Education (e.g. training sessions, webinars, workshops, tours and ETP, WTP, ESWEC sessions/tours)
- Digital engagement (e.g. Your Say), and
- Social media (e.g. Facebook and Instagram).

Despite the potential to be reduced during the pandemic, the current status of the participation SCPOs for rivers, as reported in the 2021-22 HWS Annual Report at a catchment scale, is shown in Figure 36 and indicates that all catchments are “on track”. However, to understand the likelihood of the SCPOs being met by 2028, a sub-catchment scale assessment is required.

Figure 36. Summary of HWS Annual Report 21/22 results for Participation SCPOs at catchment scale.

The targets for the participation SCPO require participation rates to be at a certain level by 2028 for each catchment rather than being cumulative, like the vegetation targets. This means that participation rates need to increase and be *sustained* by 2028 at the target level. Progress towards this (displayed in Figure 37) indicates that some catchments, such as Dandenong and Westernport, have participation rates that can potentially meet the 2028 target. The challenge is sustaining this while improving participation in other catchments.

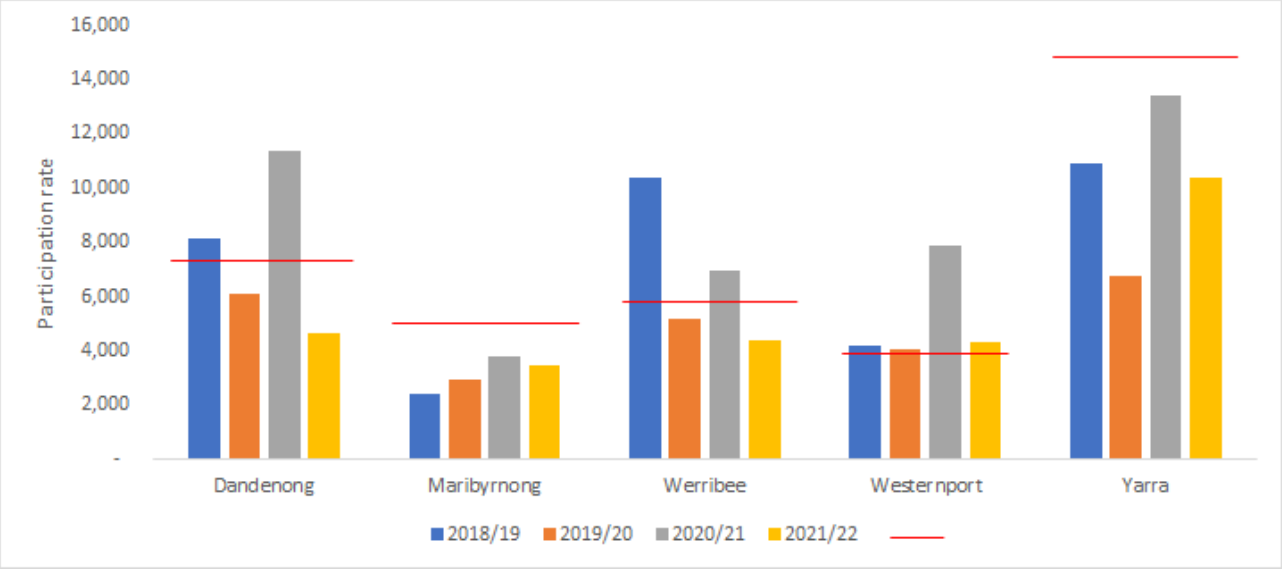


Figure 37. Participation results by catchment per year compared to 2028 target.

Some increases in participation rates in the past few years can be attributed to the pivot to online participation (e.g education and social media) in 20/21 due to Covid 19 social distancing restrictions. In contrast, participation through community incentives has decreased since 20/21 (Figure 38).

The pivot to online engagement through webinars, social media and virtual tours increased participation rates during this period, with 2020/21 registering the highest overall participation rate over the past four years. However, participation in community incentives and events have declined in the past few years due to the COVID-19 lockdowns and a change in the application process. It will be important to track how participation progresses in these categories over the next few years as it will have implications for meeting the targets in the future.

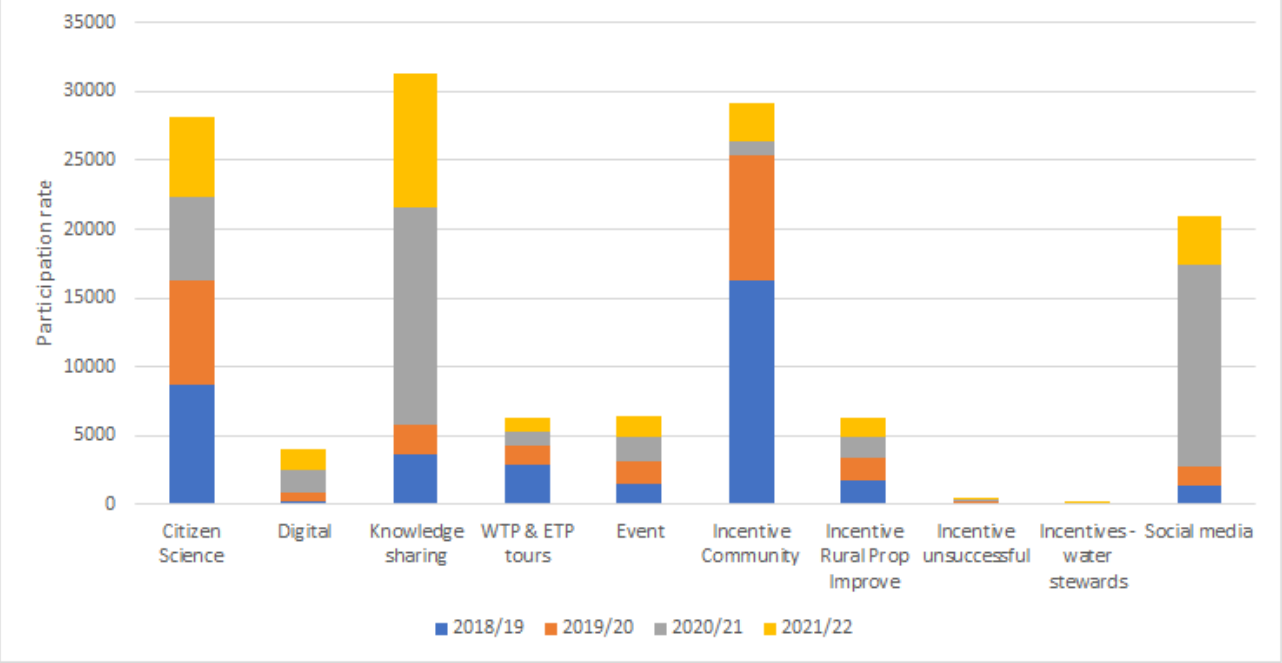


Figure 38. Contribution of participation categories over time.

Some of the highlights in progressing the participation SCPOs include the delivery of an educational expert webinar in 20/21 on cultural burning (1,100 independent views), the River Detectives program 21/22 (2077 participants), stormwater social media campaign (2844 likes (weighted value) and participation through the Litter Action Project outlined below.

Strategy to implementation – Increasing participation through litter action

What's the issue?

Litter and rubbish dumping is consistently rated by the community as one of the biggest threats to waterways and it is important to all three of the social values of the Strategy: Amenity, community connection and recreation. Litter is expensive to manage. Local government across Victoria spends over $94 million per year on litter management and street cleaning. Ninety-five per cent of litter that ends up in Port Phillip Bay comes from suburban stormwater drains.

What did we do?

The Litter Action Project supported by funding from DELWP's Port Philip Bay Fund engaged over 1960 people and established 15 Litter Action Groups across Melbourne to build awareness and action about preventing litter from entering waterways and Port Phillip Bay. Over 39,000 pieces of litter were prevented from entering waterways, and over 7900 volunteer hours were contributed to this project.

A litter awareness communications campaign was run on social media to improve community perception of maintenance management of waterways and surrounding open spaces and motivate waterway users to pick up litter adjacent to waterways to enhance their own – and their community's – enjoyment of these spaces.

In addition, Melbourne Water partnered with the Aquatic Environmental Stress Research Group (AQUEST) at RMIT University to conduct litter tracking studies using plastic bottles with small GPS tracking devices inside collected data to show how far and how quickly litter travels through drains and waterways to the sea. Data were collected from 20 rivers and creeks and attracted more than 400 participants, including 18 schools and 20 community groups, to deploy and follow the locations of the GPS-tracked bottles. Results showed that some litter makes it all the way to the bay, while other times it is caught and remains very close to where it was dropped.

The Litter Action Project, through the different forms of participation, provided the community with a sense of belonging and shared responsibility, driving empowered action by disposing of litter along waterways when enjoying these spaces.

How does this work deliver on objectives in the Strategy?

This project supports the Participation Performance Objectives and the litter Regional Performance Objectives in the Healthy Waterways Strategy through citizen science, education and volunteering to improve the health of waterways.

Source – HWS Annual Report case study

Westernport is the only catchment evaluated with no sub-catchments at risk of not meeting the targets (Figure 39) and this is due to the targets being much lower compared to the other catchments such as Yarra, Dandenong and Maribyrnong.

The sum of the targets for Maribyrnong sub-catchments at risk is 2,050 participants, with an average over four years of only 297 participants being recorded since 2018. Similarly, the sum of the targets for Yarra sub-catchments at risk is 3,924, with an average of 781 participants recorded since 2018. The two Dandenong sub-catchments at risk have the highest collective target of 4,770 participant with an average of 2,131 participants recorded over past four years.

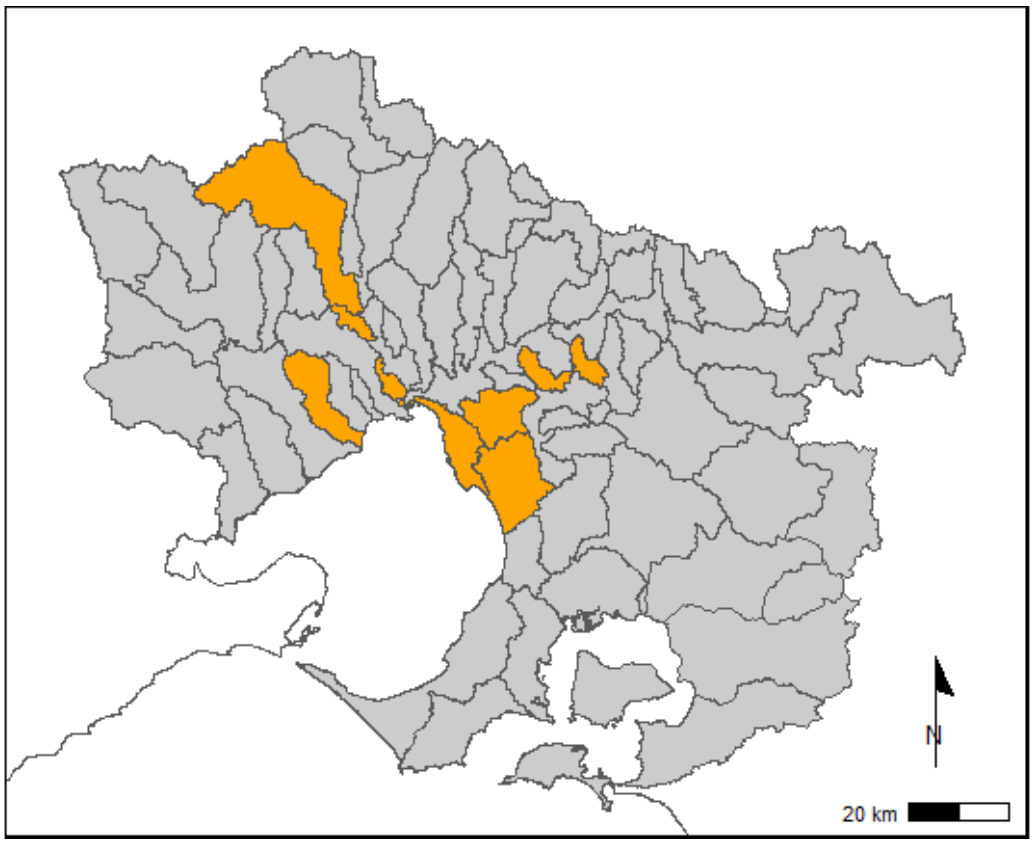


Figure 39. River sub-catchments identified as at risk of not meeting target/s for Participation.

Factors Influencing Implementation

Key factors influencing implementation are identified below:

- **Securing data** – the data used to report on participation rates is limited by the availability and access to data. While over 30 different data sources are used to calculate participation rates, there are still gaps where data is more difficult to procure (e.g., volunteers in groups that do not access the incentives program, participation in council run waterway health initiatives). In addition, including more data could be misleading unless it can be backdated to July 2018 to provide a baseline. It is also important that any new source data does not double count participation through an alternative data source.
- **Incentive process** – Melbourne Water staff have received feedback from incentive applicants that a change in software and process for incentive applications has made it more challenging and time-consuming for them to navigate and apply for funding. This has reduced the number of applications, particularly from those they have applied for many years.
- **Incentive applications** – applications for community group incentives have been on a declining trend since COVID-19, and while the change in software and process for incentive application is partly the reason, information from Melbourne Water staff indicates that the restrictions during COVID meant that many community groups could not meet to undertake the volunteer work for the incentive funding so applications dropped. Additionally, the number of volunteers in community groups has dropped post-COVID, and this is thought also to be a contributing factor.
- **Funding certainty** – Sustained funding for community programs is needed over the next five years. Reduction in the investment into the current programs is a risk to sustaining and increasing participation.

Refinements to Performance Objectives

The method used to assess whether POs needed to be updated is outlined in Appendix 5, with detailed results in Appendix 12.

In summary there are no proposed updates to the Participation POs.

Summary

The reasons for Community POs being off-track are outlined in Figure 40. While these factors were based on the subject matter expert workshops, they are reflective of the collaboration evaluation findings. Key issues are expanded on below.

Figure 40. Summary of key barriers to implementation of SCPOs relating to Community.

Access

A total of 17 sub-catchments were identified as currently at risk of not meeting the 10-year waterway access targets, leaving a potential collective target shortfall of 70 km (out of a total of 202 km). The target shortfalls in the Maribyrnong catchment are largely due to the delayed timing of new waterway access in greenfield development after 2028. In Westernport catchment, the amount of public land available to improve access in the Mornington Peninsula region was significantly underestimated.

While waterway access was not covered in the collaboration evaluation, the PO evaluation reported that there has been limited active collaboration on this PO to date, despite the high level of collaboration required to achieve waterway access POs.

Implementation plans have been drafted by Melbourne Water to focus collaborative effort in particular sub-catchments. Constraints on resourcing has impacted the level of engagement with HWS partners.

The findings from the Science Inquiry that community satisfaction with pathways (from a recreation perspective) along waterways has declined in areas such as Cardinia Creek, Yarra River Lower, Maribyrnong Lower and Werribee River Lower coincides with the PO evaluation results of the sub-catchments with the biggest targets highly unlikely to be met by 2028. This indicates that these sub-catchments need special consideration to progress co-delivery of targets in these areas.

The Science Inquiry also reviewed the results of various separate surveys of the community by Melbourne Water, Parks Victoria and DELWP and found that all identified safety as a common concern related to access along waterways. This is an aspect that RPO-19 (Transform modified waterways) has incorporated into the various ‘Reimagine Your Creek’ projects that have been delivered in the region through community led design (e.g. improved sightlines through vegetation management, elimination of ‘blind corners in paths) and should be a key consideration for future waterway access projects.

There was limited data for the estuaries access SCPOs which relate to enhancing opportunities for access and recreation and maintaining existing assets.

Participation

There has been good progress in implementing the Participation POs, with evidence of pivoting to on-line engagement during the pandemic which sustained participation numbers.

Unlike other PO targets (e.g. Access or Establish Vegetation Buffers), which are cumulative, the Participation PO target represents an end value. This means that the regional target of 44,450 participants represents the rate of participation that needs to be achieved in a one-year period during 2027/28.

The PO evaluation assumed that the future operating model for resourcing and funding of participation would remain similar to the past four years and found that nine out of 66 sub-catchments were at high risk of failing to meet the end-of-strategy targets. However, the reality is more nuanced as this assumes that the current participation rate in the remaining 57 sub-catchments can be sustained and improved.

Although Dandenong and Westernport sub-catchments have current participation rates that can meet the 2028 target, it will be more problematic for the Yarra and Maribyrnong sub-catchment. This is because these catchments have higher targets, and the current participation rates will need to double. The challenge will be sustaining a steady increase in participation rates in Dandenong, Westernport and Werribee sub-catchments while significantly improving participation in Yarra and Maribyrnong.

This challenge is reflected in the Science Inquiry which found that the social value of community connection (which participation POs seek to support – see social value conceptual models in *Social Values: A Technical Report to Inform the 2018 HWS Mid-term Evaluation* report) has declined since the 2016 baseline across most catchments due to a decrease in satisfaction by the community of waterways being suitable to support this value. The reasons for this were not explored in the Science Inquiry due to data limitations but there is the potential that COVID-19 lockdowns could have impacted the results. Research and surveys commissioned by Melbourne Water during the pandemic to understand the communities' behaviours interacting with blue-green spaces found the majority (80%) of survey respondents said they spent more time in blue and green spaces because of the COVID-19 restrictions. This was supported by Google's COVID-19 Community Mobility digital geolocation data showing a 112% increase in engagement with local natural spaces (e.g. waterways) between February 2020 and May 2021. A hypothesis that could be explored in the future is that community expectations of waterways supporting community connection increased during COVID-19 and so satisfaction results declined.

The following opportunities to improve implementation include:

- Progress the development of the social values framework to improve end-of-strategy evaluation and prepare for the next HWS.
- Work together to focus efforts to increase participation rates in key sub-catchments.

- Promote waterway improvements, community incentives and celebrate local leaders in waterway management.
- Raise the profile of Access POs with HWS partners to encourage sharing of data and progress for HWS Annual reporting.

- Collaborate with HWS co-delivery partners to prioritise locations to deliver improved or increase waterway access.

Recommendations

10 Social Values

Supporting the social values of waterways is increasingly recognised as an important component of waterway management. Community expectations around access to greenspace and the ability to connect with nature through recreation or volunteering has intensified in recent years given the mental health and well-being benefits that this can provide. Connecting with nature has also been shown to help to increase community awareness and appreciation of environmental values.

I-10.1 Focus on reinvigorating community group participation in waterway management following a decline in recent years.

I-10.2 Melbourne Water to work with delivery partners such as Parks Victoria and councils to improve waterway access in focus sub-catchments that also limits potential impacts on environmental values.

I-10.3 Progress the development of the social values framework to include wetlands and enable readiness for end-of-strategy evaluation.

PART C

Overall Summary

The mid-term review set out to answer the following Key Evaluation Questions (KEQs):

1a. To what extent is strategy delivery on-track to achieve the Performance Objective targets by 2028.

1b. To what extent has collaboration and co-delivery contributed to achieving the Performance Objective targets so far?

4c. How can collaborative governance enable effective and efficient delivery of the Strategy?

A summary of the key findings and responses to the KEQs are provided in Part C.

Collaboration and Co-delivery Evaluation

The purpose of the evaluation of collaboration and co-delivery was to answer KEQ *1b. To what extent has collaboration and co-delivery contributed to achieving the Performance Objective targets so far? 4c. How can collaborative governance enable effective and efficient delivery of the Strategy?*

Multiple lines of inquiry were used for this part of the mid-term review, including an independent review of the Region-wide Leadership Group, an external evaluation of collaboration and co-delivery and insights gathered via the February 2023 Healthy Waterways Forum, as well as a survey and workshops with Melbourne Water staff.

Without a collaboration standard or framework to assess against, the evaluation focused on clarifying, exploring and learning how the implementation of the Strategy to date had demonstrated a 'step-change' in co-delivery since 2018. Considered collectively, the insights gained through this evaluative approach generated sufficient evidence to provide a finding on the extent of collaboration and co-delivery in relation to this aspirational 'step change'.

The overarching finding for KEQ 1b is that the Strategy is not being co-delivered to the extent intended and there is little evidence of a step-change in collaboration occurring at the whole-of-Strategy scale.

The appetite for co-delivery of the strategy and support for the Strategy vision, targets and underpinning science remains generally strong among Melbourne Water and co-delivery partners. Multiple waterway collaborative projects are also underway and have generated significant learnings on how and when to collaborate. These include:

- Effective coordination across several agencies at the whole-of-region level via the Region-wide Leadership Group
- Several successful place-based partnerships, including the Chain of Ponds (Moonee Ponds) Creek collaboration and Lower Dandenong Creek Litter Collaboration
- Influence on a number of complex issues, including protection of natural wetlands, litter, stormwater and environmental water shortfall volumes, and
- Identification of key enablers of successful collaborative projects and approaches, including allowing time to build relationships, building consensus around the nature of the issue(s) to be resolved, focusing on areas of alignment, providing leadership and sufficient resources for coordination and keeping a focus on learning and adaptation.

These projects, however, do not collectively demonstrate a 'step-change' in co-delivery since 2018. Significant gaps and opportunities for effective collaboration and co-delivery have been identified in the areas of:

- Visibility of the Strategy, as a strategic driver for co-delivery
- Coordination and planning (particularly at the Catchment level)
- Role clarity and authorising environment to embed co-delivery (both within Melbourne Water and among co-delivery partners)
- Guidance for decision-making on how and when to collaborate, and
- Resourcing, systems, processes and mindset to support collaborative delivery of the strategy and associated projects.

The recommendations of this Implementation Inquiry build on these whole-of-Strategy and PO group specific findings, as well as the important lessons and insights generated in the first phase of the Strategy implementation (2018-2023).

Performance Objective Evaluation

Performance Objectives (POs) are the short-term targets required to meet expected outcomes over the 10-year implementation period of the Strategy.

The focus of the PO evaluation was to answer KEQ 1a *To what extent is strategy delivery on-track to achieve the Performance Objective targets by 2028*. The likelihood of meeting these targets was assessed using a systematic evaluation method. Insights on the implementation of the Strategy to date were also collated to identify challenges and opportunities to improve outcomes over the next five years.

Progress to date was mixed. The evaluation of RPOs identified that 22 of the 45 RPOs are meeting performance expectations at this point of the strategy implementation. The majority of RPOs that are on-track represent established

programs/initiatives or are linked to research programs. The two RPOs that have been achieved represent foundational outputs related to the HWS MERI. Many of the slightly off-track or significantly off-track RPOs represent topics that are 'wicked problems' that require multi-agency coordination or represent the application of research findings into policy or frameworks.

There has been good momentum for sub-catchment targets relating to vegetation maintenance, reducing run-off from rural land, and community participation. Several objectives have been achieved or exceeded. For example, seven fishways have been constructed so far, and progress on maintenance of existing vegetation is already exceeding targets in some sub-catchments. However, targets for stormwater and water for the environment are significantly off-track. Over the last five years, there has been little progress on stormwater infiltration targets, nor any increase in the environmental water reserve in regulated systems. Both topics require urgent attention if significant progress is to be made within the life of the current Strategy. In addition, while some POs relating to wetlands appear to be on-track, there are many priority sites where projects have not yet started and therefore are at high risk of not meeting the target.

Evaluation of progress towards the Strategy targets was typically more difficult for qualitative POs compared to quantitative POs due to limited data or the absence of clear performance expectations. Similarly, there was generally more detailed information available on targets relating to rivers, but less so for wetlands and estuaries. These information gaps restrict the ability to track progress and understand the resulting risks to waterway health. For example, only one of the SCPOs relating to 'Habitat' could be assessed quantitatively and this SCPO related to rivers. The development of consistent methods for evaluating progress and/or setting performance expectations needs to be prioritised, as well as ensuring that appropriate data is available data to regularly track progress.

Patterns and differences across the multiple lines of evidence for each HWS evaluation PO groups have revealed the following common challenges and opportunities.

Several challenges were common across the PO groups, and these include:

- Uncertainty about when to use collaboration and more resources required to do so well
- Need to build buy-in across partners to co-deliver what is needed for waterways
- Require time and trust to build relationships in new areas or initiatives
- Ability to engage private land holders in new priority areas and for protection of wetlands, and
- Internal processes and systems are seen as barriers for some aspects of the HWS.

However, many opportunities were identified including the need to:

- Improve leadership and coordination of collaboration to drive buy-in and accelerate the implementation of at-risk POs
- Support Traditional Owners to determine their involvement in future evaluation (e.g. cultural POs, cultural indicators)
- Share evaluation findings and continue to champion solutions for important issues (e.g. wetland loss, access, litter, stormwater)
- Promote waterway improvements, and community incentives and celebrate local leaders in waterway management
- Renew focus on planning and implementation solutions together (e.g. alternative water)
- Optimise the use of available instruments and guidance (GED, SFMP, Bans and Rosters) and delivery of existing entitlements (e.g. Yarra)
- Build capacity and technical guidance (e.g. for construction and maintenance of stormwater assets)
- Work strategically with private landholders to achieve multiple outcomes (vegetation, rural water quality)
- Investigate resourcing needs and potential for efficiencies across programs
- Explore ways to improve internal systems and processes to support implementation, and
- Improve evaluation/reporting of some POs to better track progress.

Key Learnings

Several key lessons emerged during the Implementation Inquiry. Firstly, while good progress has been made on strategy implementation, stormwater, water for the environment and vegetation (establishment and protection) are the top three PO groups that must be prioritised to get back on track for waterway health. Common lessons across these groups and others for consideration in the next five years of implementation and evaluation response are:

- The role of partnerships and co-delivery for Strategy implementation needs to be clarified, especially for key cross agency topics (e.g. stormwater, waterway access)
- Effective co-delivery relies on relationships, alignment, leadership and resources for coordination. More effort isneeded to maximise co-delivery opportunities
- The large number of POs is challenging to evaluate, and the absence of performance expectations, (i.e. what success looks like in 10 years) limits the ability to track and evaluate progress for qualitative POs
- It is possible we may not meet some 10-year targets in some areas, due to underestimation of the readiness of the enabling environment, the rapid pace of development, incorrect assumptions about timing and collaboration maturity, and challenging funding environment
- The HWS Annual report via the HWS website has provided a solid basis for the mid-term review and to identify opportunities for improvements in implementation. The continual improvement in this process will be an important part of communicating the progress of implementation over the next five years, and
- The importance of involving HWS partners in end-of-strategy evaluation will be critical to share learnings and prepare for the next Strategy.

Next Steps

This evaluation has identified at-risk PO groups (e.g. Stormwater) and sub-catchments through analysis of available evidence. These findings will be considered alongside the Science Inquiry to inform future strategic planning and HWS implementation. The knowledge gaps and general learnings highlighted by this Inquiry will also inform future implementation activities as well as ongoing monitoring, evaluation and reporting practices.

The recommendations from the Implementation Inquiry will be considered alongside those from the Science Inquiry Report and will be responded to and prioritised through a fomal response.

Based on discussions between HWS partners and community, the response will outline priorities and recommendations for HWS implementation, as well as timing and responsibilities. The response will also highlight future considerations for the next HWS.

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APPENDICES

Appendix 1 METHODS Collaboration Evaluation

Approach

The approach for the collaboration evaluation is underpinned by the April 2022 HWS mid-term review plan endorsed by the Mid-term Evaluation Panel, Melbourne Water executive and the Region-wide Leadership Group.

The plan outlines that the Mid-term Evaluation of collaboration should:

- Address HWS Key Evaluation Questions 1.b (regarding the extent to which collaboration and co-delivery have contributed to achieving the PO targets) and 4c (regarding how collaborative governance has enabled effective and efficient delivery of the strategy),
- Consider how collaboration and co-delivery can be improved
- Involve an independent evaluator, governance groups, HWS partners and MW staff
- Be undertaken using an Appreciative Inquiry approach, with a focus on what is working and learning, and
- Follow the principles of the Australian Evaluation Society Guidelines for Ethical Conduct of Evaluation (AES, 2013).

The evaluation of collaboration and co-delivery has been undertaken in three parts:

1. An independent review of the effectiveness of the RLG, finalised in April 2022
2. An independent evaluation (Clear Horizon 2023) of collaboration and co-delivery conducted between December 2022 and August 2023, and
3. Consideration of additional lines of evidence to verify and explore the external evaluation findings.

The approaches adopted for each of these three parts are presented in separate sections below.

Approach for RLG review

In April 2022, an independent review into the effectiveness of the RLG was finalised. The aim of this review was to evaluate the effectiveness of the RLG in line with the Healthy Waterways Strategy intent, Performance Objectives and≈Terms of Reference (ToR) for the group.

The role of the RLG as defined in the ToR includes (summarised):

- Oversight of Strategy implementation, including investment and prioritisation, effective co-delivery and collaboration at all levels, reporting, adaptive management and governance
- Champion the Strategy and partners' co-delivery
- Ensure processes are in place to share knowledge and learnings, and
- Identify risks and opportunities.

The intent was to improve leadership through suggested changes and improvements (if any) to group governance and function to improve the implementation of the HWS.

There were three parts to the review process. Firstly, all group members (6) completed a confidential survey and secondly, they participated in confidential interviews. Following this, the feedback and recommendations were presented to the RLG at their meeting on the 27th April 2022 for their validation.

Approach for external evaluation of collaboration and co-delivery

In keeping with the HWS mid-term review plan, Melbourne Water engaged external evaluator Clear Horizon Consulting to design and deliver the evaluation of collaboration and co-delivery. Clear Horizon undertook a participatory process to design the evaluation and clarify the specific purposes, primary audiences and information needs.

The key elements of the evaluation design and delivery process are presented in Table 29 with details available in a separate Clear Horizon report and summary slides. Advice from the HWS Evaluation Panel and selected Melbourne Water and external Strategy co-deliverers (including the Region-wide Leadership Group) was obtained to inform the evaluation design and co-delivery process.

Table 29. Key elements of the design and delivery process for the external evaluation of collaboration and co-delivery.

Target audience and their information needs	The evaluation was designed to meet the needs of those who will use its findings to inform collaboration and co-delivery decisions relating to the HWS implementation. These were identified as: a. Melbourne Water teams with responsibilities for HWS implementation b. HWS partners with a role in the co-delivery of the HWS (including agencies, community groups and universities) c. Melbourne Water executive with oversight of the HWS d. HWS RLG representatives and Chair, and e. Melbourne Water teams responsible for the development of the next HWS (2028-2038) (Staff and Executive).
Information needs	The target audience was identified to have the following information needs: • Clarity on how Melbourne Water and HWS partners are collaborating, including the processes, definitions and principles being used (all) • Insights into how and why collaboration is contributing to, or hindering, progress being made towards the objectives of the HWS (led by both Melbourne Water or HWS partners) (all) • Principles for effective collaboration to be used by Melbourne Water and HWS Partners (all) • Opportunities for improving how Melbourne Water and HWS partners collaborate on the implementation of the HWS (all) • Insights into how collaboration has influenced Melbourne Water and HWS Partner organisations in the way they manage waterways (i.e. capacity, processes) (c, d, e), and • Insights into how collaboration might be incorporated in the next HWS (e).
Collaboration evaluation questions	In the absence of definitions, standards or frameworks against which to assess the extent to which collaboration and co-delivery have contributed to achieving the HWS Performance Objectives, collaboration evaluation questions were designed to focus on clarification, exploration and learnings. As a result, five key collaboration evaluation questions were co-designed: 1. How are Melbourne Water and HWS Partners collaborating in the implementation of the HWS? 2. How and where is collaboration contributing to, or hindering, progress towards the objectives of the HWS? 3. How has collaborating in the implementation of the HWS influenced the way Melbourne Water and HWS Partners manage waterways? 4. What principles for effective collaboration are emerging through HWS implementation to date?, and 5. What are the opportunities for improving collaboration in the implementation of the HWS? In the absence of a shared definition, the external evaluation has taken a broad interpretation of the term collaboration that encapsulates the spectrum of collaborative approaches often defined under the terms cooperate, coordinate, collaborate and integrate in the Collective impact model. Examples for such definitions are provided in Figure 43.

Selected Case studies/PO groups	A purposively selected sample of HWS PO groups and objectives were identified to surface the most valuable and useful insights for this evaluation. These are: • Stormwater • Pests (Deer) • Water for the environment • Water quality (Litter and pollution) • Vegetation, and • Community places (Moonee Ponds Creek – Chain of Ponds (CoP)). Those PO groups were selected because: • Collaboration is critical to their success and the evaluation was likely to produce valuable and useful insights • They offer a range of both on-track and off-track status, which would enable the surfacing of insights in areas where collaboration is working well and not well • They represent include collaborations of different levels of maturity, including some that are well established and in their infancy, and • They were emerging as significant, through the mid-term science review.
Data collection	Mixed method: • Desktop review of more than 100 documents including strategies, plans, reports, Memorandum of Understanding, Terms of Reference, meeting minutes, funding applications, and evaluation reports • semi-structured interviews with 46 stakeholders across Melbourne Water [n=21] and Strategy Partners [n=25] (from a total of 55 stakeholders invited to interview) using a highly targeted sampling strategy to provide in-depth qualitative evidence across a sufficient breadth of stakeholders and role seniority against each inquiry question and PO group, and • Interviews guided by an appreciative inquiry approach. 1. Representatives of the following organisations and types of organisations were interviewed: • Community groups • Local governments • DEECA • EPA • Greater Western Water • Melbourne Water • Municipal Association Victoria • Parks Victoria • Sustainability Victoria • RMIT • the independent RLG Chair Within Melbourne Water, representatives of four business groups were interviewed: Service Futures, Service Delivery, Service and Asset Lifecycle and Customer, Community and External Affairs. This highly targeted sampling strategy aimed to provide in-depth qualitative evidence across a sufficient breadth of stakeholders and role seniority against each PO group and the whole of strategy perspective. The almost equal split of Melbourne Water and Strategy co-delivery partners is considered appropriate due to Melbourne Water's statutory responsibility to develop and implement the Strategy, its commitment to on- going facilitation of collaborative waterway management and key role in each of the PO groups covered. It is important to note that a decision was made not to conduct a broad survey of co-delivery partners at this stage, due to their limited targeted engagement in the implementation of the Strategy so far.
Analysis and synthesis	• Thematic analysis for qualitative data. • Synthesis of evaluation findings against the inquiry questions via triangulation of evidence from the different data sources. • Sense-making workshop with Melbourne Water to contextualise findings and recommendations. • Presentation to the Evaluation Panel to provide context on the findings and assist in Melbourne Water's review process.

Findings and recommendations	The key findings of the Clear Horizon external evaluation of collaboration and co-delivery are presented in four sections covering: • Overarching findings applicable to the whole of strategy • PO group specific findings (based on the case studies) • Emerging principles for effective collaboration and co-delivery, and • Whole-of-Strategy and PO group-specific recommendations.

The chosen approach for the external evaluation of collaboration and co-delivery surfaced rich findings and recurring insights, which gives confidence that additional interviews would not have garnered further general findings. As per any approach it, however, has several limitations which are outlined below:

- While the interviews provide a good indication of a range of views within Melbourne Water and among Strategy co-delivery partners, they do not represent the views of all Strategy stakeholders
- The sampling strategy for councils focused on interviewing only the councils involved in the PO groups being investigated, and MAV to get the whole -of strategy perspective of councils
- Some external stakeholders did not participate in the evaluation, namely representatives from a rural water authority, the Victorian Environmental Water Holder (VEWH), some targeted councils and a community member. Some stakeholders could not be invited to participate, as they were identified too late to be interviewed within the project timeframe
- Community views were only obtained for two case studies (Chain of Ponds and Litter), and
- The evaluation purposefully did not cover all Strategy PO groups or all aspects of each PO group evaluated.

As a result of those limitations, it is important to note that:

1. Additional aspects of collaboration may have been surfaced under the following PO groups with a broader interview sample:
    - Stormwater (developers and Victoria Planning Authority not interviewed)
    - Environmental water in regulated and unregulated systems (Victorian Environmental water Holder and Southern Rural Water not interviewed), and
2. Vegetation and deer management (no private land holders or councils interviewed under this PO group)
3. Selected interviewees were all engaged in collaborative projects. As a result, there were only limited insights into areas where it has not yet been possible to establish a collaboration.
4. Community views were only obtained for two case studies (Chain of Ponds and Litter). As a result, the findings under the other PO groups do not offer direct community views.

It is also important to recognise that while enabling a detailed exploration of issues and robust surfacing of explanations, the chosen qualitative approach could only offer limited 'measurable' results on the extent to which collaboration and co-delivery have contributed to achieving the Strategy Performance Objectives targets.

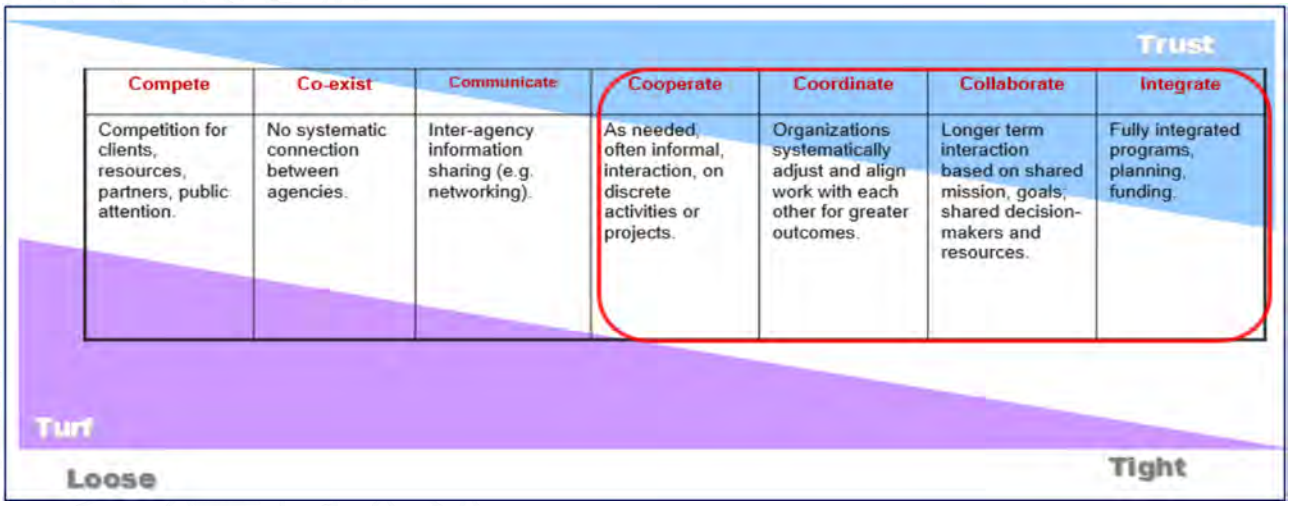

Figure 41. The Collaboration Spectrum (Source: www.tamarackcommunity.ca).

Additional lines of evidence

Recognising the limitations associated with the approach chosen for the external evaluation of collaboration and co-delivery, the following lines of evidence were analysed to verify, explore and complement the Clear Horizon findings:

- Key themes relevant to collaboration and co-delivery in the 2023 Melbourne Water internal survey (refer to Appendix 4 of this report)
- Key feedback on collaboration and co-delivery received from participants at the 2023 Healthy Waterways Strategy Regional Forum, and
- RLG work on the protection of natural wetlands, that was highlighted as an example of effective region-wide collaboration by the RLG independent review.

Appendix 2 METHODS RPO Evaluation

Approach

The current status of the RPOs was evaluated using a rubric that aligned with the HWS tracking system (e.g. on-track, slightly off-track, significantly off-track). The rubric (Table 30) outlines standards for RPOs at the mid-term that were used to compare information in the HWS Annual Reports and case studies (2018/19 – 2021/22) with the performance expectations outlined in the Regional MEP. An on-track evaluation result requires at least half of the performance expectations for an RPO to have been addressed by mid-term.

Table 30. Rubric for evaluation of RPO status at mid-term.

Criterion	Standards			
	On track to meet Performance Expectations	**On track to meet Performance Expectations**	**Slightly off track to meet Performance Expectations**	**Significantly off track to meet Performance Expectations**
Extent RPO performance expectations met by mid-term	Annual reporting indicates that all RPO performance expectations elements as outlined in RPO MEP have been met in form of output deliverable(s) and outcomes (if applicable).	Annual reporting indicates that at least half of the elements of RPO performance expectations are being met at this stage of HWS implementation with ample evidence of outputs, initiatives (programs, workshops, governance measures) and outcomes (behaviour change) in progress.	Annual reporting indicates slightly off-track at this stage of the HWS implementation due to only some elements of RPO performance expectations being met with limited evidence of outputs and outcomes and/or there is evidence of repetition of information in annual reporting with limited progress being recorded.	Annual reporting indicates that most of the elements of the RPO performance expectations have not been progressed or No performance expectations have been set or No information has been provided in annual reporting

The Cultural RPOs (1-7) were not included in the evaluation due to their inclusion as part of a separate process with Traditional Owner organisations (refer to Traditional Owner section in the Introduction for further details).

The likelihood of an RPO target being met (e.g. all performance expectations outlined in the Rivers MEP are met) was determined using a similar matrix approach as the River SCPOs but with some amendments due to an additional category of complete (Table 31).

The future operating environment for each RPO was assessed using results from the internal Melbourne Water survey, and discussions with Melbourne Water staff and HWS partners. The results of the evaluation were shared with Melbourne Water staff as part of a validation step to offer the opportunity for further context to be provided and to share learnings for the next HWS annual reporting period.

Table 31. Likelihood matrix of meeting RPO targets.

		Future operating environment over next 5 yrs		
		Negative change	**Unchanged**	**Positive change**
Current Status	**Complete**	Complete	Complete	Complete
	On-track	Possible	Almost certain	Almost complete
	Slightly off-track	Unlikely	Possible	Possible
	Significantly off-track	Unlikely	Unlikely	Possible

Limitations

The limitations of the RPO evaluation include:

- the evaluation applied a rubric that relied on performance expectations for each RPO being outlined in the Regional Monitoring Evaluation Plan. Several RPOs did not have performance expectations set and so an evaluation finding of significantly off-track - unlikely to meet end-of-strategy targets was returned regardless of the information contained in the HWS Annual report
- the evaluation was based on information contained in the HWS Annual Reports from 2018/19 to 2021/22 and case studies displayed on the HWS website. A validation step was provided to Melbourne Water RPO owners offering the opportunity to provide more information or context before the evaluation was finalised. As the timing coincided with writing responses for the next round of Annual Reports, RPO owners preferred using it as a learning opportunity to improve the content in the next Annual report rather than provide additional information to previous Annual reports, and
- some of the RPOs evaluated as slightly off-track were due to HWS Annual reporting failing to address many of the performance expectations by focusing on only one or providing unrelated information. There is potential that some of these RPOs may be further progressed and can be addressed in future HWS Annual Reports.

Appendix 3 METHODS SCPO Evaluation

Approach

Internal Survey

A survey was conducted to collect feedback from across Melbourne Water staff on perceptions of how the Strategy is currently tracking. The survey aimed to gather preliminary insights on the implementation of the Strategy to date, including current challenges hindering the successful delivery of targets and potential opportunities to make improvements over the next five years. The survey was open for two weeks, from Tuesday 14 March to Monday 27 March 2023 and was circulated internally via email, intranet and staff news bulletins.

The survey questions are listed in Appendix 4. A total of 53 responses were collected, with the majority of respondents from the Services Futures and Service Delivery portfolios. An overview of statistics on the internal survey data is provided in Appendix 8. Note that insights from Melbourne Water's co-delivery partners were gathered via a separate consultation process described in Appendix 1.

Evaluation of likelihood – Quantitative POs

Performance Objectives (POs) are the short-term measures required to meet expected outcomes over the 10-year implementation period of the Strategy. Progress for quantitative POs is typically expressed as on-track and significantly off-track.

The method to determine the status of a PO mid-term through the Strategy is based on rubrics outlined in the MEPs. The rubrics are tailored individually to each POs, but typically if progress is more than 40% complete in 2021-22, then considered to be "on-track". Figure 42. shows a simplified conceptual diagram of the trajectory of progress over the life of the Strategy, highlighting the importance of checking in midway through the Strategy to determine whether adjustments in resources and effort are required for the next five years. The arrows indicate the overall intent to assess whether the SCPOs that are 'off-track' can be adjusted to bring them back on track.

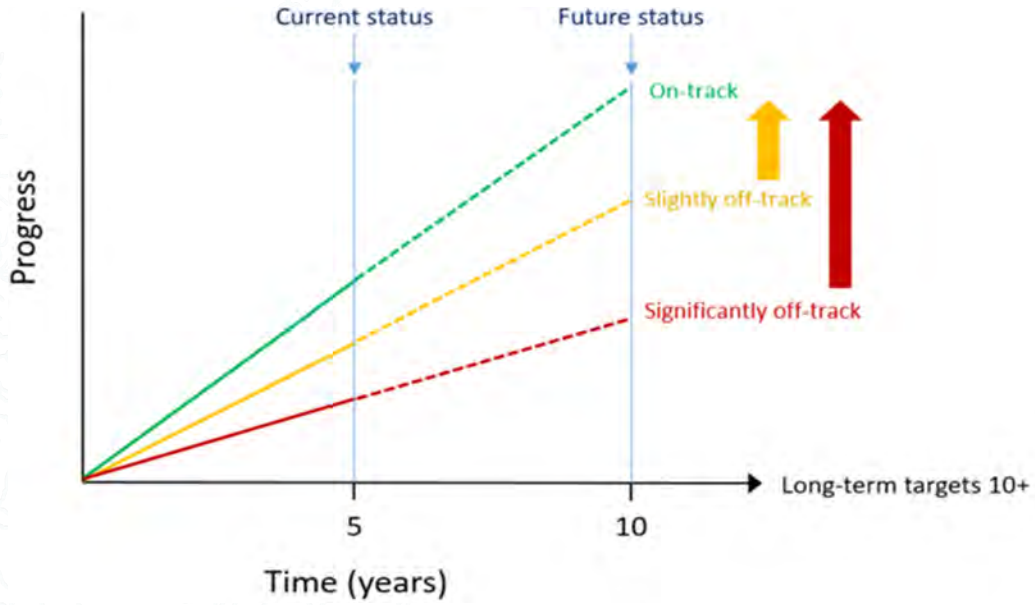

Figure 42. Conceptual diagram of trajectory scenario for SCPOs.

A systematic method of identifying which SCPOs were at risk of not meeting the 10-year targets was developed. This assessment incorporated four key factors:

- **Current status** - on-track, slightly off-track, significantly off-track
- **Future operating environment** - resources, funding, incentives, awareness, planning, and engagement needed to meet the target. This was assessed using survey results, plus relevant background information. If limited information was available, the default setting was 'unchanged'
- **Location** - has the sub-catchment been identified as a focus area as part of the Science Inquiry, and
- **Scale** - does the PO have a large target at the catchment or regional scale and therefore have a significant impact on the success of the strategy?

With over 900 individual performance objectives in the Strategy, it was necessary to systematically sort the SCPOs into priority ratings to create a shortlist for further assessment. The approach displayed in Figure 43. outlines that two-step process. The first step assessed likelihood of meeting the target based on current status and the future operating environment. The second step then further prioritised using a decision tree that incorporated findings from the Science Inquiry about focus sub-catchments and the scale of the target.

Step 1 – Assess Likelihood

		Future operating environment over next 5yrs at catchment scale		
		Negative change	**Unchanged**	**Positive change**
Current Status	**On-track**	Possible	Almost certain	Almost complete
	Slightly off-track	Unlikely	Possible	Possible
	Significantly off-track	Unlikely	Unlikely	Possible

Step 2 – Prioritise

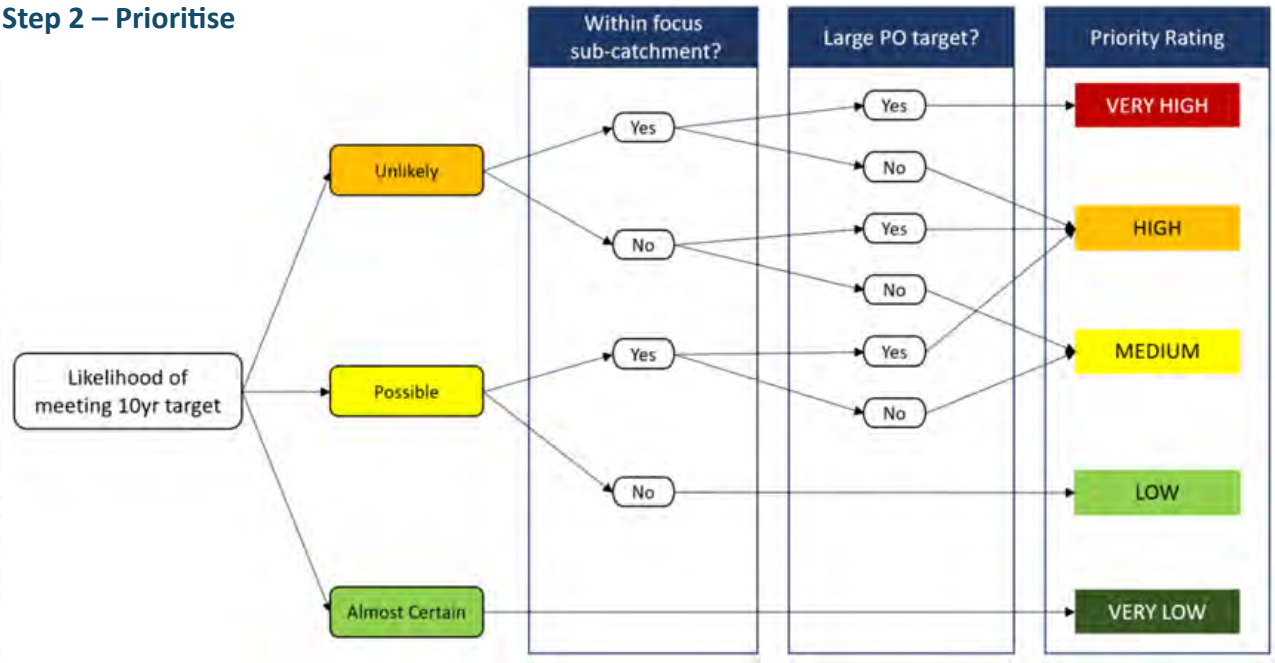

Figure 43. Two-step approach for determining risk and priority ratings for SCPOs.

This approach resulted in the following ratings:

- **HIGH** or **VERY HIGH** - At risk of not meeting the 10-year targets. Shortlisted for more detailed investigation. See the section below 'Further assessment'
- **MEDIUM** – Some risk of not meeting the 10-year targets. No further action at this stage, and
- **LOW** or **VERY LOW** – Minimal risk of not meeting the 10-year targets. Continue as planned.

The output was a preliminary shortlist to inform further assessment. As a general rule, the SCPOs that had a priority rating of High or Very High were included in the preliminary shortlist. These ratings indicate that the SCPO is at risk of failing to meet the target by the end of the Strategy, which may impact the overall success of the Strategy and have long-term implications for waterway health in this sub-catchment.

Evaluation of likelihood – Qualitative POs

The assessment of qualitative POs was conducted using a more streamlined approach. Annual progress for qualitative POs is typically expressed as 'Not Started', 'In Progress', 'Complete', or 'Under Review' based on information contained in a short qualitative statement. For this evaluation, where progress had not started the PO was considered to be at risk of not meeting the 10-year target. This assumes that if the required actions had not started by the strategy's midway point, then further evaluation is needed.

Note that some SCPOs were assessed as part of the evaluation of regional performance objectives (RPOs). For example, the SCPOs relating to increasing community access for priority wetlands are reported at the regional scale via RPO-20 '*The amenity, community connection and recreation values of wetlands are better understood. Performance objectives are developed to enhance these values*.' The evaluation of RPOs is discussed in Appendix 2. Other SCPOs were flagged for review due to incorrect assumptions, errors made during the target-setting process, missed or incorrect locations, etc. These issues have been documented in the section '*Performance Objectives for Review'* where the potential for change is investigated as part of the mid-term review.

Further assessment

The preliminary shortlist was used to analyse further why these SCPOs are at risk of failing to meet the 10-year targets. Central to this assessment were the following questions:

- What are the causes, contributing factors and key drivers for why these objectives are off-track?
- Can changes be made to get them back on track over the next five years?
- If we had all the resources we needed, what would look different?
- What decisions would need to be made to change the trajectory of these performance objectives?

Multiple lines of evidence approach was used to gather information on the above questions. The lines of evidence are described in Table 32.

Table 32. Lines of evidence used to assess why SCPOs were at risk of not meeting 10-year targets.

Line of evidence	Description
Survey results	The internal survey gathered preliminary insights on the implementation of the Strategy to date, including current challenges hindering the successful delivery of targets and potential opportunities to make improvements over the next 5 years. A mix of quantitative and qualitative data was collected from a total of 53 responses.
Outputs from Science Inquiry	The Science Inquiry collated evidence from Melbourne Water's monitoring and research program to understand how key values and conditions were tracking, the status and management of threats across the region, if interventions have been effective, and the key knowledge gaps that need to be addressed. Importantly for the evaluation of performance objectives, it also identified focus area sub-catchments where implementation efforts should be prioritised.
Cause and effect diagrams	Information from the internal survey, the Science Inquiry and other relevant background documents were used to develop 'fishbone' diagrams that depict the potential causes for specific SCPOs being off-track. Potential causes were grouped into major categories, such as Resources, Funding, Operational Processes, Collaboration, Awareness etc. These diagrams were used as a problem solving tool to test preliminary findings with subject matter experts (SMEs) and prompt discussion.

Line of evidence	Description
Subject Matter Expert (SME) Workshops	Targeted workshops with Subject Matter Experts (SMEs) were held to discuss SCPOs for a specific PO group: • Vegetation – 4 May 2023 (12 participants including facilitators) • Water Quality focusing on rural land – 11 May 2023 (8 participants including facilitators) • Stormwater – 15 May 2023 (12 participants including facilitators), and • Water for the Environment – 30 May 2023 (12 participants including facilitators). Follow-up discussions with SMEs were held to collect further detailed evidence specific to wetlands (5 June 2023), and environmental flows in unregulated catchments (6 June 2023). Preliminary findings, including survey results and fishbone diagrams, were presented during these workshop discussions and information collated about PO groups, sub-catchment and SCPO progress.
Clustering of common themes or catchments.	Common threads and intersection of results across PO groups were identified during collation of findings. In many cases spatial mapping was used a tool to identify overlap for issues across sub-catchments and catchments. For example, clustering was identified for vegetation SCPOs for the Westernport catchment. This information was used to support synthesis of key findings.
Validation	Preliminary findings were shared with relevant practitioners across Melbourne Water. Information packs were prepared for each performance objective group. Reviewers were asked to provide comments or suggestions and links to any accompanying evidence. The key questions for this validation step were: • Is additional context needed for specific topics and if so, what is this? • Have the main potential barriers to implementation been captured?, and • Have the main opportunities for change been captured?

Validation

The draft Implementation Inquiry Report was shared with key Melbourne Water staff to identify potential gaps, validate findings and collect further evidence. A total of 58 separate comments and suggestions were received. These were collated, reviewed and adjustments made to the Implementation Inquiry report as required.

Limitations

This evaluation of SCPOs and the likelihood of meeting the 10-year targets was designed to be systematic and targeted towards gathering insights on the implementation of the Strategy to date. However, it was not exhaustive and had the following limitations:

- **Data availability and consistency** – Detailed data and information about progress was typically available for quantitative SCPOs compared to more limited information on qualitative SCPOs. Similarly, there was generally more detailed information available on targets relating to rivers, but less so for wetlands and even less so estuaries. For example, there was only a handful of respondents in the internal survey that reported working on estuaries “Most of the time”, as compared to rivers which was the reverse (see Appendix 8). These disparities in data availability and consistency skew the likelihood evaluation results towards SCPOs that can be characterised better. Furthermore, it magnifies existing uncertainties and ambiguity for SCPOs that are less well known.
- **Time constraints for the evaluation** – Considerable effort was invested into gathering the necessary evidence for the likelihood evaluation. However, deadlines for completion of the Mid-term Evaluation meant that the consultation process was somewhat constrained. While the internal survey provided an opportunity for Melbourne Water staff to provide preliminary feedback, the workshops involved a small group of internal subject matter experts. Similarly, with over 900 individual performance objectives in the Strategy, evaluating each SCPO within the required timeframe was not feasible. Instead, the SCPOs were grouped by PO group and summarised by type Consequently, there is a risk that data, information and/or feedback relevant to the likelihood evaluation may have been overlooked. A final validation step was included in the evaluation process to mitigate these potential gaps and collect further evidence if required.
- **Engagement with external partners** – It is recognised that the likelihood evaluation for SCPOs primarily focussed on gathering evidence from internal sources. There was limited opportunity to seek input from external partners due to the time constraints for the mid-term review. Note that PART B of this report outlines how external partners were consulted on evaluating collaboration and co-delivery.

Appendix 4 METHODS Internal Survey Questions

Melbourne Water staff involved in the Healthy Waterway Strategy were invited to respond to the following questionnaire in March 2023.

Healthy Waterways Strategy – Mid-term Review 2023

Q1 Welcome to Melbourne Water's Heathy Waterway Strategy Mid-term Review Survey.

The Healthy Waterways Strategy (HWS) was developed in 2018 as an overarching framework for the management of rivers, wetlands and estuaries in the Port Phillip and Western Port region. We are now mid-way through the Strategy's term and are keen to hear how you perceive the Strategy is tracking and if any changes are needed to refine and improve outcomes over the next five years. This survey is focused on gathering information from Melbourne Water staff and is one part of a wider program of Strategy evaluation.

This survey should take less than 15 minutes to complete and will provide the evaluation team with valuable feedback. Your responses will remain confidential. There is an opportunity to save your answers and come back to the survey later if you need more time.

Please submit the survey by 5pm on Friday 24 March (*note this was extended to 27 March*).

Thank you for taking the time to share your thoughts. We welcome your honest and constructive feedback to help guide future implementation of the Health Waterways Strategy.

About you

Q2 Which area of Melbourne Water do you work in? (Note: this information will only be used to understand the nature of your work.). Options for answer:

- Service Futures
- Service and Asset Lifecycle
- Service Delivery
- Customer, Community & External Affairs
- Corporate Services
- People & Transformation
- None of the above, I do not work for Melbourne Water (please specify)
- Other (please specify)

Q3 Does your role directly involve the delivery of the Health Waterways Strategy? Options for answer:

- Yes
- Somewhat
- No
- Don't know/unsure

Q4 In what capacity are you involved? Please select all that apply. Options for answer:

- Collaboration with external partners
- Delivery of on-ground works
- Strategy governance
- Monitoring and reporting
- Oversight of funding/resources
- Planning of on-ground works
- Research
- Strategic planning and policy/program development
- Other (please specify)

Q5 To what extent does your work relate to rivers, wetlands or estuaries? Options for answer:

- Most of the time
- Sometimes
- Not at all
- Unsure/not applicable

About the Healthy Waterways Strategy overall

Q6 How would you rate the overall success of implementing the Strategy over the last 5 years? Options for answer:

- Highly successful
- Somewhat successful
- Unsuccessful
- Don't know / Unsure

Q7 What is the key reason/s for your answer above?

Q8 To the best of your knowledge, how would you rate the expected overall success of implementing the Strategy over the next 5 years? Options for answer:

- Highly successful
- Somewhat successful
- Unsuccessful
- Don't know / Unsure

Q9 What is the key reason/s for your answer above?

About the targets in the Healthy Waterways Strategy (HWS)

Q10 For each of the five major catchments within the Port Phillip and Western Port region (Werribee, Maribyrnong, Yarra, Dandenong and Westernport), the Strategy outlines catchment-specific targets for waterway health across multiple themes.

Which PO group does your work primarily relate to? Please select all that apply.

- Community (improve access, participation)
- Habitat (fish passage, physical form, re-engage floodplains)
- Vegetation (establish, maintain)
- Stormwater (harvest, infiltrate)
- Water for the environment (improve unregulated flows, increase reserve volume)
- Water quality (reduce pollutant run-off, STP loads, recreational use)
- All of the above

Q11 Which catchments does your work primarily relate to? Please select all that apply.

- Dandenong
- Maribyrnong
- Werribee
- Westernport
- Yarra
- All (my work is region wide)

Q12 For the PO groups and catchments you selected previously, would you say that the implementation of the Strategy has the right amount of:

- Awareness and focus outside of Melbourne Water
- Awareness and focus within Melbourne Water
- Collaboration with external partners
- Funding (incl. both OPEX and CAPEX)
- Mechanisms to enable delivery of the Strategy
- Operational processes and procedures in place
- People and resources to plan on-ground works
- People on the ground to deliver works
- People to manage oversight of funding and resources
- Policy and regulation frameworks to support and drive Strategy targets
- Other (please specify)

Q13 For the PO groups and catchments you work in, do you foresee any opportunities that could enhance the success of the Strategy over the next 5 years?

Q14 For the PO groups and catchments you work in, do you foresee any challenges that could hinder the success of the Strategy over the next 5 years?

Q15 What external groups do you work with to deliver on the Strategy targets for the PO groups and catchment you work in? Where possible, please nominate which organisation/s. Options for answer:

- State Government (please specify)
- Water retailers (please specify)
- Local government (please specify)
- Community groups (please specify)
- Other (please specify)

Q16 Are you planning any consultation (e.g. events, meetings, forums) relating to delivery of the Strategy in the next 12 months with the groups listed above? Options for answer:

- No
- Yes. Please specify who and what type of consultation.

Q17 Are there any organisation/s that we should be working with but currently do not have ongoing partnership? Options for answer:

- No
- Yes. Please specify.

About the performance objectives in the Healthy Waterways Strategy (HWS)

Q18 Within the five major catchments, there are 69 sub-catchments in the Strategy. In these sub-catchments, specific actions for rivers, estuaries and wetlands are detailed in performance objectives. These performance objectives are short-term targets aimed at improving waterway conditions within 10 years that are the priorities required to meet the long-term targets.

Does your work involve the delivery of performance objectives at the sub-catchment scale? Options for answer:

- No. *If 'No' skip to Q70*
- Yes.

Q19 Which sub-catchment/s does your work primarily relate to? Please select all that apply.

- Bass River
- Bayside
- Blind Creek
- Boyd Creek
- Brushy Creek
- Bunyip Lower
- Bunyip River Middle and Upper
- Cardinia, Toomuc, Deep and Ararat Creeks
- Cherry Creek
- Corhanwarrabul, Monbulk and Ferny Creeks
- Dalmore Outfalls
- Dandenong Creek Lower
- Dandenong Creek Middle
- Dandenong Creek Upper
- Darebin Creek
- Deep Creek Lower
- Deep Creek Upper
- Diamond Creek (Rural)
- Diamond Creek (Source)
- Emu Creek
- Eumemmerring Creek
- French and Phillip Islands
- Gardiners Creek
- Jacksons Creek
- Kananook Creek
- King Parrot and Musk Creeks
- Koonung Creek
- Kororoit Creek Lower
- Kororoit Creek Upper
- Lang Lang River
- Laverton Creek
- Lerderderg River
- Little River Lower
- Little River Upper
- Little Yarra River and Hoddles Creek
- Lollypop Creek
- Maribyrnong River
- Merri Creek Lower
- Merri Creek Upper
- Moonee Ponds Creek
- Mornington Peninsula North-Eastern Creeks
- Mornington Peninsula South-Eastern Creeks
- Mornington Peninsula Western Creeks
- Mullum Mullum Creek
- Olinda Creek

- Parwan Creek
- Plenty River (Source)
- Plenty River Lower
- Plenty River Upper
- Skeleton Creek
- Steele Creek
- Steels and Pauls Creek (Rural)
- Steels and Pauls Creek (Source)
- Stony Creek
- Stringybark Creek
- Tarago River
- Taylors Creek
- Toolern Creek
- Watsons Creek
- Watts River (Rural)
- Watts River (Source)
- Werribee River Lower
- Werribee River Middle
- Werribee River Upper
- Woori Yallock Creek
- Yarra River Lower
- Yarra River Middle
- Yarra River Upper (Rural)
- Yarra River Upper (Source)

Q20 In the sub-catchment/s you previously selected, please indicate what performance objective group your work primarily relates to? (Please note you can pick ONLY one. If you work covers multiple PO groups, you will have the option to complete these questions again for a different group).

- Community (improve access, participation)
- Habitat (fish passage, physical form, re-engage floodplains)
- Vegetation (establish, maintain)
- Stormwater (harvest, infiltrate)
- Water for the environment (improve unregulated flows, increase reserve volume)
- Water quality (reduce pollutant run-off, STP loads, recreational use)

Q21 Thinking about the sub-catchment/s and PO group you selected, how would you rate overall progress in the delivery of the performance objective over the last 5 years? Options for answer:

- Highly successful
- Somewhat successful
- Unsuccessful
- Don’t know / Unsure

Q22 What is the key reason/s for your answer above?

Q23 Thinking about the sub-catchment/s and PO group you selected, how would you rate overall expected progress in the delivery of the performance objective over the next 5 years? Options for answer:

- Highly successful
- Somewhat successful

- Unsuccessful
- Don't know / Unsure

Q24 What is the key reason/s for your answer above?

Q25 Thinking about the sub-catchment/s and PO group you selected, would you say that the delivery has the right amount of:

- Awareness and focus outside of Melbourne Water
- Awareness and focus within Melbourne Water
- Collaboration with external partners
- Funding (incl. both OPEX and CAPEX)
- Mechanisms to enable delivery of the Strategy
- Operational processes and procedures in place
- People and resources to plan on-ground works
- People on the ground to deliver works
- People to manage oversight of funding and resources
- Policy and regulation frameworks to support and drive Strategy targets
- Other (please specify)

Q26 Thinking about the sub-catchment/s and PO group you selected, do you foresee any opportunities that could enhance progress in the delivery of the performance objective in the Strategy over the next 5 years?

Q27 Thinking about the sub-catchment/s and PO group you selected, do you foresee any challenges that wouldhinder progress in the delivery of the performance objective in the Strategy over the next 5 years?

Q28 Do you wish to complete these questions again for different sub-catchment or performance objective group?

- No.
- Yes. *If 'Yes' loop back to Q18 for a maximum of five times.*

Final Comments

Q29 Do you have any other final comments or feedback that will help Melbourne Water and its external partners to refine and improve the Strategy over the next five years?

Q30 Are you interested in being involved in further consultation to help evaluate the Strategy? If yes, please provide your contact details below. Enter name and email address.

Q31 Is there any particular topic/s that you would like to provide further information about?

Appendix 5 METHODS POs For Review

During the HWS development process, it was acknowledged that, over the 10-year life of the Strategy some of the 900+ Performance Objectives (POs) and associated targets would require changes or adaptations for a range of reason. Structural arrangements were put in place to support such an approach. The HWS was split into the main document (that summarises the five catchment programs, region-wide performance objectives and catchment scale targets) and the more detailed catchment programs for the Werribee, Maribyrnong, Yarra, Dandenong and Westernport catchments. The rationale was that performance objectives in the 10-year catchment program that contain targets at sub-catchment, wetland and estuary scales could be modified during the life of the strategy as long as changes do not result in a decline in any of the long-term (50+ year) value and condition targets published in the main document. Changes to the HWS main document would require approval from the Minister as outlined in the *Water Act S.192 - variation of regional waterway strategies during operation of strategy*.

Since the HWS began in 2018, several issues have been raised about a number of sub-catchment, wetland and estuary performance objectives by partners and stakeholders including Melbourne Water staff. Issues have occurred for various reasons based on (e.g. incorrect assumptions, errors made during the target-setting process, missed or incorrect locations, etc.). These issues have been documented, assessed and classified into performance objectives where a change is recommended as part of the mid-term review and those where we propose only to change reporting to provide an explanation of the issue and outline shortcomings.

In addition to the changes that have been highlighted through the annual reporting cycle there are changes to performance objectives that could be made as a result of the recommendations coming from for the Science Inquiry. The HWS formal response to the mid-term review will consider these and prioritise which of these to take action on for the remainder of the strategy period and which to consider for the development of the next strategy.

Melbourne Water is committed to being transparent about any changes made to the performance objectives and targets. The approach taken will be:

- Prioritise which performance objective to change during the development of the mid-term review response
- Discuss and agree to the proposed changes with all relevant strategy partners
- Produce a short communication on the Performance Objective changes as a stand-alone document and publish it on the website
- Include reference to the changes made as a result of the mid-term review on relevant web pages, including where links are made to the catchment program documents and add links to the short communication document
- Make the proposed changes in the website for the Annual Reporting cycle, and
- Communicate the changes to the community through appropriate channels.

Approach

The review of POs emphasised addressing changes to ensure that they are current and appropriate, identifying opportunities for improvement, addressing errors and flagging improvements for this and the next Strategy.

Performance Objectives requiring review have either been flagged by stakeholders as a result of the annual reporting process or have been identified as requiring revision through the Science Inquiry.

A record of issues raised by stakeholders has been kept since 2020. Stakeholders were generally data contributors to annual reports such as Melbourne Water staff as well as external stakeholders such as water corporations and Parks Victoria. The POs flagged for review by stakeholders have commonly required refinement in some way, e.g. stakeholders felt they were not applicable to a particular location and either required deletion or relocation, targets had been incorrectly calculated, multiple similar POs were included in the same sub-catchment, POs were unclear, or PO targets were missed in the HWS catchment program wording despite the sub-catchment being identified as a priority area on the maps. The POs flagged for review by the Science Inquiry have generally focussed on issues that were missed when the Strategy was written or that were not made explicit enough (e.g. wetland protection, delivery of existing environmental water entitlements, coverage of industrial area performance objectives and deer management).

The Performance Objectives flagged for review by stakeholders were assessed and sorted into issue type. Issues were documented for each performance objective. Many of the more minor issues identified (e.g. duplicate similar performance objectives, or inappropriate reporting frequency) will be managed through modification to the way they are reported on the HWS website to streamline reporting for stakeholders i.e. one report provided for two similar performance objectives. These are not discussed further in this mid-term review and are considered resolved for the remainder of the Strategy period. A summary of the process is displayed in Figure 44.

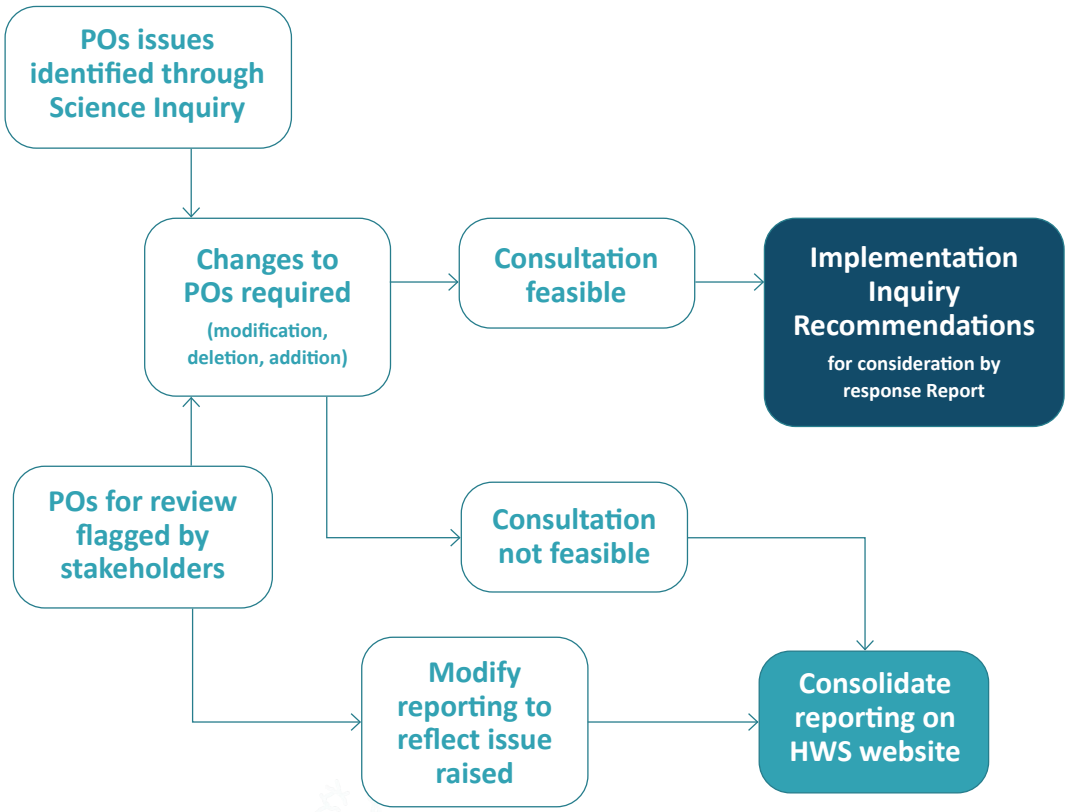

Figure 44. Summary of process used for reviewing performance objectives.

Appendix 6 RESULTS Collaboration - Additional Lines of Evidence

This appendix documents three additional lines of evidence used to verify and explore the findings of the external evaluation of collaboration and co-delivery.

1. February 2023 region-wide forum

The 2023 Healthy Waterways Regional Forum was hosted online in February and designed to inform partners and interested communities across the Port Phillip and Westernport region on how the Healthy Waterways Strategy is progressing. The 304 attendees from a range of organisations across the five catchments were given the opportunity toask questions and provide comments in writing during the event. Some commentsby the external participants related to how partners are working together towards co-delivery of the Healthy Waterways Strategy.

Several comments focused on the structure and approach to collaboration, echoing the external evaluation findings that co-delivery is not taking place as intended.

> This strategy had a fantastic co-design approach with 660 people from 220 orgs, and as Cheryl [sic] notes many groups have obligations towards healthy waterways. What is the intention to re-convene these groups toward the genuine participation? *Community organisation*

> One half hour session with EPA re progress on PP taskforce IS NOT genuine collaboration with community - Community member

Several comments related to community and agency involvement in decision-making for the Healthy Waterways Strategy, in line with the external evaluation findings of confusion around roles and responsibilities.

> Water retailers are not represented but their role is expected in the projects and activities aimed at improving the health of the waterways. It is even more important now with the broad umbrella of integrated water management covering all elements of water cycle for the holistic outcome for the community.
> *Water retailer*

> Shouldn't there be community representation on the RLG to fulfil the promises of government across strategies to engage community in waterway management? Community member

> I can't see community being mentioned here as either partners or collaborations? This should be upfront, surely.

A few comments called for improved inter-agency collaboration to resolve the complex issues of litter and pollution:

> With Friends of Williamstown Wetlands we tried to map all the gross pollution traps in Hobsons Bay. Information from the local council and MW showed that information was not up to date and maintenance was very patchy. How will MW and LGAs better collaborate to manage GPTs? *Community organisation*

> How can Melbourne Water, Councils and the EPA work together to get a pragmatic solution to pollution control, the reporting of incidents and issuing fines? The population is confused. *Community member*

2. Internal MW survey (March 2023)

The survey conducted in 2023 to understand how Melbourne Water perceives how the Strategy is tracking included several questions relating to collaboration.

Insights from the survey relevant to collaboration and co-delivery include:

- 55% of the 53 respondents indicated that their role in the implementation of the Healthy Waterways Strategy involved collaboration with external partners
- 50 of the 53 respondents rated how 'right' the amount of collaboration relating to the PO groups in which they operate was:
  - 16% of these 50 respondents rated the amount of collaboration with external partners at 'just right' and 68% as not enough as highlighted in Figure 45, and
  - This is aligned with the external evaluation finding that collaboration is not occurring as intended. These was little difference in the ratings of participants who indicated that they were involved in collaborative work with partners (60% of the 50 respondents) and the ratings of participants who indicated that they were not involved in collaborative work with partners (40% of the 50 respondents) – as outlined in Figure 46 and Figure 47 below.
- Many opportunities to enhance the success of the strategy identified through the survey are aligned with the external evaluation findings. The opportunities listed below were mentioned by several respondents, often both as opportunities for improvement or challenges to the Strategy implementation:
  - Development of implementation plans
  - Executive level commitment within Melbourne Water and among partners
  - Clear accountability and responsibility across all parties, including Melbourne Water and partners
  - Increase internal and external awareness, capacity, engagement and collaboration, and
  - Allocate more resources to enable engagement with partners.

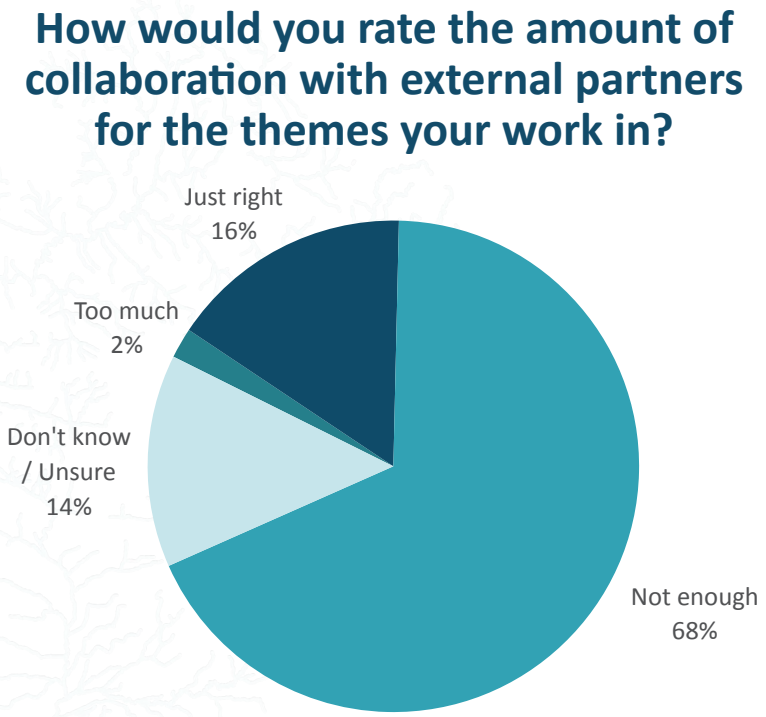

Figure 45. Melbourne Water staff (n=50) rating for the amount of collaboration with external partners.

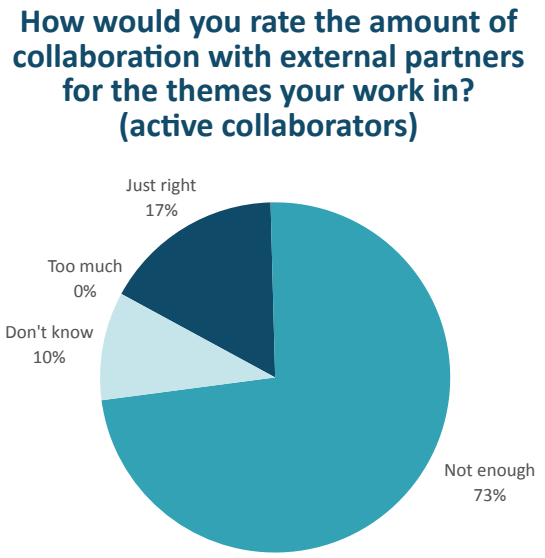

Figure 46. Melbourne Water staff rating for the amount of collaboration with external partners (active collaborator, n=30).

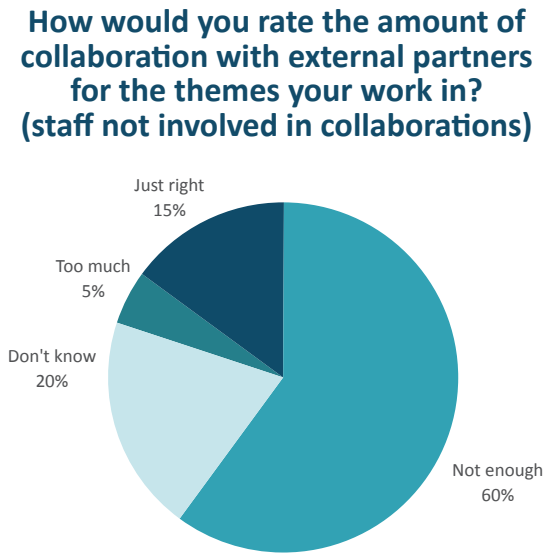

Figure 47. Melbourne Water staff rating for the amount of collaboration with external partners (staff not involved in collaborations, n=20).

Region-wide Leadership Group collaborative work on natural wetlands

HWS Region-wide Leadership Group (RLG) collaborative work on natural wetlands has been highlighted as an example of effective region-wide collaboration by the RLG independent review. Details about this collaboration are provided below to offer additional context and support the forming of recommendations.

In response to the loss of natural wetlands identified in the HWS first (2019) Annual Report, the RLG requested a discussion paper on the problem, the policy and planning context, and options for improved management. The paper was provided to the RLG in July 2020 and also circulated to senior staff at DEECA and the Victorian Planning Authority. The paper found that the basic machinery of managing wetlands in urban and peri-urban environment is not developed.

Over the past two years, protection mechanisms for natural wetlands have been considered and were discussed by the RLG (April 2021). Foundational work was approved to understand the potential options available to Melbourne Water and HWS delivery partners for natural wetland protections. This has included the formation of a Wetland Working Group, chaired by DEECA's RLG representative with representatives from Melbourne Water, DEECA, Parks Victoria, Victorian Planning Authority, EPA, a Council in the growth area and, most recently, a representative of the Wurundjeri woi-wurrung Registered Aboriginal Party.

In consultation with scientists and planners, the group developed a decision/risk framework tool to support priority setting and action planning for natural wetlands, particularly those on private land. This is important because there is a≈current policy gap around protecting wetlands.

Other potential initiatives based on the collective tool-box available to RLG members to protect natural wetlands include:

- Exploring community willingness to pay to protect natural wetlands (Melbourne Water)
- Improve understanding of the status of natural wetlands under the Water Act 1989 (DEECA and Melbourne Water)
- Mapping all natural wetlands and making the map publicly available on the Regional Catchment Strategy web site (Melbourne Water)
- Exploring the inclusion of guidance on the opportunity to retain and protect natural wetlands in the Precinct Structure Plan Guidelines (Victorian Planning Authority), and
- Strong advocacy for the protection of Hannah Swamp, resulting in a softer flood engineering response approach (Wurundjeri woi wurrung Cultural Heritage Aboriginal Corporation and Nature Glenelg Trust).

Appendix 7 RESULTS Proposed Principles for Effective Collaboration

This appendix presents the Principles for effective collaboration developed by external evaluator Clear Horizon, based on the insights and lessons surfaced through their evaluation of collaboration and co-delivery. These principles have informed the recommendations of the HWS mid-term review and provide robust and more detailed insights for consideration in the HWS mid-term response.

1. The form and expectations of a collaboration is defined.

Collaboration is a broad term that can describe a range of different ways of working with stakeholders. Collaboration can be considered on a spectrum, from intentional cooperation through to fully integrated ways of working. (An example of a collaboration spectrum is presented in Appendix 1). Different types of collaboration are relevant in different circumstances, and a collaboration can also move along the spectrum in response to various influencing factors.

It is important to clearly define the type of collaboration that is needed in any given circumstance and to ensure there is a shared understanding of the associated expectations. In addition, if there is an intention to transition along the spectrum from one form to another, this requires an explicit understanding from all parties.

2. The enabling conditions required for the collaboration to succeed in the given context are understood and established.

It is important to first understand what enabling conditions are required for a collaboration to succeed in any given context. Once this has been done, it may be necessary to do some groundwork to establish those conditions before a collaboration can commence. It is important to note that these conditions are dynamic and require ongoing attention and maintenance. The following list provides an example of the enabling conditions surfaced through the external evaluation of collaboration and co-delivery; however, these may not be the same in every context, nor will they all need to be present from the outset of a collaboration.

- Key stakeholders (especially the community) are motivated and highly engaged around a given problem or opportunity.
- There is strong buy-in to a shared vision that seeks to address the problem/opportunity within an agreed scope and scale.
- There is an agreed lead coordinator/facilitator of the collaboration (if a Collective Impact approach to collaboration is being used, this is referred to as the Backbone).
- Stakeholders are sufficiently well-resourced to collaborate (financially or otherwise).
- Stakeholders have the authority necessary to collaborate.
- Stakeholders have strong relationships (ideally pre-existing with a history of collaboration).
- Stakeholders have access to sufficient contextual knowledge and networks.

In some cases, a specific threat or time-bound opportunity may also act as a driver for collaboration.

3. A fit-for-purpose operating model and associated implementation plans for the collaboration is in place.

With the enabling conditions in place, a collaboration requires a fit-for-purpose operating model and associated implementation plans that outline the roles, accountabilities, and expectations for each stakeholder. As above, clear leadership expectations are an important element of this, and depending on the operating model chosen this may be centralised or distributed leadership (or a combination of both). Clearly articulated roles for implementation are especially important for enabling stakeholders to integrate their role/s within the collaboration into their 'business as usual' work.

4. A collaboration orientation or ‘mind-set’ is encouraged and nurtured.

Collaboration, and especially ‘transformative’ collaboration to address wicked problems, requires a unique mind-set, which includes a willingness to share power and decision-making authority, and the associated risks and rewards. It also requires a learning orientation, the ability to be responsive to changing conditions, and a commitment to building long-term relationships. Nurturing these orientations within individual collaborators is essential for collaborations to be successful.

5. Ongoing learning and reflection is embedded into collaboration.

An intentional approach to collaborative learning, reflection and improvement is required for a collaboration to be successful and impactful. This includes the routine collection of data (monitoring), collaboratively reviewing data to inform judgements (evaluation), and drawing insights from these to inform decision making (learning).

Appendix 8 RESULTS Internal Survey Summary Data

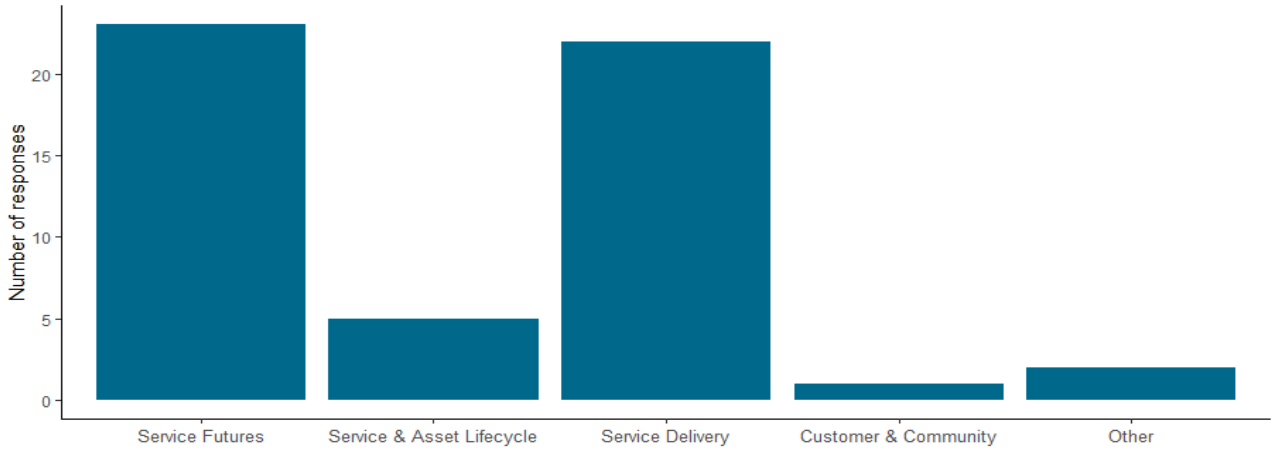

*Figure 48. Responses collected via the internal survey for Q2–- "**Which area of Melbourne Water do you work in?**". Total number = 53.*

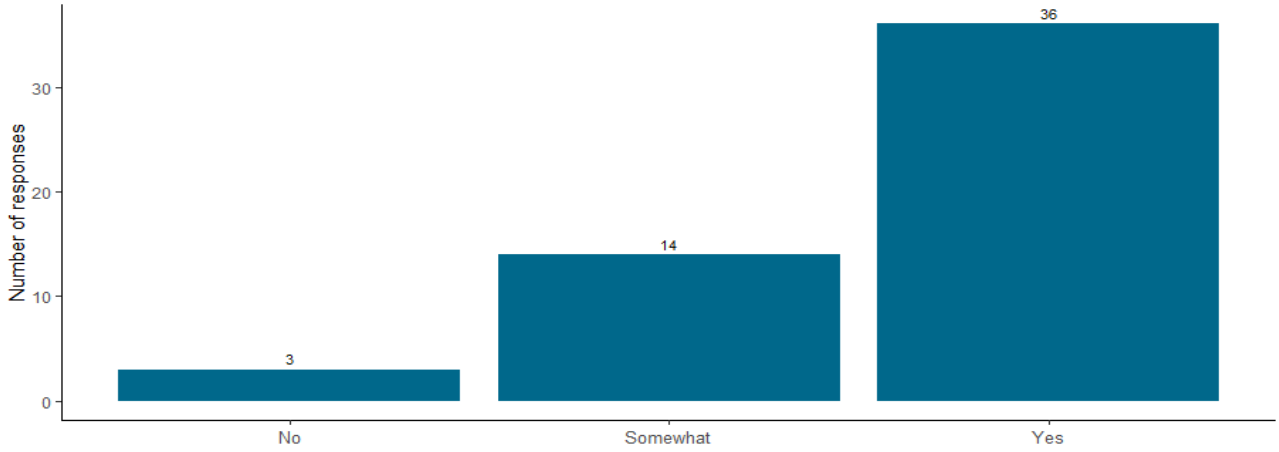

*Figure 49. Responses collected via the internal survey for Q3–- "**Does your role directly involve the delivery of the Health Waterways Strategy?**"*

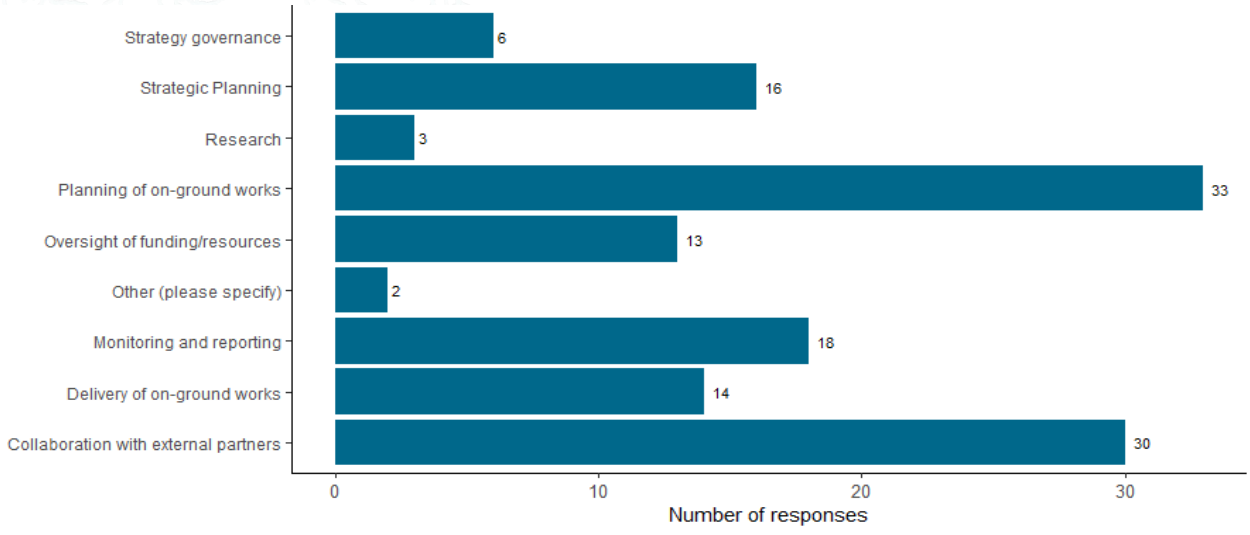

*Figure 50. Responses collected via the internal survey for Q4 "**In what capacity are you involved? Please select all that apply.**"*

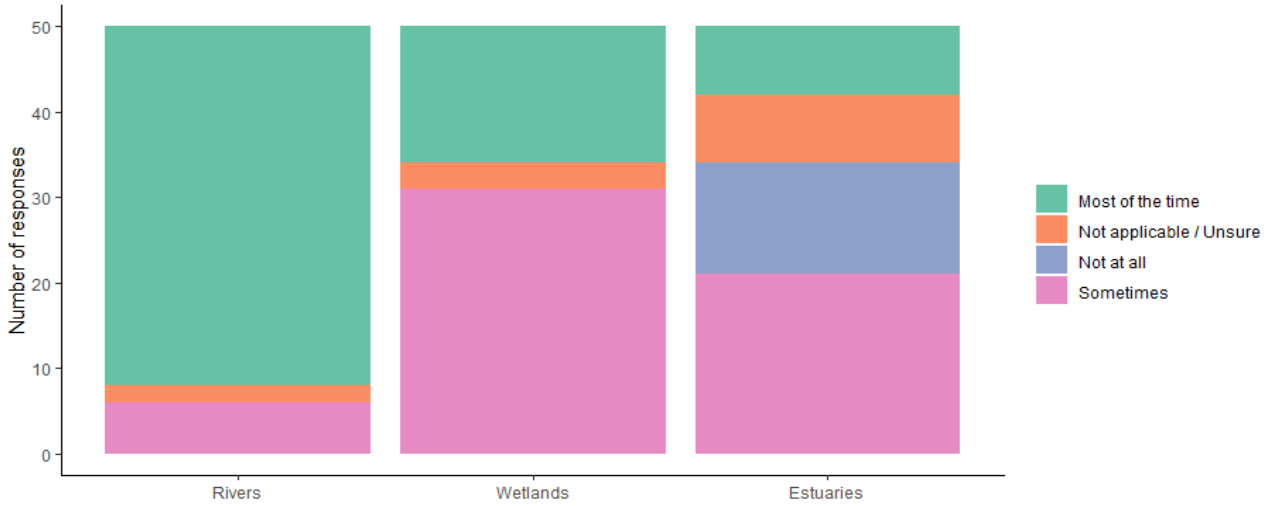

*Figure 51. Responses collected via the internal survey for Q5 – "**To what extent does your work relate to rivers, wetlands or estuaries?**"*

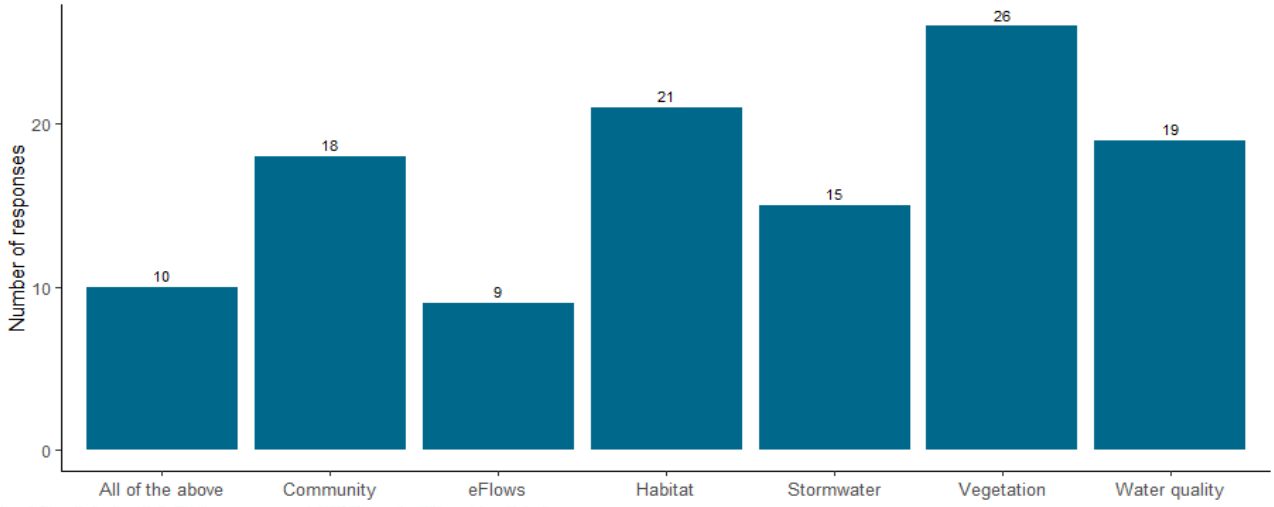

*Figure 52. Responses collected via the internal survey for Q10 – "**Which PO group does your work primarily relate to?**"*

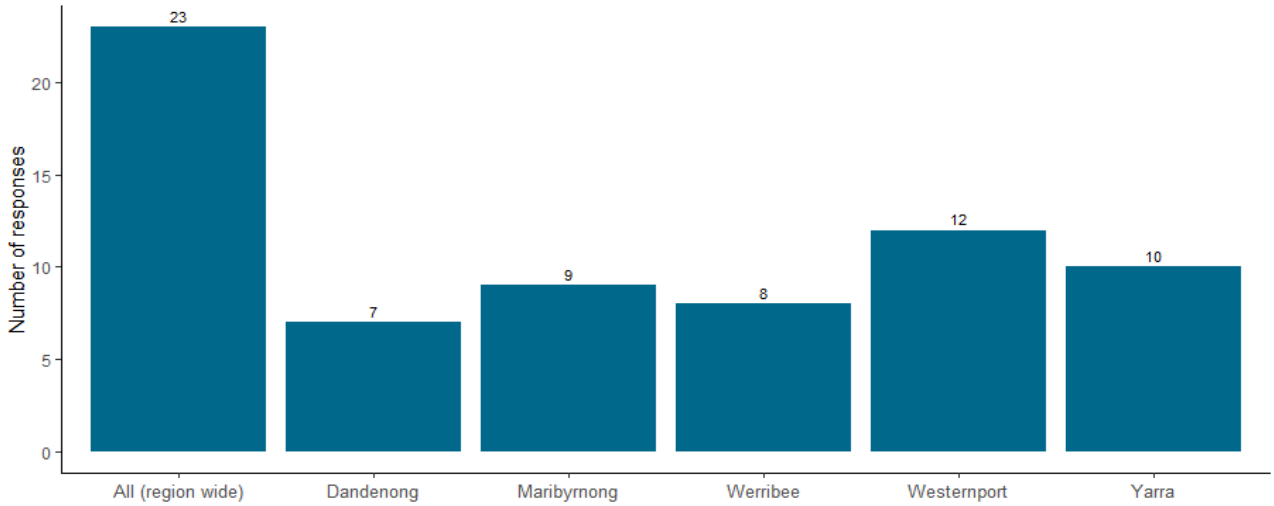

*Figure 53. Responses collected via the internal survey for Q11 – "**Which catchments does your work primarily relate to? Please select all that apply.**"*

Appendix 9 RESULTS RPO Evaluation

The table below outlines the evaluative reasoning for all Regional Performance Objectives.

Table 33. Evaluation results for the RPOs.

RPO	Evaluative Reasoning
RPO 1-7: Traditional Owner RPOs	Out of scope for this review.
RPO-8: Environmental-economic accounts are developed for the region's waterways using contemporary international standards and are used to demonstrate the returns on catchment and waterway investment	⚠ **Slightly off-track – At risk of not meeting performance expectations by the end of Strategy** A pilot accounting framework is in development but has yet to be tested as of 21/22. This still needs to fully meet the performance expectation in RPO MEP, which stated pilot would be tested by 21/22. A review of the previous System of Environmental and Economic Accounting by other government agencies has been undertaken, and a working group for a pilot framework has been set up. Repetition of information in HWS Annual Reporting suggests that progress for this RPO has been slower than initially anticipated.
RPO-9: Environmental-economic accounting is incorporated into Healthy Waterways Strategy monitoring, evaluation and reporting (MER) by 2023.	⚠ **Slightly off-track – At the risk of not meeting performance expectations by the end of Strategy** This RPO is linked to RPO-8, which needs to be further progressed before this RPO can advance. While the HWS Annual Reporting emphasises commitment to incorporate environmental-economic accounting in the HWS MER by 2023, the assumption is that this RPO is slightly off-track due to the pilot in RPO-8 not being implemented as of 21/22.
RPO 10: An adaptive pathways approach is adopted to understand and manage the risks of climate change on waterways.	✓ **On track to meet performance expectations** Evidence of multiple projects to understand climate impacts, response options and adaptive pathways being progressed. A new project started in 21/22 to support a Mid-term Evaluation looking at what has changed in the operating environment since 2018 is a precursor to undertaking scenario and adaptive planning for HWS. No mention of HSM progress: this should be included in future annual reporting.
RPO 11: Understanding of groundwater dependent ecosystems is improved and opportunities to maintain or improve these continue to be investigated.	✓ **On track to meet performance expectations** Most performance expectations outlined in RPO MEP have been met with evidence of adaptive management and improvement of the monitoring program and Environmental Watering Action Plans. The new project initiated to map the risk of climate change and urbanisation to GDEs will contribute to meeting the last outstanding performance expectation.
RPO 12: Water for the Environment continues to be managed and delivered to the region's rivers and wetlands and recovery options continue to be investigated.	⚠ **Significantly off-track – At risk of not meeting performance expectations by end of Strategy** This RPO is linked to SCPOs related to increasing reserve volume and maintaining or improving flow regimes in unregulated systems. Targets and environmental water recovery opportunities have been outlined in the CRSWS to be delivered by 2032. The Victorian Environmental Water Holder holds water for the environment and is delivered by Melbourne Water on their behalf in regulated systems. However, a limited number of funded projects are planned to achieve these targets. This includes temporary trade of unused irrigation allocations being delivered to Jacksons Creek in the Maribyrnong Catchment. It is unclear what proportion of the 23GL per year environmental reserve target has been met to date. The progress is unclear of the performance expectation for Melbourne Water to lead a complimentary water recovery program and develop opportunities to test by 2022.

RPO-13: Industry capacity for whole of water cycle and stormwater management is increased to enable collaboration, improved access to information and knowledge, and a skilful and capable industry with strong established networks.	⚠ **Slightly off-track – At risk of not meeting performance expectations by end of Strategy** The performance expectations of this RPO were redefined in March this year due to the need to clarify the foundational elements needed to support the implementation of the sub-catchment stormwater PO targets. The four main themes for the performance expectations are: • Capacity has increased • Collaboration is evident • Strong established networks, and • Improved access to information and knowledge. The HWS Annual reporting has focused on two of the performance expectations for capacity building and strong established networks through the work and events delivered by Clearwater. However, certain aspects still need to be covered, such as how networks have strengthened over time or how feedback from capacity-building events demonstrates increased knowledge and awareness of stormwater implementation practices (e.g., infiltration and harvesting targets). While improved access to information and knowledge has been progressed through the Online Navigator Tool Resource Portal to assist planning system users in identifying stormwater management requirements set out in the Victoria Planning Provisions, it is unclear how information channels about stormwater management (e.g. Clearwater Website, DEECA IWM webpage) have been improved or the extent they support collaboration.
RPO-14: Standards, tools and guidelines are in place and implemented to enable re-use and infiltration of excess stormwater and protect and/or restore urban waterways.	⚠ **Slightly off-track – At risk of not meeting performance expectations by end of Strategy** The performance expectations of this RPO were redefined in March this year due to the need to clarify the foundational elements needed to support the implementation of the sub-catchment stormwater PO targets. Several documents have recently been published that contribute to this RPO. The EPA published publication 1739.1: Urban stormwater management guidance in July 2021. The Healthy Waterways Strategy Stormwater Targets: Practitioner's Note was also published by Melbourne Water. These two pieces align to provide consistent flow targets and information for practitioners about harvesting and infiltration targets. An update to the MUSIC guidelines is in development and has included industry consultation. The update is being staged in two parts and it is unclear when the releases are expected. A Stormwater Industry Guidance Plan is in early stages of development. While there is evidence of several guidance notes being developed, it is unclear if work is underway to strengthen policy and planning frameworks to regulate the new stormwater standards and this needs to be addressed in future HWS Annual Reports. A Stormwater Industry Guidance Plan is in development and is due to be completed in 2023/24.
RPO-15: Victoria's planning system is used effectively to protect and enhance waterway values.	⚠ **Slightly off-track – At risk of not meeting performance expectations by end of Strategy** HWS annual reporting outlines several different planning initiatives, guidelines and policies that are either in development or have been finalised to protect and enhance waterways, such as: • Port Phillip and Westernport Catchment Management Authority's Regional Catchment Strategy • Environmental Protection Authority Urban Stormwater Management Guidance • Victorian Governments Planning Framework for Land Use and Development • Victorian Governments Precinct Structure Plan Guidelines • Victorian Governments Sustainable Water Strategy for the Central and Gippsland Region. • Victorian Governments Waterways for West Action Plan • Council Alliance for Sustainable Built Environments Sustainable Subdivisions Guidelines • Melbourne Water Waterway Corridor Guidelines for Greenfield Areas • Planning controls to protect the urban reaches of the Yarra River from inappropriate development, and • Melbourne Urban Stormwater Institutional Arrangements Review (MUSIA). However, as it is still being determined how effectiveness is defined for this RPO or the extent to which some of these documents help to protect and enhance waterway values, this RPO has been evaluated as slightly-off-track.

RPO-16: Protection mechanisms are in place for headwaters to ensure that they are retained as features in the landscape for environmental, social, cultural and economic benefits.	⚠ **Slightly off-track – At risk of not meeting performance expectations by end of Strategy** While there is evidence of multiple projects and initiatives underway or completed to provide important foundational information that meets some of the performance expectations of this RPO, more than half of the performance expectations are yet to progress and hence it is slightly off-track. New Precinct Structure Plan Guidelines were released on 21/22 and have been used in Craigieburn Precinct Structure Plan to retain the headwaters of a waterway. DELWP released Waterway identification guidelines in 2002 that assist in interpreting the Water Act definition for waterways, and a new designated waterways layer has been developed that includes headwater streams. It needs to be clarified from HWS Annual Reporting if these are being used in all aspects of planning yet (e.g. PSPs, DSSs, and other referral processes by all delivery partners). Research is underway to improve knowledge of the role of headwater streams in different land uses to mitigate nutrient and stormwater impacts. On the basis that approximately 51 km of headwater streams are proposed to be piped, 192 km proposed to be channelised and 17 km planned to be removed or re-directed in Precinct Structure Plans and Developer Services Schemes, more progress is needed to meet the remaining performance expectations by 2028. The importance of headwaters were flagged in the focus sub-catchments highlighted in the Science Inquiry.
RPO-17: Water quality in waterways and bays is improved by reducing inputs of sediment and other pollutants from urban construction and development	⚠ **Slightly off-track – At risk of not meeting performance expectations by end of Strategy** HWS Annual reporting outlines evidence of new guidance developed by EPA (1834) includes information about risk management of construction working near waterways. No evidence has been provided about determining that quantum of sediment being delivered to Western Port Bay to set the baseline from construction sites. HWS Annual report doesn't cover many of the performance expectations outlined in the Regional MEP but covers other items. This indicates the need for further information to be provided in future annual reports.
RPO-18: Critical waterway health assets including stormwater treatment systems, fishways and erosion control structures, are maintained for their designed purpose or the same outcomes are delivered by alternative means.	⚠ **Slightly off-track – At risk of not meeting performance expectations by end of Strategy** HWS annual reporting for this RPO has focused on outputs, and as such, the performance objectives relating to outcomes have yet to be addressed, so progress on these is unknown. Melbourne Water has an asset management plan that supports the maintenance and renewal of assets such as fishways, erosion control structures and stormwater quality wetlands. There is reported evidence of regular maintenance and renewal of all three asset classes. No evidence has been provided where softer bank protection structures have been implemented to seek better environmental outcomes or examples where existing wetlands have been retrofitted to contribute towards Strategy infiltration and harvesting targets. While there is reported involvement in research, it does not relate to the performance expectation of understanding how asset performance has improved waterway conditions and values.
RPO 19: Options to transform modified waterways by creating more natural, community-loved spaces are identified and implemented.	✅ **On track to meet performance expectations** This RPO is being delivered via the Reimagine Your Creek Program (RYC). HWS annual reporting indicates that a number of RYC naturalisation projects are underway and are at varying levels of delivery. RYC website () provides videos, photos and plans demonstrating evidence of construction. The restoration of these creeks will activate open space and provide improved access to waterways in highly urbanised areas for community benefit. The projects have delivered a series of walking paths, boardwalks and bridges that connect the community to nature and each other and has improved pedestrian and cycling connections with other transport links.
RPO-20: The amenity, community connection and recreation values of wetlands are better understood. Performance objectives are developed to enhance these values.	⚠ **Slightly off-track – At risk of not meeting performance expectations by end of Strategy** HWS annual reporting indicates the performance expectations in the Regional MEP outlining the need for conceptual models for social values of wetlands to be developed, is underway with the models drafted. Work is currently underway to identify which wetlands need social value POs. The performance expectation of the piloting approach to determine social value status and conditions for priority wetlands appears to be behind schedule.
RPO-21: The multiple benefits of waterways investment are tracked and understood.	⚠ **Significantly off-track – At risk of not meeting performance expectations by the end of Strategy** Performance expectations have yet to be developed for this RPO, and HWS annual reporting refers to RPO-8. The multiple benefits of waterways being tracked or understood in the HWS annual reporting for RPO-8 need to be mentioned. However, developing environmental and economic accounting is likely to enable this to occur in the future. This RPO was evaluated as significantly off-track given that RPO-8 & 9 are slightly off-track and the uncertainty around the performance expectations for this RPO. Waterway investment by HWS partners could be explored as part of setting the performance expectations for RPO-21.

RPO 22: Cooler, greener and more liveable urban environments are created through revegetation and as part of managing excess stormwater.	**On track to meet performance expectations** Several examples provided in HWS Annual Reports and Case Sudies of different approaches to creating cooler, green and move liveable urban environments along waterway. Some of these are part of pilot projects. Case studies are available via HWS website. It is unclear if presentations have been shared with HWS partners to encourage learning and wider application so this should be addressed in future annual reports.
RPO 23: The potential impacts of emerging contaminants of concern such as microplastics, pesticides and pharmaceuticals, and toxic chemicals are better understood and mechanisms to respond collaboratively developed.	**On track to meet performance expectations** Risk assessments of emerging chemicals of concern have been reported each year of the Annual Report. Potential hotspots have been identified, and journal articles are being written (with some delay due to Covid). It is nclear how agencies and communities use the information to manage the risk collaboratively and proactively. This needs to be the focus of future annual reporting.
RPO 24: Risk-based programs are in place to mitigate sources of urban pollution (licenced and unlicensed discharges) to protect bays and waterways.	**On track to meet performance expectations** The majority of Performance Expectations are well underway with Officer for the Protection of Local Environment (OPLEs) transitioned from pilot program (linked to RPO 17) to ongoing EPA program (but unclear if MW are continuing to facilitate funding), research into urban pollution patterns within Dandenong Creek undertaken by university and industry using low-cost sensors to identify pollution sources. It is unclear if this research is now being used to manage major pollution sources – this should be focus of future annual reporting. A joint QMRA project has been initiated during 2018/19 to support risk based prioritisation for sewerage. Future annual report should provide update on how this research has been used to reduce impacts for sewerage discharges.
RPO-25: Programs, standards, tools and guidelines are in place to manage nutrients, sediments and other pollutants from rural land in priority areas.	**Slightly off-track – At risk of not meeting performance expectations by end of Strategy** The number of properties enrolled in programs to manage sediment and nutrients from rural land has decreased from the 2017 baseline, according to information in HWS Annual Reports. This may be due to lockdown impacts from COVID-19. No evidence was provided in HWS annual reporting that existing programs will be reviewed and evaluated as per the performance expectation for this RPO. HWS annual reporting content in the future needs to be more specific to the performance objectives to avoid repetition of previous years' reports. The future focus should also be directed to providing information on how updated guidelines and new tools have been used by landholders.
RPO 26: Methods are in place to assess volume and source of litter to inform and promote litter reduction programs.	**On track to meet performance expectations** Half of the PEs have been met with others in progress. Research project has developed a framework and litter monitoring method which has been trialled across different sites. A MERI for litter program has provided baseline information of catchment litter condition in 6 sub-catchments. Some information by MW is provided on the Litterwatch mapping portal but unclear how much. Community group and EPA data shown on portal. Case Study on Stony Creek indicates PE to have collaborative, whole of catchment approach to understand, prioritise and co-ordinate litter management is underway. Unclear how PE is progressing for MW to adopt a level of service for litter management for different catchments or if internal roles and responsibilities have been clarified. This should be addressed in future annual reports.
RPO 27: Incidence of littering and illegal dumping is reduced through raised community awareness and knowledge, infrastructure and enforcement.	**On track to meet performance expectations** Enforcement of litter offences is publicised on the EPA website, and the number of infringement notices reported has reduced in the past few years. This could be partly due to impacts related to the Covid lockdowns in 2020 and 2021. While several activities to increase community awareness have been undertaken, it is still being determined if an increase in awareness has occurred (or if it is being measured). A litter baseline has been established for some sub-catchments through RPO 26; future reporting needs to provide details of litter monitoring results for these sub-catchments. A container deposit scheme for Victoria will be in place in 2024.

RPO 28: Seasonal Herbaceous Wetland vegetation communities are identified and a management program is in place to protect them on public and private land.	**On track to meet performance expectations** Several examples are provided in the HWS Annual Report of Seasonal Herbaceous Wetland vegetation communities being identified and mapped in different regions of the urban growth area. Management plans appear to be in place for several wetlands.
RPO 29: Programs, standards, tools and guidelines are in place to protect wetland vegetation communities from urban and rural threats, including adequate planning controls.	**On track to meet performance expectations** The Wetland MEP has been developed and monitoring results are provided online at the HWS report card website. Research has enabled the database and mapping of natural wetlands to be improved and this information has been shared with HWS partners and is available on the HWS website. A collaborative approach by HWS partners through a working group is currently underway on developing guidance and mechanisms for natural wetland protection. A decision risk tool has been developed to support priority setting and action planning for natural wetlands, particularly on private land. However, four natural wetlands have been lost since the beginning of the Strategy and approximately 14 priority wetlands have been identified of being at risk due to urban development. This is clearly not 'on track' but the performance expectations do not mention maintaining the *number* of natural wetlands and hence this urgently needs to be addressed for the evaluation result to reflect this significant issue.
RPO 30: Climate change resilient revegetation management practices are understood and implemented by selecting plant species, provenances and vegetation communities that are suited to projected future climatic conditions.	**On track to meet performance expectations** A research project is underway to model likely impacts of climate change on the distribution of 31 key species, including impacts on critical life stages (e.g. germination) for six revegetation species and identification of potential seed source locations for 10 species. Investigations are also underway to apply adaptive management approach to build resilience in revegetation programs. On-ground pilot projects are planned for next year to trial this approach. It is unclear if the performance expectation of researching the distribution of ecologically important weeds has been progressed.
RPO 31: A risk-based approach is adopted to prevent, eradicate and contain pest plants and animals (including deer) and protect waterway assets.	**On track to meet performance expectations** Several examples provided in the HWS Annual Reports of a risk-based approach being applied for pests in the region. Research focus has been on deer to understand deer occupancy and impact across the region. Evidence noted of deer control program led by Parks Victoria in collaboration with DELWP and Melbourne Water. Continued improvement reported on understanding the extent of invasive species across the region Unclear if this this includes rabbits, carp and eastern gambusia (as outlined in the performance expectation).
RPO 32: Programs are in place to protect and enhance sites of biodiversity significance associated with the region's waterways, such as through Melbourne Water's Sites of Biodiversity Significance Strategy.	**On track to meet performance expectations** There is evidence of regular site management plan renewal for Sites of Biodiversity Significance (SoBS) with 17 sites with new management plans since July 2018. The tracking of management plan implementation has also been enhanced to provide better oversight of the SoBs program. It is unclear from information provided if all management plans are less than seven years old. Information provided in the HWS Annual Report indicates that additional sites are under consideration for inclusion in the SoBS program. It is unclear of the progress in reviewing all listed sites by 2023 to ensure they still meet the eligibility criteria, this needs to be addressed in the next Annual Report. Regular flora and fauna threatened species/communities monitoring has been conducted at 19 SoBS sites. A project investigating habitat improvement measures for the threatened Southern Toadlet has progressed to implementing on-ground improvement measures at Sugarloaf Reservoir. The Ramsar Protection Program overseen by DELWP/DEECA has implemented priority management actions in Western Port and Port Phillip Bay, Bellarine Peninsula and Edithvale-Seaford wetlands. A project is underway to explore potential impacts of long-term trends of climate change and urbanisation on SoBS sites and a feasibility study has been commissioned for the possible use of recycled water from the Eastern Treatment Plant.

RPO 33: A Region-wide Leadership Group and Catchment Implementation Forums are established to support work towards the vison and goals of the Healthy Waterways Strategy at the regional and catchment scales.	**On track to meet performance expectations** Lots of evidence provided in HWS Annual Reporting of the frequency and operation of the RLG and catchment implementation forums. Future annual reporting should address the remaining performance expectations - particularly about the catchment forums and that at least 80% of the core members of RLG have attended the RLG meetings. This RPO would benefit from a review and refinement of the performance expectations following the Mid-term Evaluation response process.
RPO-34: Waterway Labs are established as needed to tackle complex or region-wide priorities.	**Slightly off-track – At risk of not meeting performance expectations by end of Strategy** HWS annual reporting indicates that three Waterway labs have been held since the strategy started (MERI framework, Education and engagement with community, Litter); however, it is still being determined if Lab outcomes have led to solutions based on a collaborative effort. It is also unclear from Annual reporting if feedback on content and the process of Waterway Labs is regularly collected and evaluated to improve their appropriateness and effectiveness. The impacts of COVID-19 restricting the ability to hold in-person workshops have limited the opportunities to progress with the RPO in the past few years.
RPO 35: The effectiveness of the Leadership Group, Catchment Implementation Forums and Waterways Lab are evaluated, through ongoing feedback, and one interim and one final assessment undertaken during the life of the Strategy.	**On track to meet performance expectations** Future annual reporting should address the performance expectations - particularly about the catchment forums and that at least 80% of the core members of RLG have attended the RLG meetings. This RPO would benefit from a review and refinement of the performance expectations following the mid-term review response process.
RPO-36: The Catchment Implementation Forums improve the coordination of information and activities by catchment stakeholders and communities (while ensuring waterway management includes the whole of catchment perspective).	**Slightly off-track – At risk of not meeting performance expectations by end of Strategy** Catchment forums have been held in three of the four years since July 2018, with social distancing restrictions due to COVID-19 influencing the delivery and format of the forums in recent years. Changes have been made to the structure and objectives of the catchment forums compared with how they were initially described in the Strategy. However, future HWS annual reporting needs to address how this has improved the coordination of information and activities by catchment stakeholders and communities. No evidence was sighted relating to the performance expectation of publishing case studies on the HWS online website demonstrating how catchment implementation forums have improved the coordination of information and activities.
RPO 37: Participation rates in education, capacity building, incentive programs and citizen science activities have increased and enable greater levels of environmental stewardship for our waterways.	**On track to meet performance expectations** Several quantitative examples provided in annual reports of participation rates increasing in most categories, despite the potential impacts of lockdowns during COVID-19. Future annual reporting needs to focus on the performance expectations, particularly demonstrating increased participation rates in urban growth areas
RPO 38: Key messages, stories and resources for waterways and waterway health are collaboratively developed and broadly distributed, increasing community knowledge and engagement around waterways.	**On track to meet performance expectations** Future annual reporting needs to address the performance expectations, particularly the ones relating to stories with a personal element and connection to waterways are being shared by communities and stakeholders and are helping to increase community knowledge and connection.
RPO 39: Systems and pathways to share knowledge and information between communities and stakeholders have been developed and expanded to empower communities to participate and influence waterway management (for example, digital portals, social media, Communities of Practice, signage programs).	**On track to meet performance expectations** Over half of the performance expectations have been progressed. Future annual reporting needs to address the performance expectations, particularly - more community groups are involved in participating in waterway management due to more options (via systems and processes) being available to support the participation. Also need to report on evidence that the systems and processes have contributed to collective impact by some communities on their local waterways.

RPO 40: The profile of waterways is lifted, local connections to waterways are increased, and leaders in waterway management are celebrated and fostered.	⚠ **Significantly off-track – At risk of not meeting performance expectations by end of Strategy** Performance expectations for this RPO have yet to be agreed upon, and it needs to be clarified which Melbourne Water team is responsible for progressing this RPO. Information in HWS annual reporting was provided for the first time in 2021/22. It highlighted different events that had been held in the region as well as media coverage to increase community connection. However, there are no indications or measures of how these initiatives have raised the profile of waterways or how leaders in waterway management are celebrated and fostered. Further work is needed to clarify responsibilities for progressing this RPO and to outline performance expectations so that an evaluation can be conducted in the future.
RPO 41: A monitoring, evaluation and reporting plan is in place by 30 June 2019.	✔ **Achieved – all performance expectations met** The MERI Plan and framework was approved by the Region-wide Leadership Group in August 2019. Detailed Monitoring and Evaluation Plans for Rivers, Wetlands and Estuaries were finalised in late 2020 and are available on the Healthy Waterways Strategy website.
RPO 42: Wetland condition information and prioritisation with a focus on vulnerable wetlands is understood and informs collaborative planning.	✔ **On track to meet performance expectations** Good level of information contained in HWS Annual Reports about majority of the performance expectations. Future reporting could include more information on how work has been progressed with Traditional Owners to address the knowledge gap of identifying cultural values of the region's wetlands.
RPO 43: The social values framework, information and methods used to develop values assessments, targets and performance objectives are further developed and improved during the life of the Strategy.	⚠ **Slightly off-track – At risk of not meeting performance expectations by end of Strategy** A draft social values framework has been developed, and baseline data from 2018 has been applied. Information contained in HWS annual reporting indicates that there has been a focus on assessing the condition of litter as part of the framework. No evidence is provided in HWS annual reporting of when the social framework is due to be finalised or approvals sought from the RLG, suggesting that framework development may have been delayed. The communication of the status of social values to the community needs to be addressed in HWS annual reporting. There is also no evidence of progress for the performance expectation that conflicts between social and environmental values of waterways are understood and guidance provided to practitioners on how to navigate this. This indicates the need for further information to be provided in future annual reports.
RPO 44: Web-based systems are established to report performance and measure outcomes of the catchment implementation forums (by 30 June 2020).	✔ **Achieved – all performance expectations met** The Healthy Waterways Strategy web site was released in June 2020, including the landing page for the Annual Report Card, in readiness for the next annual reporting cycle due late 2020. In 2021, further work was completed on the website including the addition of detailed information about the region's waterway conditions and key values.
RPO 45: Research partnerships with universities and other research institutions are in place to address the key research areas and build our knowledge and capacity to efficiently and effectively achieve the Healthy Waterways Strategy performance objectives and targets.	✔ **On track to meet performance expectations** Research partnerships have been set up with Melbourne University, RMIT, Monash University and several other research institutions with governance structures in place. Several performance expectations around knowledge and capacity are well underway. Evaluation of the effectiveness of the program and identification of knowledge gaps through the Mid-term Evaluation process should be the focus for future annual reports.

Appendix 10 RESULTS SCPO Likelihood Evaluation of Meeting SCPOs

Community – Increase waterway access

Catchment	Sub-catchment	Target (km)	Delivered to 21/22 (km)	Current Status	Future Operating Model	Likelihood	Focus SC	Large target	Priority Rating
Dandenong	Bayside	1	0.45	on-track	negative change	Possible	no	no	LOW
Dandenong	Blind Creek	2	0.6	slightly off-track	positive change	Possible	yes	no	MEDIUM
Dandenong	Corhanwarrabul, Monbulk and Ferny Creeks	2	1	on-track	positive change	Almost certain	yes	no	VERY LOW
Dandenong	Dandenong Creek Lower	3	4.1	complete	positive change	Complete	yes	no	NOT REQUIRED
Dandenong	Dandenong Creek Middle	5	2	slightly off-track	positive change	Possible	yes	yes	HIGH
Dandenong	Dandenong Creek Upper	1	0	Significantly off-track	unchanged	Unlikely	yes	no	HIGH
Dandenong	Eumemmerring Creek	10	4.6	on-track	negative change	Possible	no	yes	LOW
Dandenong	Kananook Creek	2	2.01	complete	unchanged	Complete	no	no	NOT REQUIRED
Maribyrnong	Boyd Creek								NOT APPLICABLE
Maribyrnong	Deep Creek Lower	5	0	Significantly off-track	unchanged	Unlikely	no	yes	HIGH
Maribyrnong	Deep Creek Upper								NOT APPLICABLE
Maribyrnong	Emu Creek	8	0	Significantly off-track	unchanged	Unlikely	yes	yes	VERY HIGH
Maribyrnong	Jacksons Creek	25	1.3	Significantly off-track	unchanged	Unlikely	yes	yes	VERY HIGH
Maribyrnong	Maribyrnong River	10	1.08	Significantly off-track	positive change	Possible	yes	yes	HIGH
Maribyrnong	Moonee Ponds Creek	3	2	on-track	unchanged	Almost certain	yes	no	VERY LOW
Maribyrnong	Steele Creek	2	0	Significantly off-track	unchanged	Unlikely	yes	no	HIGH
Maribyrnong	Stony Creek	2	0.3	Significantly off-track	positive change	Possible	yes	no	MEDIUM
Maribyrnong	Taylors Creek	2	2.5	complete	unchanged	Complete	yes	no	NOT REQUIRED
Werribee	Cherry Creek	3	0	Significantly off-track	unchanged	Unlikely	yes	yes	VERY HIGH
Werribee	Kororoit Creek Lower	5	7.7	complete	unchanged	Complete	yes	no	NOT REQUIRED
Werribee	Kororoit Creek Upper								NOT APPLICABLE
Werribee	Laverton Creek	5	3.2	on-track	negative change	Possible	no	no	LOW
Werribee	Lerderderg River								NOT APPLICABLE
Werribee	Little River Lower	2	0	Significantly off-track	unchanged	Unlikely	no	no	MEDIUM
Werribee	Little River Upper								NOT APPLICABLE
Werribee	Lollypop Creek	2	3	complete	unchanged	Complete	no	no	NOT REQUIRED
Werribee	Parwan Creek								NOT APPLICABLE
Werribee	Skeleton Creek	5	6.9	complete	unchanged	Complete	yes	no	NOT REQUIRED
Werribee	Toolern Creek	5	2.26	on-track	positive change	Almost certain	no	yes	VERY LOW
Werribee	Werribee River Lower	5	0.53	Significantly off-track	unchanged	Unlikely	yes	yes	VERY HIGH
Werribee	Werribee River Middle	2	2	complete	unchanged	Complete	yes	no	NOT REQUIRED
Werribee	Werribee River Upper								NOT APPLICABLE
Westernport	Bass River								NOT APPLICABLE
Westernport	Bunyip Lower								NOT APPLICABLE
Westernport	Bunyip River Middle and Upper	1	0	Significantly off-track	unchanged	Unlikely	yes	no	HIGH
Westernport	Cardinia, Toomuc, Deep and Ararat Creeks	20	8.6	on-track	negative change	Possible	yes	yes	HIGH
Westernport	Dalmore Outfalls	5	2.2	on-track	positive change	Almost certain	no	yes	VERY LOW
Westernport	French and Phillip Islands								NOT APPLICABLE
Westernport	King Parrot and Musk Creeks								NOT APPLICABLE
Westernport	Lang Lang River								NOT APPLICABLE
Westernport	Mornington Peninsula North-Eastern Creeks	5	0.4	Significantly off-track	unchanged	Unlikely	yes	yes	VERY HIGH
Westernport	Mornington Peninsula South-Eastern Creeks	5	0	Significantly off-track	unchanged	Unlikely	no	yes	HIGH
Westernport	Mornington Peninsula Western Creeks	5	0.24	Significantly off-track	unchanged	Unlikely	yes	yes	VERY HIGH
Westernport	Tarago River	1	0	Significantly off-track	unchanged	Unlikely	yes	no	HIGH
Yarra	Brushy Creek	1	0.2	slightly off-track	positive change	Possible	yes	no	MEDIUM
Yarra	Darebin Creek	5	3.26	on-track	unchanged	Almost certain	yes	no	VERY LOW
Yarra	Diamond Creek (Rural)	5	7.1	complete	unchanged	Complete	no	no	NOT REQUIRED
Yarra	Diamond Creek (Source)								NOT APPLICABLE
Yarra	Gardiners Creek	1	3.1	complete	unchanged	Complete	yes	no	NOT REQUIRED
Yarra	Koonung Creek								NOT APPLICABLE
Yarra	Little Yarra River and Hoddles Creek								NOT APPLICABLE
Yarra	Merri Creek Lower	10	1.37	Significantly off-track	positive change	Possible	no	yes	LOW
Yarra	Merri Creek Upper	5	3.17	on-track	unchanged	Almost certain	no	no	VERY LOW
Yarra	Mullum Mullum Creek	1	0	Significantly off-track	positive change	Possible	yes	no	MEDIUM
Yarra	Olinda Creek	1	1	complete	unchanged	Complete	yes	no	NOT REQUIRED
Yarra	Plenty River (Source)								NOT APPLICABLE
Yarra	Plenty River Lower	5	0	Significantly off-track	positive change	Possible	no	yes	LOW
Yarra	Plenty River Upper	5	0	Significantly off-track	unchanged	Unlikely	yes	yes	VERY HIGH
Yarra	Steels and Pauls Creek (Rural)								NOT APPLICABLE
Yarra	Steels and Pauls Creek (Source)								NOT APPLICABLE
Yarra	Stringybark Creek								NOT APPLICABLE
Yarra	Watsons Creek								NOT APPLICABLE
Yarra	Watts River (Rural)								NOT APPLICABLE
Yarra	Watts River (Source)								NOT APPLICABLE
Yarra	Woori Yallock Creek								NOT APPLICABLE
Yarra	Yarra River Lower	4	0.55	slightly off-track	unchanged	Possible	yes	yes	HIGH
Yarra	Yarra River Middle	0	1	on-track	positive change	Almost certain	yes	no	VERY LOW
Yarra	Yarra River Upper (Rural)								NOT APPLICABLE
Yarra	Yarra River Upper (Source)								NOT APPLICABLE

Community – Increase participation

Catchment	Sub-catchment	Target (km)	Delivered to 21/22 (km)	Current Status	Future Operating Model	Likelihood	Focus SC	Large target	Priority Rating
Sub-catchment	Bayside	1710	142	significantly off-track	unchanged	Unlikely	no	yes	HIGH
Dandenong	Blind Creek	299	159	on-track	unchanged	Almost certain	yes	no	VERY LOW
Dandenong	Corhanwarrabul, Monbulk and Ferny Creeks	781	817	exceeding target	unchanged	Almost certain	yes	no	VERY LOW
Dandenong	Dandenong Creek Lower	3060	1989	slightly off-track	unchanged	Possible	yes	yes	HIGH
Dandenong	Dandenong Creek Middle	1964	1091	on-track	unchanged	Almost certain	yes	yes	VERY LOW
Dandenong	Dandenong Creek Upper	63	33	on-track	unchanged	Almost certain	yes	no	VERY LOW
Dandenong	Eumemmerring Creek	1142	398	slightly off-track	unchanged	Possible	no	yes	LOW
Dandenong	Kananook Creek	1221	1122	on-track	unchanged	Almost certain	no	yes	VERY LOW
Maribyrnong	Boyd Creek	13	16	exceeding target	unchanged	Almost certain	yes	no	VERY LOW
Maribyrnong	Deep Creek Lower	37	108	exceeding target	unchanged	Almost certain	no	no	VERY LOW
Maribyrnong	Deep Creek Upper	150	282	exceeding target	unchanged	Almost certain	yes	no	VERY LOW
Maribyrnong	Emu Creek	118	33	slightly off-track	unchanged	Possible	yes	no	MEDIUM
Maribyrnong	Jacksons Creek	1046	260	slightly off-track	unchanged	Possible	yes	yes	HIGH
Maribyrnong	Maribyrnong River	1203	539	on-track	unchanged	Almost certain	yes	yes	VERY LOW
Maribyrnong	Moonee Ponds Creek	2308	1017	on-track	unchanged	Almost certain	yes	yes	VERY LOW
Maribyrnong	Steele Creek	315	103	slightly off-track	unchanged	Possible	yes	no	MEDIUM
Maribyrnong	Stony Creek	564	20	significantly off-track	unchanged	Unlikely	yes	no	HIGH
Maribyrnong	Taylors Creek	440	18	significantly off-track	unchanged	Unlikely	yes	no	HIGH
Werribee	Cherry Creek	185	54	slightly off-track	unchanged	Possible	yes	no	MEDIUM
Werribee	Kororoit Creek Lower	2212	1995	on-track	unchanged	Almost certain	yes	yes	VERY LOW
Werribee	Kororoit Creek Upper	46	22	on-track	unchanged	Almost certain	yes	no	VERY LOW
Werribee	Laverton Creek	872	264	slightly off-track	unchanged	Possible	no	no	LOW
Werribee	Lerderderg River	27	10	on-track	unchanged	Almost certain	yes	no	VERY LOW
Werribee	Little River Lower	23	1558	exceeding target	unchanged	Almost certain	no	no	VERY LOW
Werribee	Little River Upper	16	52	exceeding target	unchanged	Almost certain	no	no	VERY LOW
Werribee	Lollypop Creek	487	709	exceeding target	unchanged	Almost certain	no	no	VERY LOW
Werribee	Parwan Creek	10	71	exceeding target	unchanged	Almost certain	yes	no	VERY LOW
Werribee	Skeleton Creek	1120	205	slightly off-track	unchanged	Possible	yes	yes	HIGH
Werribee	Toolern Creek	382	231	on-track	unchanged	Almost certain	no	no	VERY LOW
Werribee	Werribee River Lower	887	399	on-track	unchanged	Almost certain	yes	no	VERY LOW
Werribee	Werribee River Middle	583	243	on-track	unchanged	Almost certain	yes	no	VERY LOW
Werribee	Werribee River Upper	80	36	on-track	unchanged	Almost certain	yes	no	VERY LOW
Westernport	Bass River	111	343	exceeding target	unchanged	Almost certain	yes	no	VERY LOW
Westernport	Bunyip Lower	131	119	on-track	unchanged	Almost certain	yes	no	VERY LOW
Westernport	Bunyip River Middle and Upper	54	239	exceeding target	unchanged	Almost certain	yes	no	VERY LOW
Westernport	Cardinia, Toomuc, Deep and Ararat Creeks	965	294	slightly off-track	unchanged	Possible	yes	no	MEDIUM
Westernport	Dalmore Outfalls	159	29	slightly off-track	unchanged	Possible	no	no	LOW
Westernport	French and Phillip Islands	210	120	on-track	unchanged	Almost certain	no	no	VERY LOW
Westernport	King Parrot and Musk Creeks	51	10	slightly off-track	unchanged	Possible	yes	no	MEDIUM
Westernport	Lang Lang River	102	188	exceeding target	unchanged	Almost certain	yes	no	VERY LOW
Westernport	Mornington Peninsula North-Eastern Creeks	383	166	on-track	unchanged	Almost certain	yes	no	VERY LOW
Westernport	Mornington Peninsula South-Eastern Creeks	160	370	exceeding target	unchanged	Almost certain	no	no	VERY LOW
Westernport	Mornington Peninsula Western Creeks	2514	2118	on-track	unchanged	Almost certain	yes	yes	VERY LOW
Westernport	Tarago River	93	113	exceeding target	unchanged	Almost certain	yes	no	VERY LOW
Yarra	Brushy Creek	234	6	significantly off-track	unchanged	Unlikely	yes	no	HIGH
Yarra	Darebin Creek	806	168	slightly off-track	unchanged	Possible	yes	no	MEDIUM
Yarra	Diamond Creek (Rural)	1274	799	on-track	unchanged	Almost certain	no	yes	VERY LOW
Yarra	Diamond Creek (Source)	19	6	slightly off-track	unchanged	Possible	yes	no	MEDIUM
Yarra	Gardiners Creek	3035	726	slightly off-track	unchanged	Possible	yes	yes	HIGH
Yarra	Koonung Creek	829	6	significantly off-track	unchanged	Unlikely	no	no	MEDIUM
Yarra	Little Yarra River and Hoddles Creek	114	98	on-track	unchanged	Almost certain	yes	no	VERY LOW
Yarra	Merri Creek Lower	799	76	on-track	unchanged	Almost certain	no	yes	VERY LOW
Yarra	Merri Creek Upper	2125	900	significantly off-track	unchanged	Unlikely	no	no	MEDIUM
Yarra	Mullum Mullum Creek	655	49	significantly off-track	unchanged	Unlikely	yes	no	HIGH
Yarra	Olinda Creek	556	128	slightly off-track	unchanged	Possible	yes	no	MEDIUM
Yarra	Plenty River (Source)								NOT APPLICABLE
Yarra	Plenty River Lower	974	245	slightly off-track	unchanged	Possible	no	no	LOW
Yarra	Plenty River Upper	170	82	on-track	unchanged	Almost certain	yes	no	VERY LOW
Yarra	Steels and Pauls Creek (Rural)	28	69	exceeding target	unchanged	Almost certain	no	no	VERY LOW
Yarra	Steels and Pauls Creek (Source)	5	2	on-track	unchanged	Almost certain	yes	no	VERY LOW
Yarra	Stringybark Creek	148	46	slightly off-track	unchanged	Possible	no	no	LOW
Yarra	Watsons Creek	32	23	on-track	unchanged	Almost certain	yes	no	VERY LOW
Yarra	Watts River (Rural)	195	152	on-track	unchanged	Almost certain	yes	no	VERY LOW
Yarra	Watts River (Source)								NOT APPLICABLE
Yarra	Woori Yallock Creek	562	1042	exceeding target	unchanged	Almost certain	yes	no	VERY LOW
Yarra	Yarra River Lower	4436	2433	on-track	unchanged	Almost certain	yes	yes	VERY LOW
Yarra	Yarra River Middle	747	87	slightly off-track	unchanged	Possible	yes	no	MEDIUM
Yarra	Yarra River Upper (Rural)	232	207	on-track	unchanged	Almost certain	yes	no	VERY LOW
Yarra	Yarra River Upper (Source)								NOT APPLICABLE

Legend

On-track = >40% of the annual target

Slightly off-track = 10 – 40% of the annual target

Significantly off-track = < 10% of the annual target

Large target = > 1000 participants

Focus sub-catchment = yes if one of the focus sub-catchments identified from science inquiry

Habitat – Improve fish passage

Catchment	Sub-catchment	Current Status	Future Operating Model	Likelihood	Focus SC	Large target	Priority Rating
Dandenong	Bayside						NOT APPLICABLE
Dandenong	Blind Creek						NOT APPLICABLE
Dandenong	Corhanwarrabul, Monbulk and Ferny Creeks						NOT APPLICABLE
Dandenong	Dandenong Creek Lower	on-track	Unchanged	Almost certain	yes	no	VERY LOW
Dandenong	Dandenong Creek Middle						NOT APPLICABLE
Dandenong	Dandenong Creek Upper						NOT APPLICABLE
Dandenong	Eumemmerring Creek						NOT APPLICABLE
Dandenong	Kananook Creek						NOT APPLICABLE
Maribyrnong	Boyd Creek						NOT APPLICABLE
Maribyrnong	Deep Creek Lower						NOT APPLICABLE
Maribyrnong	Deep Creek Upper						NOT APPLICABLE
Maribyrnong	Emu Creek						NOT APPLICABLE
Maribyrnong	Jacksons Creek						NOT APPLICABLE
Maribyrnong	Maribyrnong River	on-track	Unchanged	Almost certain	yes	no	VERY LOW
Maribyrnong	Moonee Ponds Creek						NOT APPLICABLE
Maribyrnong	Steele Creek						NOT APPLICABLE
Maribyrnong	Stony Creek						NOT APPLICABLE
Maribyrnong	Taylors Creek						NOT APPLICABLE
Werribee	Cherry Creek						NOT APPLICABLE
Werribee	Kororoit Creek Lower						NOT APPLICABLE
Werribee	Kororoit Creek Upper						NOT APPLICABLE
Werribee	Laverton Creek						NOT APPLICABLE
Werribee	Lerderderg River						NOT APPLICABLE
Werribee	Little River Lower	on-track	Unchanged	Almost certain	no	yes	VERY LOW
Werribee	Little River Upper						NOT APPLICABLE
Werribee	Lollypop Creek						NOT APPLICABLE
Werribee	Parwan Creek						NOT APPLICABLE
Werribee	Skeleton Creek						NOT APPLICABLE
Werribee	Toolern Creek	on-track	Unchanged	Almost certain	no	no	VERY LOW
Werribee	Werribee River Lower	z	Unchanged	Possible	yes	yes	HIGH
Werribee	Werribee River Middle						NOT APPLICABLE
Werribee	Werribee River Upper						NOT APPLICABLE
Westernport	Bass River						NOT APPLICABLE
Westernport	Bunyip Lower						NOT APPLICABLE
Westernport	Bunyip River Middle and Upper						NOT APPLICABLE
Westernport	Cardinia, Toomuc, Deep and Ararat Creeks						NOT APPLICABLE
Westernport	Dalmore Outfalls						NOT APPLICABLE
Westernport	French and Phillip Islands						NOT APPLICABLE
Westernport	King Parrot and Musk Creeks						NOT APPLICABLE
Westernport	Lang Lang River	significantly off-track	Unchanged	Unlikely	yes	no	HIGH
Westernport	Mornington Peninsula North-Eastern Creeks						NOT APPLICABLE
Westernport	Mornington Peninsula South-Eastern Creeks						NOT APPLICABLE
Westernport	Mornington Peninsula Western Creeks						NOT APPLICABLE
Westernport	Tarago River						NOT APPLICABLE
Yarra	Brushy Creek						NOT APPLICABLE
Yarra	Darebin Creek	on-track	Unchanged	Almost certain	yes	no	VERY LOW
Yarra	Diamond Creek (Rural)						NOT APPLICABLE
Yarra	Diamond Creek (Source)						NOT APPLICABLE
Yarra	Gardiners Creek						NOT APPLICABLE
Yarra	Koonung Creek						NOT APPLICABLE
Yarra	Little Yarra River and Hoddles Creek						NOT APPLICABLE
Yarra	Merri Creek Lower						NOT APPLICABLE
Yarra	Merri Creek Upper						NOT APPLICABLE
Yarra	Mullum Mullum Creek						NOT APPLICABLE
Yarra	Olinda Creek						NOT APPLICABLE
Yarra	Plenty River (Source)						NOT APPLICABLE
Yarra	Plenty River Lower						NOT APPLICABLE
Yarra	Plenty River Upper						NOT APPLICABLE
Yarra	Steels and Pauls Creek (Rural)						NOT APPLICABLE
Yarra	Steels and Pauls Creek (Source)						NOT APPLICABLE
Yarra	Stringybark Creek						NOT APPLICABLE
Yarra	Watsons Creek						NOT APPLICABLE
Yarra	Watts River (Rural)						NOT APPLICABLE
Yarra	Watts River (Source)	slightly off-track	Unchanged	Possible	yes	no	MEDIUM
Yarra	Woori Yallock Creek						NOT APPLICABLE
Yarra	Yarra River Lower	on-track	Unchanged	Almost certain	yes	no	VERY LOW
Yarra	Yarra River Middle						NOT APPLICABLE
Yarra	Yarra River Upper (Rural)						NOT APPLICABLE
Yarra	Yarra River Upper (Source)	slightly off-track	Unchanged	Possible	yes	no	MEDIUM

Vegetation – Establish buffers

Catchment	Sub-catchment	Target (ha)	Delivered to 21/22 (ha)	Current Status	Future Operating Model	Likelihood	Focus SC	Large target	Priority Rating
Dandenong	Bayside	6	0	significantly off-track	unchanged	Unlikely	no	no	MEDIUM
Dandenong	Blind Creek	4	0	significantly off-track	positive change	Possible	yes	no	MEDIUM
Dandenong	Corhanwarrabul, Monbulk and Ferny Creeks	38	53.8	complete	unchanged	Complete	yes	no	NOT REQUIRED
Dandenong	Dandenong Creek Lower	11	0	significantly off-track	positive change	Possible	yes	no	MEDIUM
Dandenong	Dandenong Creek Middle	47	63.6	complete	unchanged	Complete	yes	no	NOT REQUIRED
Dandenong	Dandenong Creek Upper	10	2.5	slightly off-track	unchanged	Possible	yes	no	MEDIUM
Dandenong	Eumemmerring Creek	13	0	significantly off-track	unchanged	Unlikely	no	no	MEDIUM
Dandenong	Kananook Creek	28	8.4	slightly off-track	unchanged	Possible	no	no	LOW
Maribyrnong	Boyd Creek	126	2.8	significantly off-track	positive change	Possible	yes	no	MEDIUM
Maribyrnong	Deep Creek Lower	154	1.6	significantly off-track	unchanged	Unlikely	no	no	MEDIUM
Maribyrnong	Deep Creek Upper	575	171.6	slightly off-track	positive change	Possible	yes	yes	HIGH
Maribyrnong	Emu Creek	159	18.3	slightly off-track	unchanged	Possible	yes	no	MEDIUM
Maribyrnong	Jacksons Creek	516	64.7	slightly off-track	positive change	Possible	yes	yes	HIGH
Maribyrnong	Maribyrnong River	83	30.1	slightly off-track	unchanged	Possible	yes	no	MEDIUM
Maribyrnong	Moonee Ponds Creek	131	0	significantly off-track	positive change	Possible	yes	no	MEDIUM
Maribyrnong	Steele Creek	3	4	complete	unchanged	Complete	yes	no	NOT REQUIRED
Maribyrnong	Stony Creek								NOT APPLICABLE
Maribyrnong	Taylors Creek	2	0	significantly off-track	positive change	Possible	yes	no	MEDIUM
Werribee	Cherry Creek	4	14	complete	unchanged	Complete	yes	no	NOT REQUIRED
Werribee	Kororoit Creek Lower	85	63.1	on-track	unchanged	Almost certain	yes	no	VERY LOW
Werribee	Kororoit Creek Upper	180	3.4	significantly off-track	positive change	Possible	yes	no	MEDIUM
Werribee	Laverton Creek	57	42.1	on-track	unchanged	Almost certain	no	no	VERY LOW
Werribee	Lerderderg River	32	40.2	complete	unchanged	Complete	yes	no	NOT REQUIRED
Werribee	Little River Lower	99	9.1	significantly off-track	unchanged	Unlikely	no	no	MEDIUM
Werribee	Little River Upper	363	4.9	significantly off-track	positive change	Possible	no	yes	LOW
Werribee	Lollypop Creek	100	3.5	significantly off-track	unchanged	Unlikely	no	no	MEDIUM
Werribee	Parwan Creek	37	1	significantly off-track	positive change	Possible	yes	no	MEDIUM
Werribee	Skeleton Creek	158	3.6	significantly off-track	positive change	Possible	yes	no	MEDIUM
Werribee	Toolern Creek	119	51.8	on-track	unchanged	Almost certain	no	no	VERY LOW
Werribee	Werribee River Lower	114	30.4	slightly off-track	unchanged	Possible	yes	no	MEDIUM
Werribee	Werribee River Middle	199	21.2	slightly off-track	unchanged	Possible	yes	no	MEDIUM
Werribee	Werribee River Upper	213	3.4	significantly off-track	positive change	Possible	yes	yes	HIGH
Westernport	Bass River	216	69.7	slightly off-track	unchanged	Possible	yes	no	MEDIUM
Westernport	Bunyip Lower	349	93.9	slightly off-track	positive change	Possible	yes	yes	HIGH
Westernport	Bunyip River Middle and Upper	174	56	slightly off-track	unchanged	Possible	yes	no	MEDIUM
Westernport	Cardinia, Toomuc, Deep and Ararat Creeks	297	48.3	slightly off-track	positive change	Possible	yes	yes	HIGH
Westernport	Dalmore Outfalls	175	4.5	significantly off-track	unchanged	Unlikely	no	no	MEDIUM
Westernport	French and Phillip Islands	167	5.8	significantly off-track	unchanged	Unlikely	no	no	MEDIUM
Westernport	King Parrot and Musk Creeks	161	2.1	significantly off-track	positive change	Possible	yes	no	MEDIUM
Westernport	Lang Lang River	768	36.6	significantly off-track	positive change	Possible	yes	yes	HIGH
Westernport	Mornington Peninsula North-Eastern Creeks	11	12.3	complete	unchanged	Complete	yes	no	NOT REQUIRED
Westernport	Mornington Peninsula South-Eastern Creeks	87	55.2	on-track	unchanged	Almost certain	no	no	VERY LOW
Westernport	Mornington Peninsula Western Creeks	184	32.5	slightly off-track	unchanged	Possible	yes	no	MEDIUM
Westernport	Tarago River	260	21.6	significantly off-track	positive change	Possible	yes	yes	HIGH
Yarra	Brushy Creek	2	0	significantly off-track	positive change	Possible	yes	no	MEDIUM
Yarra	Darebin Creek	122	1.1	significantly off-track	positive change	Possible	yes	no	MEDIUM
Yarra	Diamond Creek (Rural)	101	38.3	slightly off-track	unchanged	Possible	no	no	LOW
Yarra	Diamond Creek (Source)	17	0.5	significantly off-track	positive change	Possible	yes	no	MEDIUM
Yarra	Gardiners Creek	5	0	significantly off-track	positive change	Possible	yes	no	MEDIUM
Yarra	Koonung Creek	3	0	significantly off-track	unchanged	Unlikely	no	no	MEDIUM
Yarra	Little Yarra River and Hoddles Creek	44	64.9	complete	unchanged	Complete	yes	no	NOT REQUIRED
Yarra	Merri Creek Lower	10	25.5	slightly off-track	unchanged	Possible	no	no	LOW
Yarra	Merri Creek Upper	213	2	significantly off-track	positive change	Possible	no	yes	LOW
Yarra	Mullum Mullum Creek	7	0	significantly off-track	positive change	Possible	yes	no	MEDIUM
Yarra	Olinda Creek	34	23.6	on-track	unchanged	Almost certain	yes	no	VERY LOW
Yarra	Plenty River (Source)								NOT APPLICABLE
Yarra	Plenty River Lower	57	17.5	slightly off-track	unchanged	Possible	no	no	LOW
Yarra	Plenty River Upper	145	12.9	significantly off-track	positive change	Possible	yes	no	MEDIUM
Yarra	Steels and Pauls Creek (Rural)	28	1.2	significantly off-track	unchanged	Unlikely	no	no	MEDIUM
Yarra	Steels and Pauls Creek (Source)	3	0	significantly off-track	positive change	Possible	yes	no	MEDIUM
Yarra	Stringybark Creek	29	3.9	slightly off-track	unchanged	Possible	no	no	LOW
Yarra	Watsons Creek	31	1.7	significantly off-track	positive change	Possible	yes	no	MEDIUM
Yarra	Watts River (Rural)	28	3.1	slightly off-track	unchanged	Possible	yes	no	MEDIUM
Yarra	Watts River (Source)	1	0	significantly off-track	positive change	Possible	yes	no	MEDIUM
Yarra	Woori Yallock Creek	196	56.5	slightly off-track	unchanged	Possible	yes	no	MEDIUM
Yarra	Yarra River Lower	60	73.1	complete	unchanged	Complete	yes	no	NOT REQUIRED
Yarra	Yarra River Middle	191	1.7	significantly off-track	positive change	Possible	yes	no	MEDIUM
Yarra	Yarra River Upper (Rural)	169	39.9	slightly off-track	unchanged	Possible	yes	no	MEDIUM
Yarra	Yarra River Upper (Source)	4	0	significantly off-track	positive change	Possible	yes	no	MEDIUM

Legend

On-track = >40% of 10-year target

Slightly off-track = 10 – 40% of 10-year target

Significantly off-track = < 10% of 10-year target

Large target = > 200 ha

Focus sub-catchment = yes if one of focus sub-catchments identified from science inquiry

Vegetation – Maintain existing vegetation

Catchment	Sub-catchment	Target (ha)	Delivered to 21/22 (ha)	Current Status	Future Operating Model	Likelihood	Focus SC	Large target	Priority Rating
Dandenong	Bayside	2	0.94	slightly off-track	unchanged	Possible	no	no	LOW
Dandenong	Blind Creek	14	19.35	exceeding target	unchanged	Almost certain	yes	no	VERY LOW
Dandenong	Corhanwarrabul, Monbulk and Ferny Creeks	119	157	exceeding target	unchanged	Almost certain	yes	no	VERY LOW
Dandenong	Dandenong Creek Lower	11	4.7	on-track	unchanged	Almost certain	yes	no	VERY LOW
Dandenong	Dandenong Creek Middle	114	264.4	exceeding target	unchanged	Almost certain	yes	no	VERY LOW
Dandenong	Dandenong Creek Upper	49	40.1	on-track	unchanged	Almost certain	yes	no	VERY LOW
Dandenong	Eumemmerring Creek	13	2.6	slightly off-track	unchanged	Possible	no	no	LOW
Dandenong	Kananook Creek	32	31.2	on-track	unchanged	Almost certain	no	no	VERY LOW
Maribyrnong	Boyd Creek	36	0.81	significantly off-track	unchanged	Unlikely	yes	no	HIGH
Maribyrnong	Deep Creek Lower	157	30.7	slightly off-track	unchanged	Possible	no	no	LOW
Maribyrnong	Deep Creek Upper	215	171	on-track	unchanged	Almost certain	yes	no	VERY LOW
Maribyrnong	Emu Creek	130	103.9	exceeding target	unchanged	Almost certain	yes	no	VERY LOW
Maribyrnong	Jacksons Creek	516	476.9	on-track	unchanged	Almost certain	yes	yes	VERY LOW
Maribyrnong	Maribyrnong River	83	39.4	on-track	unchanged	Almost certain	yes	no	VERY LOW
Maribyrnong	Moonee Ponds Creek	43	105.5	exceeding target	unchanged	Almost certain	yes	no	VERY LOW
Maribyrnong	Steele Creek	1	0	slightly off-track	unchanged	Possible	yes	no	MEDIUM
Maribyrnong	Stony Creek								NOT APPLICABLE
Maribyrnong	Taylors Creek	4	2.4	on-track	unchanged	Almost certain	yes	no	VERY LOW
Werribee	Cherry Creek								NOT APPLICABLE
Werribee	Kororoit Creek Lower	21	129.8	exceeding target	unchanged	Almost certain	yes	no	VERY LOW
Werribee	Kororoit Creek Upper	15	2.2	slightly off-track	unchanged	Possible	yes	no	MEDIUM
Werribee	Laverton Creek	2	111	exceeding target	unchanged	Almost certain	no	no	VERY LOW
Werribee	Lerderderg River	1160	739.4	on-track	unchanged	Almost certain	yes	yes	VERY LOW
Werribee	Little River Lower	10	32.1	exceeding target	unchanged	Almost certain	no	no	VERY LOW
Werribee	Little River Upper	251	36.9	slightly off-track	unchanged	Possible	no	no	LOW
Werribee	Lollypop Creek	13	6.9	on-track	unchanged	Almost certain	no	no	VERY LOW
Werribee	Parwan Creek	64	35	on-track	unchanged	Almost certain	yes	no	VERY LOW
Werribee	Skeleton Creek	5	72	exceeding target	unchanged	Almost certain	yes	no	VERY LOW
Werribee	Toolern Creek	39	315.8	exceeding target	unchanged	Almost certain	no	no	VERY LOW
Werribee	Werribee River Lower	86	132.5	on-track	unchanged	Almost certain	yes	no	VERY LOW
Werribee	Werribee River Middle	480	494.6	exceeding target	unchanged	Almost certain	yes	no	VERY LOW
Werribee	Werribee River Upper	539	547	exceeding target	unchanged	Almost certain	yes	yes	VERY LOW
Westernport	Bass River	167	57.5	slightly off-track	unchanged	Possible	yes	no	MEDIUM
Westernport	Bunyip Lower	76	195.6	exceeding target	unchanged	Almost certain	yes	no	VERY LOW
Westernport	Bunyip River Middle and Upper	626	421.9	on-track	unchanged	Almost certain	yes	yes	VERY LOW
Westernport	Cardinia, Toomuc, Deep and Ararat Creeks	485	339.8	on-track	unchanged	Almost certain	yes	no	VERY LOW
Westernport	Dalmore Outfalls	35	13.7	slightly off-track	unchanged	Possible	no	no	LOW
Westernport	French and Phillip Islands	157	7.5	significantly off-track	unchanged	Unlikely	no	no	MEDIUM
Westernport	King Parrot and Musk Creeks	57	3.2	significantly off-track	unchanged	Unlikely	yes	no	HIGH
Westernport	Lang Lang River	780	79	slightly off-track	unchanged	Possible	yes	yes	HIGH
Westernport	Mornington Peninsula North-Eastern Creeks	28	6.2	slightly off-track	unchanged	Possible	yes	no	MEDIUM
Westernport	Mornington Peninsula South-Eastern Creeks	166	283.4	exceeding target	unchanged	Almost certain	no	no	VERY LOW
Westernport	Mornington Peninsula Western Creeks	193	63.2	slightly off-track	unchanged	Possible	yes	no	MEDIUM
Westernport	Tarago River	338	209.9	on-track	unchanged	Almost certain	yes	no	VERY LOW
Yarra	Brushy Creek	1	0	slightly off-track	unchanged	Possible	yes	no	MEDIUM
Yarra	Darebin Creek	13	10.2	on-track	unchanged	Almost certain	yes	no	VERY LOW
Yarra	Diamond Creek (Rural)	322	172.1	on-track	unchanged	Almost certain	no	no	VERY LOW
Yarra	Diamond Creek (Source)	237	153.1	on-track	unchanged	Almost certain	yes	no	VERY LOW
Yarra	Gardiners Creek	1	0.05	slightly off-track	unchanged	Possible	yes	no	MEDIUM
Yarra	Koonung Creek	5	2.7	slightly off-track	unchanged	Possible	no	no	LOW
Yarra	Little Yarra River and Hoddles Creek	519	368.5	on-track	unchanged	Almost certain	yes	yes	VERY LOW
Yarra	Merri Creek Lower	2	69	exceeding target	unchanged	Almost certain	no	no	VERY LOW
Yarra	Merri Creek Upper	46	45.3	on-track	unchanged	Almost certain	no	no	VERY LOW
Yarra	Mullum Mullum Creek	46	27.3	on-track	unchanged	Almost certain	yes	no	VERY LOW
Yarra	Olinda Creek	109	147.7	exceeding target	unchanged	Almost certain	yes	no	VERY LOW
Yarra	Plenty River (Source)	150	50.5	on-track	unchanged	Almost certain	yes	no	VERY LOW
Yarra	Plenty River Lower	128	180.3	exceeding target	unchanged	Almost certain	no	no	VERY LOW
Yarra	Plenty River Upper	241	10.9	significantly off-track	unchanged	Unlikely	yes	no	HIGH
Yarra	Steels and Pauls Creek (Rural)	67	28.3	slightly off-track	unchanged	Possible	no	no	LOW
Yarra	Steels and Pauls Creek (Source)	121	43.2	slightly off-track	unchanged	Possible	yes	no	MEDIUM
Yarra	Stringybark Creek	64	16.5	slightly off-track	unchanged	Possible	no	no	LOW
Yarra	Watsons Creek	232	239.5	exceeding target	unchanged	Almost certain	yes	no	VERY LOW
Yarra	Watts River (Rural)	175	106.1	on-track	unchanged	Almost certain	yes	no	VERY LOW
Yarra	Watts River (Source)	547	704.7	exceeding target	unchanged	Almost certain	yes	yes	VERY LOW
Yarra	Woori Yallock Creek	817	684	on-track	unchanged	Almost certain	yes	yes	VERY LOW
Yarra	Yarra River Lower	305	664	exceeding target	unchanged	Almost certain	yes	no	VERY LOW
Yarra	Yarra River Middle	227	257.7	exceeding target	unchanged	Almost certain	yes	no	VERY LOW
Yarra	Yarra River Upper (Rural)	1097	876.2	on-track	unchanged	Almost certain	yes	yes	VERY LOW
Yarra	Yarra River Upper (Source)	1699	304	slightly off-track	unchanged	Possible	yes	yes	HIGH

Legend

On-track = >40% of annual target

Slightly off-track = 10 – 40% of annual target

Significantly off-track = < 10% of annual target

Large target = > 500 ha

Focus sub-catchment = yes if one of focus sub-catchments identified from science inquiry

Vegetation – Protect high-quality vegetation

Catchment	Sub-catchment	Target (ha)	Delivered to 21/22 (ha)	Current Status	Future Operating Model	Likelihood	Focus SC	Large target	Priority Rating
Dandenong	Bayside								NOT APPLICABLE
Dandenong	Blind Creek	2	1.6	on-track	unchanged	Almost certain	yes	no	VERY LOW
Dandenong	Corhanwarrabul, Monbulk and Ferny Creeks	34	37	exceeding target	unchanged	Almost certain	yes	no	VERY LOW
Dandenong	Dandenong Creek Lower								NOT APPLICABLE
Dandenong	Dandenong Creek Middle	0*	0	on-track	unchanged	Almost certain	yes	no	VERY LOW
Dandenong	Dandenong Creek Upper	5	1.5	slightly off-track	unchanged	Possible	yes	no	MEDIUM
Dandenong	Eumemmerring Creek								NOT APPLICABLE
Dandenong	Kananook Creek	0*	0	on-track	unchanged	Almost certain	no	no	VERY LOW
Maribyrnong	Boyd Creek	25	0.67	significantly off-track	unchanged	Unlikely	yes	no	HIGH
Maribyrnong	Deep Creek Lower	0*	28.6	exceeding target	unchanged	Almost certain	no	no	VERY LOW
Maribyrnong	Deep Creek Upper	88	76	on-track	unchanged	Almost certain	yes	no	VERY LOW
Maribyrnong	Emu Creek	63	71.2	exceeding target	unchanged	Almost certain	yes	no	VERY LOW
Maribyrnong	Jacksons Creek	326	278.2	on-track	unchanged	Almost certain	yes	yes	VERY LOW
Maribyrnong	Maribyrnong River	qualitative		on-track	unchanged	Almost certain	yes	no	VERY LOW
Maribyrnong	Moonee Ponds Creek	qualitative		on-track	unchanged	Almost certain	yes	no	VERY LOW
Maribyrnong	Steele Creek								NOT APPLICABLE
Maribyrnong	Stony Creek								NOT APPLICABLE
Maribyrnong	Taylors Creek	qualitative		on-track	unchanged	Almost certain	yes	no	VERY LOW
Werribee	Cherry Creek								NOT APPLICABLE
Werribee	Kororoit Creek Lower								NOT APPLICABLE
Werribee	Kororoit Creek Upper								NOT APPLICABLE
Werribee	Laverton Creek	7	12.6	exceeding target	unchanged	Almost certain	no	no	VERY LOW
Werribee	Lerderderg River	2373	714.3	on-track	unchanged	Almost certain	yes	yes	VERY LOW
Werribee	Little River Lower	0*	0	on-track	unchanged	Almost certain	no	no	VERY LOW
Werribee	Little River Upper	155	0.05	significantly off-track	unchanged	Unlikely	no	no	MEDIUM
Werribee	Lollypop Creek								NOT APPLICABLE
Werribee	Parwan Creek	39	32.45	on-track	unchanged	Almost certain	yes	no	VERY LOW
Werribee	Skeleton Creek	12	18.5	exceeding target	unchanged	Almost certain	yes	no	VERY LOW
Werribee	Toolern Creek	qualitative		on-track	unchanged	Almost certain	no	no	VERY LOW
Werribee	Werribee River Lower								NOT APPLICABLE
Werribee	Werribee River Middle	984	362.7	slightly off-track	unchanged	Possible	yes	yes	HIGH
Werribee	Werribee River Upper	0*	518.4	exceeding target	unchanged	Almost certain	yes	no	VERY LOW
Westernport	Bass River	4	0	significantly off-track	unchanged	Unlikely	yes	no	HIGH
Westernport	Bunyip Lower								NOT APPLICABLE
Westernport	Bunyip River Middle and Upper	1742	380.4	slightly off-track	unchanged	Possible	yes	yes	HIGH
Westernport	Cardinia, Toomuc, Deep and Ararat Creeks	112	72.1	on-track	unchanged	Almost certain	yes	no	VERY LOW
Westernport	Dalmore Outfalls								NOT APPLICABLE
Westernport	French and Phillip Islands	116	0	significantly off-track	unchanged	Unlikely	no	no	MEDIUM
Westernport	King Parrot and Musk Creeks								NOT APPLICABLE
Westernport	Lang Lang River								NOT APPLICABLE
Westernport	Mornington Peninsula North-Eastern Creeks								NOT APPLICABLE
Westernport	Mornington Peninsula South-Eastern Creeks	24	22.8	on-track	unchanged	Almost certain	no	no	VERY LOW
Westernport	Mornington Peninsula Western Creeks	14	6.4	on-track	unchanged	Almost certain	yes	no	VERY LOW
Westernport	Tarago River	995	151.5	slightly off-track	unchanged	Possible	yes	yes	HIGH
Yarra	Brushy Creek								NOT APPLICABLE
Yarra	Darebin Creek	0*	0	on-track	unchanged	Almost certain	yes	no	VERY LOW
Yarra	Diamond Creek (Rural)	34	26.7	on-track	unchanged	Almost certain	no	no	VERY LOW
Yarra	Diamond Creek (Source)	324	98.3	slightly off-track	unchanged	Possible	yes	yes	HIGH
Yarra	Gardiners Creek								NOT APPLICABLE
Yarra	Koonung Creek								NOT APPLICABLE
Yarra	Little Yarra River and Hoddles Creek	465	309.9	on-track	unchanged	Almost certain	yes	yes	VERY LOW
Yarra	Merri Creek Lower								NOT APPLICABLE
Yarra	Merri Creek Upper	0*	0	on-track	unchanged	Almost certain	no	no	VERY LOW
Yarra	Mullum Mullum Creek								NOT APPLICABLE
Yarra	Olinda Creek	19	44.94	exceeding target	unchanged	Almost certain	yes	no	VERY LOW
Yarra	Plenty River (Source)	0*	0.15	on-track	unchanged	Almost certain	no	no	VERY LOW
Yarra	Plenty River Lower	181	0.5	significantly off-track	unchanged	Unlikely	yes	no	HIGH
Yarra	Plenty River Upper	551	40.4	significantly off-track	unchanged	Unlikely	yes	yes	VERY HIGH
Yarra	Steels and Pauls Creek (Rural)	12	14.5	exceeding target	unchanged	Almost certain	no	no	VERY LOW
Yarra	Steels and Pauls Creek (Source)	268	43.2	slightly off-track	unchanged	Possible	yes	yes	HIGH
Yarra	Stringybark Creek								NOT APPLICABLE
Yarra	Watsons Creek	267	215	on-track	unchanged	Almost certain	yes	no	VERY LOW
Yarra	Watts River (Rural)	103	57.1	on-track	unchanged	Almost certain	yes	no	VERY LOW
Yarra	Watts River (Source)	1454	702.9	on-track	unchanged	Almost certain	yes	yes	VERY LOW
Yarra	Woori Yallock Creek	201	153.8	on-track	unchanged	Almost certain	yes	yes	VERY LOW
Yarra	Yarra River Lower								NOT APPLICABLE
Yarra	Yarra River Middle	14	3.25	slightly off-track	unchanged	Possible	yes	no	MEDIUM
Yarra	Yarra River Upper (Rural)	1987	543.4	slightly off-track	unchanged	Possible	yes	yes	HIGH
Yarra	Yarra River Upper (Source)	8781	304	significantly off-track	unchanged	Unlikely	yes	yes	VERY HIGH

Legend

On-track = >40% of annual target

Slightly off-track = 10 – 40% of annual target

Significantly off-track = < 10% of annual target

Large target = > 200 ha

Focus sub-catchment = yes if one of focus sub-catchments identified from science inquiry

0* - extent of high quality vegetation has been confirmed and new target to be applied post mid-term

Stormwater – Harvest

Catchment	Sub-catchment	Short Name	Current Status	Future Operating Model	Likelihood	Focus SC	Large target	Priority Rating
Dandenong	Bayside							NOT APPLICABLE
Dandenong	Blind Creek							NOT APPLICABLE
Dandenong	Corhanwarrabul, Monbulk and Ferny Creeks							NOT APPLICABLE
Dandenong	Dandenong Creek Lower							NOT APPLICABLE
Dandenong	Dandenong Creek Middle							NOT APPLICABLE
Dandenong	Dandenong Creek Upper							NOT APPLICABLE
Dandenong	Eumemmerring Creek							NOT APPLICABLE
Dandenong	Kananook Creek							NOT APPLICABLE
Maribyrnong	Boyd Creek							NOT APPLICABLE
Maribyrnong	Deep Creek Lower							NOT APPLICABLE
Maribyrnong	Deep Creek Upper	Harvest	significantly off-track	Unchanged	Unlikely	yes	no	HIGH
Maribyrnong	Emu Creek	Harvest	on-track	Negative change	Possible	yes	yes	HIGH
Maribyrnong	Jacksons Creek	Harvest	on-track	Negative change	Possible	yes	yes	HIGH
Maribyrnong	Maribyrnong River							NOT APPLICABLE
Maribyrnong	Moonee Ponds Creek							NOT APPLICABLE
Maribyrnong	Steele Creek							NOT APPLICABLE
Maribyrnong	Stony Creek							NOT APPLICABLE
Maribyrnong	Taylors Creek							NOT APPLICABLE
Werribee	Cherry Creek							NOT APPLICABLE
Werribee	Kororoit Creek Lower	Harvest	on-track	Negative change	Possible	yes	yes	HIGH
Werribee	Kororoit Creek Upper							NOT APPLICABLE
Werribee	Laverton Creek							NOT APPLICABLE
Werribee	Lerderderg River							NOT APPLICABLE
Werribee	Little River Lower							NOT APPLICABLE
Werribee	Little River Upper							NOT APPLICABLE
Werribee	Lollypop Creek	Harvest	significantly off-track	Negative change	Unlikely	no	no	MEDIUM
Werribee	Parwan Creek							NOT APPLICABLE
Werribee	Skeleton Creek							NOT APPLICABLE
Werribee	Toolern Creek	Harvest	on-track	Negative change	Possible	no	no	LOW
Werribee	Werribee River Lower	Harvest	significantly off-track	Negative change	Unlikely	yes	yes	VERY HIGH
Werribee	Werribee River Middle							NOT APPLICABLE
Werribee	Werribee River Upper	Harvest	significantly off-track	Negative change	Unlikely	yes	no	HIGH
Westernport	Bass River							NOT APPLICABLE
Westernport	Bunyip Lower							NOT APPLICABLE
Westernport	Bunyip River Middle and Upper							NOT APPLICABLE
Westernport	Cardinia, Toomuc, Deep and Ararat Creeks	Harvest	slightly off-track	Negative change	Unlikely	yes	yes	HIGH
Westernport	Dalmore Outfalls							NOT APPLICABLE
Westernport	French and Phillip Islands	Harvest	slightly off-track	Negative change	Unlikely	no	no	MEDIUM
Westernport	King Parrot and Musk Creeks	Harvest	slightly off-track	Negative change	Unlikely	yes	no	HIGH
Westernport	Lang Lang River	Harvest	slightly off-track	Negative change	Unlikely	yes	no	HIGH
Westernport	Mornington Peninsula North-Eastern Creeks							NOT APPLICABLE
Westernport	Mornington Peninsula South-Eastern Creeks	Harvest	slightly off-track	Negative change	Unlikely	no	no	MEDIUM
Westernport	Mornington Peninsula Western Creeks	Harvest	slightly off-track	Negative change	Unlikely	yes	no	HIGH
Westernport	Tarago River	Harvest	significantly off-track	Negative change	Unlikely	yes	no	HIGH
Yarra	Brushy Creek	Harvest	significantly off-track	Negative change	Unlikely	yes	no	HIGH
Yarra	Darebin Creek	Harvest	on-track	Negative change	Possible	yes	no	MEDIUM
Yarra	Diamond Creek (Rural)							NOT APPLICABLE
Yarra	Diamond Creek (Source)							NOT APPLICABLE
Yarra	Gardiners Creek							NOT APPLICABLE
Yarra	Koonung Creek							NOT APPLICABLE
Yarra	Little Yarra River and Hoddles Creek	Harvest	significantly off-track	Negative change	Unlikely	yes	no	HIGH
Yarra	Merri Creek Lower							NOT APPLICABLE
Yarra	Merri Creek Upper	Harvest	slightly off-track	Negative change	Unlikely	no	no	MEDIUM
Yarra	Mullum Mullum Creek							NOT APPLICABLE
Yarra	Olinda Creek	Harvest	slightly off-track	Negative change	Unlikely	yes	no	HIGH
Yarra	Plenty River (Source)							NOT APPLICABLE
Yarra	Plenty River Lower							NOT APPLICABLE
Yarra	Plenty River Upper	Harvest	significantly off-track	Negative change	Unlikely	yes	no	HIGH
Yarra	Steels and Pauls Creek (Rural)							NOT APPLICABLE
Yarra	Steels and Pauls Creek (Source)							NOT APPLICABLE
Yarra	Stringybark Creek							NOT APPLICABLE
Yarra	Watsons Creek							NOT APPLICABLE
Yarra	Watts River (Rural)	Harvest	significantly off-track	Negative change	Unlikely	yes	no	HIGH
Yarra	Watts River (Source)							NOT APPLICABLE
Yarra	Woori Yallock Creek	Harvest	slightly off-track	Negative change	Unlikely	yes	no	HIGH
Yarra	Yarra River Lower	Harvest	significantly off-track	Negative change	Unlikely	yes	no	HIGH
Yarra	Yarra River Middle	Harvest	significantly off-track	Negative change	Unlikely	yes	no	HIGH
Yarra	Yarra River Upper (Rural)	Harvest	significantly off-track	Negative change	Unlikely	yes	no	HIGH
Yarra	Yarra River Upper (Source)							NOT APPLICABLE

Stormwater – Infiltrate

Catchment	Sub-catchment	Short Name	Current Status	Future Operating Model	Likelihood	Focus SC	Large target	Priority Rating
Dandenong	Bayside							NOT APPLICABLE
Dandenong	Blind Creek							NOT APPLICABLE
Dandenong	Corhanwarrabul, Monbulk and Ferny Creeks							NOT APPLICABLE
Dandenong	Dandenong Creek Lower							NOT APPLICABLE
Dandenong	Dandenong Creek Middle							NOT APPLICABLE
Dandenong	Dandenong Creek Upper							NOT APPLICABLE
Dandenong	Eumemmerring Creek							NOT APPLICABLE
Dandenong	Kananook Creek							NOT APPLICABLE
Maribyrnong	Boyd Creek							NOT APPLICABLE
Maribyrnong	Deep Creek Lower							NOT APPLICABLE
Maribyrnong	Deep Creek Upper	Infiltrate	significantly off-track	Negative change	Unlikely	yes	no	HIGH
Maribyrnong	Emu Creek	Infiltrate	on-track	Negative change	Possible	yes	yes	HIGH
Maribyrnong	Jacksons Creek	Infiltrate	on-track	Negative change	Possible	yes	yes	HIGH
Maribyrnong	Maribyrnong River							NOT APPLICABLE
Maribyrnong	Moonee Ponds Creek							NOT APPLICABLE
Maribyrnong	Steele Creek							NOT APPLICABLE
Maribyrnong	Stony Creek							NOT APPLICABLE
Maribyrnong	Taylors Creek							NOT APPLICABLE
Werribee	Cherry Creek							NOT APPLICABLE
Werribee	Kororoit Creek Lower	Infiltrate	significantly off-track	Negative change	Unlikely	yes	yes	HIGH
Werribee	Kororoit Creek Upper							NOT APPLICABLE
Werribee	Laverton Creek							NOT APPLICABLE
Werribee	Lerderderg River							NOT APPLICABLE
Werribee	Little River Lower							NOT APPLICABLE
Werribee	Little River Upper							NOT APPLICABLE
Werribee	Lollypop Creek	Infiltrate	slightly off-track	Negative change	Unlikely	no	no	MEDIUM
Werribee	Parwan Creek							NOT APPLICABLE
Werribee	Skeleton Creek							NOT APPLICABLE
Werribee	Toolern Creek	Infiltrate	slightly off-track	Negative change	Unlikely	no	no	LOW
Werribee	Werribee River Lower	Infiltrate	significantly off-track	Negative change	Unlikely	yes	no	VERY HIGH
Werribee	Werribee River Middle							NOT APPLICABLE
Werribee	Werribee River Upper	Infiltrate	significantly off-track	Negative change	Unlikely	yes	no	HIGH
Westernport	Bass River							NOT APPLICABLE
Westernport	Bunyip Lower							NOT APPLICABLE
Westernport	Bunyip River Middle and Upper							NOT APPLICABLE
Westernport	Cardinia, Toomuc, Deep and Ararat Creeks	Infiltrate	significantly off-track	Negative change	Unlikely	yes	yes	VERY HIGH
Westernport	Dalmore Outfalls							NOT APPLICABLE
Westernport	French and Phillip Islands	Infiltrate	slightly off-track	Negative change	Unlikely	no	no	MEDIUM
Westernport	King Parrot and Musk Creeks	Infiltrate	significantly off-track	Negative change	Unlikely	yes	no	HIGH
Westernport	Lang Lang River	Infiltrate	slightly off-track	Negative change	Unlikely	yes	no	HIGH
Westernport	Mornington Peninsula North-Eastern Creeks							NOT APPLICABLE
Westernport	Mornington Peninsula South-Eastern Creeks	Infiltrate	slightly off-track	Negative change	Unlikely	no	no	MEDIUM
Westernport	Mornington Peninsula Western Creeks	Infiltrate	slightly off-track	Negative change	Unlikely	yes	no	HIGH
Westernport	Tarago River	Infiltrate	significantly off-track	Negative change	Unlikely	yes	yes	HIGH
Yarra	Brushy Creek	Infiltrate	significantly off-track	Negative change	Unlikely	yes	no	HIGH
Yarra	Darebin Creek	Infiltrate	significantly off-track	Negative change	Unlikely	yes	no	MEDIUM
Yarra	Diamond Creek (Rural)							NOT APPLICABLE
Yarra	Diamond Creek (Source)							NOT APPLICABLE
Yarra	Gardiners Creek							NOT APPLICABLE
Yarra	Koonung Creek							NOT APPLICABLE
Yarra	Little Yarra River and Hoddles Creek	Infiltrate	significantly off-track	Negative change	Unlikely	yes	no	HIGH
Yarra	Merri Creek Lower							NOT APPLICABLE
Yarra	Merri Creek Upper	Infiltrate	slightly off-track	Negative change	Unlikely	no	no	MEDIUM
Yarra	Mullum Mullum Creek							NOT APPLICABLE
Yarra	Olinda Creek	Infiltrate	on-track	Negative change	Possible	yes	no	HIGH
Yarra	Plenty River (Source)							NOT APPLICABLE
Yarra	Plenty River Lower							NOT APPLICABLE
Yarra	Plenty River Upper	Infiltrate	slightly off-track	Negative change	Unlikely	yes	no	HIGH
Yarra	Steels and Pauls Creek (Rural)							NOT APPLICABLE
Yarra	Steels and Pauls Creek (Source)							NOT APPLICABLE
Yarra	Stringybark Creek							NOT APPLICABLE
Yarra	Watsons Creek							NOT APPLICABLE
Yarra	Watts River (Rural)	Infiltrate	slightly off-track	Negative change	Unlikely	yes	no	HIGH
Yarra	Watts River (Source)							NOT APPLICABLE
Yarra	Woori Yallock Creek	Infiltrate	on-track	Negative change	Possible	yes	no	HIGH
Yarra	Yarra River Lower	Infiltrate	significantly off-track	Negative change	Unlikely	yes	no	HIGH
Yarra	Yarra River Middle	Infiltrate	significantly off-track	Negative change	Unlikely	yes	no	HIGH
Yarra	Yarra River Upper (Rural)	Infiltrate	slightly off-track	Negative change	Unlikely	yes	no	HIGH
Yarra	Yarra River Upper (Source)							NOT APPLICABLE

Water for the Environment – increase reserve volume

Catchment	Sub-catchment	Short Name	Current Status	Future Operating Model	Likelihood	Focus SC	Large target	Priority Rating
Dandenong	Bayside							NOT APPLICABLE
Dandenong	Blind Creek							NOT APPLICABLE
Dandenong	Corhanwarrabul, Monbulk and Ferny Creeks							NOT APPLICABLE
Dandenong	Dandenong Creek Lower							NOT APPLICABLE
Dandenong	Dandenong Creek Middle							NOT APPLICABLE
Dandenong	Dandenong Creek Upper							NOT APPLICABLE
Dandenong	Eumemmerring Creek							NOT APPLICABLE
Dandenong	Kananook Creek							NOT APPLICABLE
Maribyrnong	Boyd Creek							NOT APPLICABLE
Maribyrnong	Deep Creek Lower							NOT APPLICABLE
Maribyrnong	Deep Creek Upper							NOT APPLICABLE
Maribyrnong	Emu Creek							NOT APPLICABLE
Maribyrnong	Jacksons Creek	Increase reserve volume	significantly off-track	Unchanged	Unlikely	yes	no	HIGH
Maribyrnong	Maribyrnong River	Increase reserve volume	significantly off-track	Unchanged	Unlikely	yes	no	HIGH
Maribyrnong	Moonee Ponds Creek							NOT APPLICABLE
Maribyrnong	Steele Creek							NOT APPLICABLE
Maribyrnong	Stony Creek							NOT APPLICABLE
Maribyrnong	Taylors Creek							NOT APPLICABLE
Werribee	Cherry Creek							NOT APPLICABLE
Werribee	Kororoit Creek Lower							NOT APPLICABLE
Werribee	Kororoit Creek Upper							NOT APPLICABLE
Werribee	Laverton Creek							NOT APPLICABLE
Werribee	Lerderderg River							NOT APPLICABLE
Werribee	Little River Lower							NOT APPLICABLE
Werribee	Little River Upper							NOT APPLICABLE
Werribee	Lollypop Creek							NOT APPLICABLE
Werribee	Parwan Creek							NOT APPLICABLE
Werribee	Skeleton Creek							NOT APPLICABLE
Werribee	Toolern Creek							NOT APPLICABLE
Werribee	Werribee River Lower	Increase reserve volume	significantly off-track	Unchanged	Unlikely	yes	no	HIGH
Werribee	Werribee River Middle	Increase reserve volume	significantly off-track	Unchanged	Unlikely	yes	no	HIGH
Werribee	Werribee River Upper	Increase reserve volume	significantly off-track	Unchanged	Unlikely	yes	no	HIGH
Westernport	Bass River							NOT APPLICABLE
Westernport	Bunyip Lower	Increase reserve volume	significantly off-track	Unchanged	Unlikely	yes	no	HIGH
Westernport	Bunyip River Middle and Upper							NOT APPLICABLE
Westernport	Cardinia, Toomuc, Deep and Ararat Creeks							NOT APPLICABLE
Westernport	Dalmore Outfalls							NOT APPLICABLE
Westernport	French and Phillip Islands							NOT APPLICABLE
Westernport	King Parrot and Musk Creeks							NOT APPLICABLE
Westernport	Lang Lang River							NOT APPLICABLE
Westernport	Mornington Peninsula North-Eastern Creeks							NOT APPLICABLE
Westernport	Mornington Peninsula South-Eastern Creeks							NOT APPLICABLE
Westernport	Mornington Peninsula Western Creeks							NOT APPLICABLE
Westernport	Tarago River	Increase reserve volume	significantly off-track	Unchanged	Unlikely	yes	no	HIGH
Yarra	Brushy Creek							NOT APPLICABLE
Yarra	Darebin Creek							NOT APPLICABLE
Yarra	Diamond Creek (Rural)							NOT APPLICABLE
Yarra	Diamond Creek (Source)							NOT APPLICABLE
Yarra	Gardiners Creek							NOT APPLICABLE
Yarra	Koonung Creek							NOT APPLICABLE
Yarra	Little Yarra River and Hoddles Creek							NOT APPLICABLE
Yarra	Merri Creek Lower							NOT APPLICABLE
Yarra	Merri Creek Upper							NOT APPLICABLE
Yarra	Mullum Mullum Creek							NOT APPLICABLE
Yarra	Olinda Creek							NOT APPLICABLE
Yarra	Plenty River (Source)							NOT APPLICABLE
Yarra	Plenty River Lower							NOT APPLICABLE
Yarra	Plenty River Upper							NOT APPLICABLE
Yarra	Steels and Pauls Creek (Rural)							NOT APPLICABLE
Yarra	Steels and Pauls Creek (Source)							NOT APPLICABLE
Yarra	Stringybark Creek							NOT APPLICABLE
Yarra	Watsons Creek							NOT APPLICABLE
Yarra	Watts River (Rural)							NOT APPLICABLE
Yarra	Watts River (Source)	Increase reserve volume	significantly off-track	Unchanged	Unlikely	yes	no	HIGH
Yarra	Woori Yallock Creek							NOT APPLICABLE
Yarra	Yarra River Lower	Increase reserve volume	significantly off-track	Unchanged	Unlikely	yes	no	HIGH
Yarra	Yarra River Middle	Increase reserve volume	significantly off-track	Unchanged	Unlikely	yes	no	HIGH
Yarra	Yarra River Upper (Rural)	Increase reserve volume	significantly off-track	Unchanged	Unlikely	yes	no	HIGH
Yarra	Yarra River Upper (Source)	Increase reserve volume	significantly off-track	Unchanged	Unlikely	yes	no	HIGH

Water Quality – reduce agricultural run-off

Catchment	Sub-catchment	Short Name	Current Status	Future Operating Model	Likelihood	Focus SC	Large target	Priority Rating
Dandenong	Bayside							NOT APPLICABLE
Dandenong	Blind Creek							NOT APPLICABLE
Dandenong	Corhanwarrabul, Monbulk and Ferny Creeks	Reduce agricultural run-off	significantly off-track	Positive Change	Possible	yes	no	MEDIUM
Dandenong	Dandenong Creek Lower							NOT APPLICABLE
Dandenong	Dandenong Creek Middle							NOT APPLICABLE
Dandenong	Dandenong Creek Upper							NOT APPLICABLE
Dandenong	Eumemmerring Creek							NOT APPLICABLE
Dandenong	Kananook Creek							NOT APPLICABLE
Maribyrnong	Boyd Creek	Reduce agricultural run-off	on-track	Unchanged	Almost certain	yes	yes	VERY LOW
Maribyrnong	Deep Creek Lower							NOT APPLICABLE
Maribyrnong	Deep Creek Upper	Reduce agricultural run-off	on-track	Unchanged	Almost certain	yes	yes	VERY LOW
Maribyrnong	Emu Creek	Reduce agricultural run-off	significantly off-track	Unchanged	Unlikely	yes	yes	VERY HIGH
Maribyrnong	Jacksons Creek	Reduce agricultural run-off	significantly off-track	Unchanged	Unlikely	yes	yes	VERY HIGH
Maribyrnong	Maribyrnong River							NOT APPLICABLE
Maribyrnong	Moonee Ponds Creek							NOT APPLICABLE
Maribyrnong	Steele Creek							NOT APPLICABLE
Maribyrnong	Stony Creek							NOT APPLICABLE
Maribyrnong	Taylors Creek							NOT APPLICABLE
Werribee	Cherry Creek							NOT APPLICABLE
Werribee	Kororoit Creek Lower							NOT APPLICABLE
Werribee	Kororoit Creek Upper							NOT APPLICABLE
Werribee	Laverton Creek							NOT APPLICABLE
Werribee	Lerderderg River	Reduce agricultural run-off	significantly off-track	Unchanged	Unlikely	yes	yes	VERY HIGH
Werribee	Little River Lower							NOT APPLICABLE
Werribee	Little River Upper	Reduce agricultural run-off	on-track	Unchanged	Almost certain	no	yes	VERY LOW
Werribee	Lollypop Creek							NOT APPLICABLE
Werribee	Parwan Creek							NOT APPLICABLE
Werribee	Skeleton Creek							NOT APPLICABLE
Werribee	Toolern Creek							NOT APPLICABLE
Werribee	Werribee River Lower							NOT APPLICABLE
Werribee	Werribee River Middle	Reduce agricultural run-off	on-track	Unchanged	Almost certain	yes	yes	VERY LOW
Werribee	Werribee River Upper	Reduce agricultural run-off	significantly off-track	Unchanged	Unlikely	yes	yes	VERY HIGH
Westernport	Bass River	Reduce agricultural run-off	on-track	Unchanged	Almost certain	yes	yes	VERY LOW
Westernport	Bunyip Lower	Reduce agricultural run-off	on-track	Unchanged	Almost certain	yes	yes	VERY LOW
Westernport	Bunyip River Middle and Upper	Reduce agricultural run-off	on-track	Unchanged	Almost certain	yes	yes	VERY LOW
Westernport	Cardinia, Toomuc, Deep and Ararat Creeks	Reduce agricultural run-off	significantly off-track	Unchanged	Unlikely	yes	yes	VERY HIGH
Westernport	Dalmore Outfalls	Reduce agricultural run-off	significantly off-track	Unchanged	Unlikely	no	yes	HIGH
Westernport	French and Phillip Islands							NOT APPLICABLE
Westernport	King Parrot and Musk Creeks							NOT APPLICABLE
Westernport	Lang Lang River	Reduce agricultural run-off	on-track	Unchanged	Almost certain	yes	yes	VERY LOW
Westernport	Mornington Peninsula North-Eastern Creeks	Reduce agricultural run-off	significantly off-track	Unchanged	Unlikely	yes	yes	VERY HIGH
Westernport	Mornington Peninsula South-Eastern Creeks							NOT APPLICABLE
Westernport	Mornington Peninsula Western Creeks							NOT APPLICABLE
Westernport	Tarago River	Reduce agricultural run-off	on-track	Unchanged	Almost certain	yes	yes	VERY LOW
Yarra	Brushy Creek							NOT APPLICABLE
Yarra	Darebin Creek							NOT APPLICABLE
Yarra	Diamond Creek (Rural)							NOT APPLICABLE
Yarra	Diamond Creek (Source)	Reduce agricultural run-off	significantly off-track	Unchanged	Unlikely	yes	yes	VERY HIGH
Yarra	Gardiners Creek							NOT APPLICABLE
Yarra	Koonung Creek							NOT APPLICABLE
Yarra	Little Yarra River and Hoddles Creek	Reduce agricultural run-off	on-track	Unchanged	Almost certain	yes	yes	VERY LOW
Yarra	Merri Creek Lower							NOT APPLICABLE
Yarra	Merri Creek Upper							NOT APPLICABLE
Yarra	Mullum Mullum Creek							NOT APPLICABLE
Yarra	Olinda Creek	Reduce agricultural run-off	significantly off-track	Unchanged	Unlikely	yes	yes	VERY HIGH
Yarra	Plenty River (Source)							NOT APPLICABLE
Yarra	Plenty River Lower							NOT APPLICABLE
Yarra	Plenty River Upper	Reduce agricultural run-off	on-track	Unchanged	Almost certain	yes	yes	VERY LOW
Yarra	Steels and Pauls Creek (Rural)							NOT APPLICABLE
Yarra	Steels and Pauls Creek (Source)	Reduce agricultural run-off	on-track	Unchanged	Almost certain	yes	yes	VERY LOW
Yarra	Stringybark Creek							NOT APPLICABLE
Yarra	Watsons Creek	Reduce agricultural run-off	significantly off-track	Unchanged	Unlikely	yes	yes	VERY HIGH
Yarra	Watts River (Rural)	Reduce agricultural run-off	significantly off-track	Unchanged	Unlikely	yes	yes	VERY HIGH
Yarra	Watts River (Source)							NOT APPLICABLE
Yarra	Woori Yallock Creek	Reduce agricultural run-off	on-track	Unchanged	Almost certain	yes	yes	VERY LOW
Yarra	Yarra River Lower							NOT APPLICABLE
Yarra	Yarra River Middle							NOT APPLICABLE
Yarra	Yarra River Upper (Rural)	Reduce agricultural run-off	on-track	Unchanged	Almost certain	yes	yes	VERY LOW
Yarra	Yarra River Upper (Source)							NOT APPLICABLE

Water Quality – maintain STPs loads

Catchment	Sub-catchment	Short Name	Current Status	Future Operating Model	Likelihood	Focus SC	Large target	Priority Rating
Dandenong	Bayside							NOT APPLICABLE
Dandenong	Blind Creek							NOT APPLICABLE
Dandenong	Corhanwarrabul, Monbulk and Ferny Creeks							NOT APPLICABLE
Dandenong	Dandenong Creek Lower							NOT APPLICABLE
Dandenong	Dandenong Creek Middle							NOT APPLICABLE
Dandenong	Dandenong Creek Upper							NOT APPLICABLE
Dandenong	Eumemmerring Creek							NOT APPLICABLE
Dandenong	Kananook Creek							NOT APPLICABLE
Maribyrnong	Boyd Creek							NOT APPLICABLE
Maribyrnong	Deep Creek Lower							NOT APPLICABLE
Maribyrnong	Deep Creek Upper							NOT APPLICABLE
Maribyrnong	Emu Creek							NOT APPLICABLE
Maribyrnong	Jacksons Creek	Maintain STP loads	slightly off-track	Unchanged	Possible	yes	no	MEDIUM
Maribyrnong	Maribyrnong River							NOT APPLICABLE
Maribyrnong	Moonee Ponds Creek							NOT APPLICABLE
Maribyrnong	Steele Creek							NOT APPLICABLE
Maribyrnong	Stony Creek							NOT APPLICABLE
Maribyrnong	Taylors Creek							NOT APPLICABLE
Werribee	Cherry Creek							NOT APPLICABLE
Werribee	Kororoit Creek Lower							NOT APPLICABLE
Werribee	Kororoit Creek Upper							NOT APPLICABLE
Werribee	Laverton Creek							NOT APPLICABLE
Werribee	Lerderderg River							NOT APPLICABLE
Werribee	Little River Lower							NOT APPLICABLE
Werribee	Little River Upper							NOT APPLICABLE
Werribee	Lollypop Creek							NOT APPLICABLE
Werribee	Parwan Creek							NOT APPLICABLE
Werribee	Skeleton Creek							NOT APPLICABLE
Werribee	Toolern Creek							NOT APPLICABLE
Werribee	Werribee River Lower							NOT APPLICABLE
Werribee	Werribee River Middle							NOT APPLICABLE
Werribee	Werribee River Upper							NOT APPLICABLE
Westernport	Bass River							NOT APPLICABLE
Westernport	Bunyip Lower							NOT APPLICABLE
Westernport	Bunyip River Middle and Upper							NOT APPLICABLE
Westernport	Cardinia, Toomuc, Deep and Ararat Creeks							NOT APPLICABLE
Westernport	Dalmore Outfalls							NOT APPLICABLE
Westernport	French and Phillip Islands							NOT APPLICABLE
Westernport	King Parrot and Musk Creeks							NOT APPLICABLE
Westernport	Lang Lang River							NOT APPLICABLE
Westernport	Mornington Peninsula North-Eastern Creeks							NOT APPLICABLE
Westernport	Mornington Peninsula South-Eastern Creeks							NOT APPLICABLE
Westernport	Mornington Peninsula Western Creeks							NOT APPLICABLE
Westernport	Tarago River							NOT APPLICABLE
Yarra	Brushy Creek	Maintain STP loads	on-track	Unchanged	Almost certain	yes	no	VERY LOW
Yarra	Darebin Creek							NOT APPLICABLE
Yarra	Diamond Creek (Rural)							NOT APPLICABLE
Yarra	Diamond Creek (Source)							NOT APPLICABLE
Yarra	Gardiners Creek							NOT APPLICABLE
Yarra	Koonung Creek							NOT APPLICABLE
Yarra	Little Yarra River and Hoddles Creek							NOT APPLICABLE
Yarra	Merri Creek Lower	Maintain STP loads	on-track	Unchanged	Almost certain	no	no	VERY LOW
Yarra	Merri Creek Upper	Maintain STP loads	on-track	Unchanged	Almost certain	no	no	VERY LOW
Yarra	Mullum Mullum Creek							NOT APPLICABLE
Yarra	Olinda Creek	Maintain STP loads	on-track	Unchanged	Almost certain	yes	no	VERY LOW
Yarra	Plenty River (Source)							NOT APPLICABLE
Yarra	Plenty River Lower							NOT APPLICABLE
Yarra	Plenty River Upper							NOT APPLICABLE
Yarra	Steels and Pauls Creek (Rural)							NOT APPLICABLE
Yarra	Steels and Pauls Creek (Source)							NOT APPLICABLE
Yarra	Stringybark Creek							NOT APPLICABLE
Yarra	Watsons Creek							NOT APPLICABLE
Yarra	Watts River (Rural)							NOT APPLICABLE
Yarra	Watts River (Source)							NOT APPLICABLE
Yarra	Woori Yallock Creek	Maintain STP loads	on-track	Unchanged	Almost certain	yes	no	VERY LOW
Yarra	Yarra River Lower							NOT APPLICABLE
Yarra	Yarra River Middle							NOT APPLICABLE
Yarra	Yarra River Upper (Rural)	Maintain STP loads	on-track	Unchanged	Almost certain	yes	no	VERY LOW
Yarra	Yarra River Upper (Source)							NOT APPLICABLE

Appendix 11: Sub Catchment Performance Objectives High Risk Evaluation Results

All Performance Objective groups

Table 34. Risk ratings (very low – very high) for different PO types. MED = medium, NA = target has been achieved, no targets for blank cells. Focus sub-catchment categories are described in more detail in the Science Inquiry report. They refer to: MSV = multiple stable values, MDVs = multiple declining values, CCV = climate change vulnerable, CCS = climate change stronghold. Focus sub catchment Group is also based on the science inquiry. Group A = moderate to high baseline value status for majority of key values and Group B = low or very baseline status for most key values.

Catchment	Sub-catchment	Focus sub-catchment category	Focus sub catchment Group	PO type										
				Establish buffers	Maintain vegetation	Protect vegetation	Increase reserve volume	Reduce Agricultural runoff	Sewerage treatment plants	Stormwater Harvest	Stormwater Infiltrate	Fish passage	Access	Participation
Dandenong	Bayside	None		MED	LOW								LOW	HIGH
	Blind Creek	MSV	B	MED	VERY LOW	VERY LOW							MED	VERY LOW
	Corhanwarrabul, Monbulk and Ferny Creeks	CCS, MSV	A	NA	VERY LOW	VERY LOW		MED					VERY LOW	VERY LOW
	Dandenong Creek Lower	MSV	B	MED	VERY LOW							VERY LOW	NA	HIGH
	Dandenong Creek Middle	MSV	B	NA	VERY LOW	VERY LOW							HIGH	VERY LOW
	Dandenong Creek Upper	MSV	A	MED	VERY LOW	MED							HIGH	VERY LOW
	Eumemmerring Creek	None		MED	LOW								LOW	LOW
	Kananook Creek	None		LOW	VERY LOW	VERY LOW							NA	VERY LOW
Maribyrnong	Boyd Creek	CCV, MSV	B	MED	HIGH	HIGH		VERY LOW						VERY LOW
	Deep Creek Lower	None		MED	LOW	VERY LOW							HIGH	VERY LOW
	Deep Creek Upper	MDV, CCV	A	HIGH	VERY LOW	VERY LOW		VERY LOW		HIGH	HIGH			VERY LOW
	Emu Creek	MDV	A	MED	VERY LOW	VERY LOW		VERY HIGH		HIGH	HIGH		VERY HIGH	MED
	Jacksons Creek	MDV	A	HIGH	VERY LOW	VERY LOW	HIGH	VERY HIGH	MED	HIGH	HIGH		VERY HIGH	HIGH
	Maribyrnong River	MDV	A	MED	VERY LOW	VERY LOW	HIGH					VERY LOW	HIGH	VERY LOW
	Moonee Ponds Creek	MSV	B	MED	VERY LOW	VERY LOW							VERY LOW	VERY LOW
	Steele Creek	none		NA	MED								HIGH	MED
	Stony Creek	none											MED	HIGH
	Taylors Creek	MSV	B	MED	VERY LOW	VERY LOW							NA	HIGH

Catchment	Sub-catchment	Focus sub-catchment category	Focus sub catchment Group	PO type										
				Establish buffers	Maintain vegetation	Protect vegetation	Increase reserve volume	Reduce Agricultural runoff	Sewerage treatment plants	Stormwater Harvest	Stormwater Infiltrate	Fish passage	Access	Participation
Werribee	Cherry Creek	none		NA									VERY HIGH	MED
	Kororoit Creek Lower	none		VERY LOW	VERY LOW					HIGH	HIGH		NA	VERY LOW
	Kororoit Creek Upper	MSV	B	MED	MED									VERY LOW
	Laverton Creek	None		VERY LOW	VERY LOW	VERY LOW							LOW	LOW
	Lerderderg River	CCV, CCS	A	NA	VERY LOW	VERY LOW		VERY HIGH						VERY LOW
	Little River Lower	None		MED	VERY LOW	VERY LOW						VERY LOW	MED	VERY LOW
	Little River Upper	None		LOW	LOW	MED		VERY LOW						VERY LOW
	Lollypop Creek	None		MED	VERY LOW					MED	MED		NA	VERY LOW
	Parwan Creek	MSV	B	MED	VERY LOW	VERY LOW								VERY LOW
	Skeleton Creek	MSV	B	MED	VERY LOW	VERY LOW							NA	HIGH
	Toolern Creek	None		VERY LOW	VERY LOW	VERY LOW				LOW	LOW	VERY LOW	VERY LOW	VERY LOW
	Werribee River Lower	MDV	A	MED	VERY LOW		HIGH			VERY HIGH	VERY HIGH	HIGH	VERY HIGH	VERY LOW
	Werribee River Middle	CCV	A	MED	VERY LOW	HIGH	HIGH	VERY LOW					NA	VERY LOW
	Werribee River Upper	CCV, CCS	A	HIGH	VERY LOW	VERY LOW	HIGH	VERY HIGH		HIGH	HIGH			VERY LOW
Westernport	Bass River	CCV	A	MED	MED	HIGH		VERY LOW						VERY LOW
	Bunyip Lower	MDV	B	HIGH	VERY LOW		HIGH	VERY LOW						VERY LOW
	Bunyip River Middle and Upper	CCV, CCS	A	MED	VERY LOW	HIGH		VERY LOW					HIGH	VERY LOW
	Cardinia, Toomuc, Deep and Ararat Creeks	MDV	A	HIGH	VERY LOW	VERY LOW		VERY HIGH		VERY HIGH	VERY HIGH		HIGH	MED
	Dalmore Outfalls	None		MED	LOW			HIGH					VERY LOW	LOW
	French and Phillip Islands	None		MED	MED	MED				MED	MED			VERY LOW
	King Parrot and Musk Creeks	MDV, CCV	B	MED	HIGH					HIGH	HIGH			MED
	Lang Lang River	MDV, CCV	A	HIGH	HIGH			VERY LOW		HIGH	HIGH	HIGH		VERY LOW
	Mornington Peninsula North-Eastern Creeks	MSV	B	NA	MED			VERY HIGH					VERY HIGH	VERY LOW
	Mornington Peninsula South-Eastern Creeks	None		VERY LOW	VERY LOW	VERY LOW				MED	MED		HIGH	VERY LOW
	Mornington Peninsula Western Creeks	MSV	B	MED	MED	VERY LOW				HIGH	HIGH		VERY HIGH	VERY LOW
	Tarago River	MDV, CCS	A	HIGH	VERY LOW	HIGH	HIGH	VERY LOW		HIGH	HIGH		HIGH	VERY LOW

Catchment	Sub-catchment	Focus sub-catchment category	Focus sub catchment Group	PO type										
				Establish buffers	Maintain vegetation	Protect vegetation	Increase reserve volume	Reduce Agricultural runoff	Sewerage treatment plants	Stormwater Harvest	Stormwater Infiltrate	Fish passage	Access	Participation
Yarra	Brushy Creek	MSV	B	MED	MED				VERY LOW	HIGH	HIGH		MED	HIGH
	Darebin Creek	MDV	B	MED	VERY LOW	VERY LOW				MED	MED	VERY LOW	VERY LOW	MED
	Diamond Creek (Rural)	None		LOW	VERY LOW	VERY LOW							NA	VERY LOW
	Diamond Creek (Source)	CCV	A	MED	VERY LOW	HIGH		VERY HIGH						MED
	Gardiners Creek	MDV	B	MED	MED								NA	HIGH
	Koonung Creek	None		MED	LOW									MED
	Little Yarra River and Hoddles Creek	MSV	A	NA	VERY LOW	VERY LOW		VERY LOW		HIGH	HIGH			VERY LOW
	Merri Creek Lower	None		LOW	VERY LOW				VERY LOW				VERY LOW	MED
	Merri Creek Upper	None		LOW	VERY LOW	VERY LOW			VERY LOW	MED	MED		LOW	VERY LOW
	Mullum Mullum Creek	MSV	B	MED	VERY LOW								MED	HIGH
	Olinda Creek	MSV	A	VERY LOW	VERY LOW	VERY LOW		VERY HIGH	VERY LOW	HIGH	HIGH		NA	MED
	Plenty River (Source)	CCV, CCS	A	VERY LOW	VERY LOW	VERY HIGH								
	Plenty River Lower	None		LOW	VERY LOW	VERY LOW							LOW	LOW
	Plenty River Upper	CCV	A	MED	HIGH	HIGH		VERY LOW		HIGH	HIGH		VERY HIGH	VERY LOW
	Steels and Pauls Creek (Rural)	None		MED	LOW	VERY LOW								VERY LOW
	Steels and Pauls Creek (Source)	CCV, MSV	A	MED	MED	HIGH		VERY LOW						VERY LOW
	Stringybark Creek	None		LOW	LOW									LOW
	Watsons Creek	CCS	A	MED	VERY LOW	VERY LOW		VERY HIGH						VERY LOW
	Watts River (Rural)	CCV, CCS	A	MED	VERY LOW	VERY LOW		VERY HIGH		HIGH	HIGH			VERY LOW
	Watts River (Source)	CCV, CCS	A	MED	VERY LOW	VERY LOW	HIGH					MED		
	Woori Yallock Creek	MDV, CCV, CCS	A	MED	VERY LOW	VERY LOW		VERY LOW	VERY LOW	HIGH	HIGH			VERY LOW
	Yarra River Lower	MDV	A	NA	VERY LOW		HIGH			HIGH	HIGH	VERY LOW	HIGH	VERY LOW
	Yarra River Middle	CCS, MSV	A	MED	VERY LOW	MED	HIGH			HIGH	HIGH		VERY LOW	MED
	Yarra River Upper (Rural)	CCV, CCS	A	MED	VERY LOW	HIGH	HIGH	VERY LOW	VERY LOW	HIGH	HIGH			VERY LOW
	Yarra River Upper (Source)	CCV, CCS	A	MED	HIGH	VERY HIGH	HIGH					MED		

Table 35. Highlighted in orange are the high or very high risk environmental value related POs within Group A focus sub-catchments.

Catchment	Sub-catchment	Establish vegetation	Maintain vegetation	Protect vegetation	Water recovery	Agriculture runoff	Storwater Harvest	Storwater Infiltrate	Fish passagae
Maribyrnong	Deep Creek Upper								
Maribyrnong	Emu Creek								
Maribyrnong	Jacksons Creek								
Maribyrnong	Maribyrnong River								
Werribee	Lerderderg River								
Werribee	Werribee River Lower								
Werribee	Werribee River Middle								
Werribee	Werribee River Upper								
Westernport	Bass River								
Westernport	Bunyip River Middle and Upper								
Westernport	Cardinia, Toomuc, Deep and Ararat Creeks								
Westernport	Lang Lang River								
Westernport	Tarago River								
Yarra	Diamond Creek (Source)								
Yarra	Little Yarra River and Hoddles Creek								
Yarra	Olinda Creek								
Yarra	Plenty River (Source)								
Yarra	Plenty River Upper								
Yarra	Steels and Pauls Creek (Source)								
Yarra	Watsons Creek								
Yarra	Watts River (Rural)								
Yarra	Watts River (Source)								
Yarra	Woori Yallock Creek								
Yarra	Yarra River Lower								
Yarra	Yarra River Middle								
Yarra	Yarra River Upper (Rural)								
Yarra	Yarra River Upper (Source)								

Table 36. High or very high risk POs for social values related PO groups i.e. access and participation.

Catchment	Sub-catchment	Establish vegetation	Maintain vegetation
Dandenong	Bayside		
Dandenong	Dandenong Creek Lower		
Dandenong	Dandenong Creek Middle		
Dandenong	Dandenong Creek Upper		
Maribyrnong	Deep Creek Lower		
Maribyrnong	Emu Creek		
Maribyrnong	Jacksons Creek		
Maribyrnong	Maribyrnong River		
Maribyrnong	Steele Creek		
Maribyrnong	Stony Creek		
Maribyrnong	Taylors Creek		
Werribee	Cherry Creek		
Werribee	Skeleton Creek		
Werribee	Werribee River Lower		
Westernport	Bunyip River Middle and Upper		
Westernport	Cardinia, Toomuc, Deep and Ararat Creeks		
Westernport	Mornington Peninsula North-Eastern Creeks		
Westernport	Mornington Peninsula South-Eastern Creeks		
Westernport	Mornington Peninsula Western Creeks		
Westernport	Tarago River		
Yarra	Brushy Creek		
Yarra	Gardiners Creek		
Yarra	Mullum Mullum Creek		
Yarra	Plenty River Upper		
Yarra	Yarra River Lower		

Vegetation and Pests

High risk areas

Table 37. Short-list of SCPOs for vegetation that have been identified as at risk of not meeting the 10-year targets. Colours indicate rating: Orange – HIGH risk of not meeting 10-year target, Red – VERY HIGH risk of not meeting 10-year target, Grey – not a focus sub-catchment. Percent complete indicates proportion of 10-year target completed to 2022.

Catchment	Sub-catchment	Establish buffers (% complete)	Maintain existing (% complete)	High-quality vegetation (% complete)
Maribyrnong	Boyd Creek		2%	3%
	Deep Creek Upper	30%		
	Jacksons Creek	13%		
Werribee	Werribee River Middle			37%
	Werribee River Upper	2%		
Westernport	Bass River			0%
	Bunyip Lower	27%		
	Bunyip Middle and Upper			22%
	Cardinia, Toomuc, Deep and Ararat Creeks	16%		
	King Parrot and Musk Creeks		6%	
	Lang Lang River	5%	10%	
	Tarago River	8%		15%
Yarra	Diamond Creek (Source)			30%
	Plenty River (Source)			7%
	Plenty River Upper		5%	0%
	Steels and Pauls Creek (Source)			16%
	Yarra River Upper (Rural)			27%
	Yarra River Upper (Source)		18%	3%

Table 38. Summary of SCPO progress for vegetation management in priority wetlands.

Catchment	Establish buffers	Protect/maintain/improve
Dandenong	Not started in 1 wetland (out of 10 wetlands). *Barnbam Swamp*	Not started in 1 wetland (out of 6 wetlands). *Hallam Valley Floodplain Wetlands*
Maribyrnong	In progress	Not applicable in this catchment
Werribee	Not started in 9 wetlands (out of 23 wetlands). *Paynes Road North Swamp, Holden Road Wetland, Baths Swamp, The Spit Nature Conservation Reserve, Greens Road East Wetland No. 3, West Quandong Swamp, Balls Wetland Complex, Live Bomb Wetland, Rabbiters Lake & Swamp*	In progress
Westernport	Not started in 3 wetlands (out of 6 wetlands). *Yallock Creek Floodplain Wetlands, Lang Lang Floodplain Wetlands, Coolart Wetlands*	Not started in 2 wetlands (out of 3 wetlands). *Yallock Creek Floodplain Wetlands, Lang Lang Floodplain Wetlands*
Yarra	Not started in 4 wetlands (out of 13 wetlands). *Kalkallo Common, Domain Chandon Billabongs, Banyule Billabong, Westgate Park Wetlands*	Two POs will be reported on at the end of strategy in 2028.

Summary of barriers and opportunities for change

Table 39. Summary of evaluation findings for vegetation (not prioritised).

Ref #	Cause / contributing factor	Barriers to implementation	Opportunities for change	Spatial extent
1.1	Remote working policy	Melbourne Water's remote working policy is limiting access to areas with high-quality vegetation.	Staff safety is the top priority, however, different ways of working need to be identified if high-quality vegetation in remote areas are to be protected (e.g. partnerships/co-delivery model).	Upper reaches of Yarra and Westernport catchments, including Yarra River Upper (Source), Plenty River (Source) sub-catchments
1.2	Relationship development	Engaging with landholders takes time to negotiate the required setbacks for riparian buffers. This may prolong the delivery of required on-ground works, especially in areas with high numbers of private frontages.	Funding for increased human resources to engage with landholders in priority areas and assess applications promptly once received.	Areas with high levels of privately owned river frontages such as Westernport, Maribyrnong and Werribee catchments
1.3	Reporting and data management	Quantitative information about wetland buffers is available, however, the required reporting not yet operational. This means that a detailed evaluation of progress was unable to be completed.	Develop performance expectations that enable better tracking and improve clarity about target progress using quantitative methods.	All priority wetlands
1.4	Reporting and data management	Other land managers such as DEECA, Parks Victoria, Councils manage riparian vegetation but only Melbourne Water funded works currently count towards the Strategy targets.	Equivalent on-ground works by other organisations could be captured and counted towards the Strategy targets.	All sub-catchments

Ref #	Cause / contributing factor	Barriers to implementation	Opportunities for change	Spatial extent
1.5	Funding projects in areas adjoining priority areas	Works outside priority areas do not currently count towards the target. This may be constraining valuable works in adjacent areas that may eventually contribute environmental outcomes.	Incorporate some flexibility in the application of priority areas, such as a proportion of works outside these areas. Boundaries of priority areas are currently lines on a map based on modelling data – there may be scope for some flexibility upstream and downstream of this boundary.	All sub-catchments
1.6	Internal resourcing	Lack of resources at the delivery level to initiate and facilitate actions such as proactive landholder engagement and programming maintenance regimes within priority areas. Areas where staff have fire management responsibilities means the resource constraints higher during fire season, which corresponds with spring/summer works.	Funding for Waterway & Catchment Services support/ initiation officers.	All sub-catchments
2.3	Wetlands on private land	Engaging with landholders is difficult and many are reluctant to commit to the required pest management regime.	TBC	Werribee catchment
2.5	Reporting and data management	A large proportion of pest management works is delivered by external partners, therefore, coordination on data management and reporting is important to effectively track progress for these SCPOs.	Tracking of SCPOs for wetlands would be aided by improved metrics and integrated reporting.	Wetlands across all sub-catchments

Habitat

High risk areas

Improve Fish Passage – Rivers

Table 40. A short-list of SCPOs for fish passage identified as at risk of not meeting the 10-year targets. Colours indicate rating: Orange – HIGH risk of not meeting the 10-year target.

Catchment	Sub-catchment	Improve fish passage
Werribee	Werribee River Lower	Lower Werribee Diversion weir
Westernport	Lang Lang River	Heads Road Weir

Physical Form – Rivers and Estuaries

Table 41. Number of SCPOs relating to Physical Form per catchment.
Orange: >50% of sub-catchments within the catchment have this performance objective.

Catchment	Number of SCs with this PO	Percent of total No. SCs (%)
Dandenong	1	13
Maribyrnong	6	60
Werribee	6	43
Westernport	9	75
Yarra	8	32

Pests in Wetlands

Table 42. Summary of SCPO progress for pest management in priority wetlands.

Catchment	Manage pests in priority wetlands
Dandenong	Not started in three wetlands (out of 12 wetlands). *Braeside Park, Tamarisk Waterway Reserve, Barnbam Swamp*
Maribyrnong	In progress
Werribee	Not started in 14 wetlands (out of 26 wetlands). *Deanside Marsh, Paynes Road North Swamp, Holden Road Wetland, Baths Swamp, Richmonds Grass Swamp, WTP - Ryans Swamp, Greens Road East Wetland No. 3, Balls Wetland Complex, Black Swamp, Rabbiters Lake & Swamp, Jensz Swamp, Bingham's Swamp (Rolling Thunder Wetland), Laverton RAAF Swamp, Cunninghams Swamp*
Westernport	Not started in two wetlands (out of 5 wetlands). *Yallock Creek Floodplain Wetlands, Lang Lang Floodplain Wetlands*
Yarra	Not started in two wetlands (out of 13 wetlands). Hays Paddock Billabong, Yarra Bridge Streamside Reserve

Summary of Barriers and Opportunities

Table 43. Summary of evaluation findings for Habitat (not prioritised).

Ref #	Cause / contributing factor	Barriers to implementation	Opportunities for change	Spatial extent
2.1	Project complexity and costs	Delivery of the fishway at the Lower Werribee Diversion Weir is complex and has interdependencies with other partners. The fishway at Heads Rd is also delayed.	These projects are a high priority and therefore planning for delivery within the next five years should continue.	Lower Werribee Diversion weir (Werribee River Lower sub-catchment) Heads Road Weir (Lang Lang River sub-catchment)
2.2	Uncertainty in progress of physical form SCPOs	Performance expectations for the qualitative physical form SCPOs have not been defined so progress reporting is inconsistent and unclear.	Improve quality of reporting and outline performance expectations for physical form SCPOs.	All but particularly Westernport and Maribyrnong sub-catchments
2.4	Relationship development	In some sub-catchments, the boundaries of the natural watercourse are not always clear. Billabongs that would have been part of the river floodplain have been incorporated into the wider farming landscape making it more difficult to identify and manage these habitats.	A targeted campaign in these sub-catchments to engage landholders could support the delivery of the target over the next five years.	Yallock Creek Floodplain Wetlands & Lang Lang Floodplain Wetlands (Westernport catchment)

Stormwater

High risk areas

Rivers

Table 44. Short-list of SCPOs for stormwater identified as at risk of not meeting the 10-year targets. Colours indicate rating: Orange – HIGH risk of not meeting 10-year target, Red – VERY HIGH risk of not meeting 10-year target, Yellow – planned works show significant progress towards achieving 10-year target but continue to be HIGH risk.

Catchment	Sub-catchment	Harvest (% achieved)	Infiltrate (% achieved)
Maribyrnong	Deep Creek Upper	0%	0%
	Emu Creek	88%	51%
	Jacksons Creek	120%*	81%*
Werribee	Kororoit Creek Lower	71%	0%
	Werribee River Lower	3%	0%
	Werribee River Upper	8%	0%

Catchment	Sub-catchment	Harvest (% achieved)	Infiltrate (% achieved)
Westernport	Cardinia, Toomuc, Deep and Ararat Creeks	19%	1%
	King Parrot and Musk Creeks	20%	0%
	Lang Lang River	0%	0%
	Mornington Peninsula Western Creeks	0%	0%
	Tarago River	0%	0%
Yarra	Brushy Creek	0%	0%
	Little Yarra River and Hoddles Creek	3%	10%
	Olinda Creek	10%	46%
	Plenty River Upper	0%	0%
	Watts River (Rural)	5%	22%
	Woori Yallock Creek	16%	42%
	Yarra River Lower	0%	0%
	Yarra River Middle	0%	1%
	Yarra River Upper (Rural)	9%	32%

**Target under review.*

Summary of Barriers and Opportunities

Table 45. Summary of evaluation findings for Stormwater (not prioritised).

Ref #	Cause / contributing factors	Barriers to implementation	Opportunities for change	Spatial extent
3.1	Timing of delivery	Implementation of large-scale stormwater projects are typically beyond the timeframe of SCPOs in the Strategy.	Forward planning of new business cases and clarity on authorising environment to minimise delays.	Stormwater priority areas
3.2	Clear linkages between guidance and statutory obligations	The mechanism for how guidance is applied to stormwater harvesting and infiltration initiatives is unclear and open to interpretation.	Strengthen requirements to apply best practice measures for new developments.	Stormwater priority areas
3.3	Engagement at project inception	Time constraints during planning process limit the opportunity for stormwater initiatives to be discussed and incorporated into concept plans.	Ensure that stormwater controls are considered at the concept planning phase so that volumes for harvesting or infiltration can be incorporated into the overall design and costing of a large-scale development.	Stormwater priority areas

Ref #	Cause / contributing factors	Barriers to implementation	Opportunities for change	Spatial extent
3.4	Governance	Internal Roles & Responsibilities - Need clarity on how SCPOs for stormwater harvesting and infiltration should be implementation across the value chain and associated accountabilities.	Trial an 'interim governance arrangement' to define roles and responsibilities initially prior to any ongoing BAU arrangement.	Stormwater priority areas
		External Roles & Responsibilities - There is a need to have clear accountabilities and responsibilities for all parties (MW, developers, retailers, councils).	Reinforce stakeholder roles and responsibilities via a 'interim governance arrangement' (as above) to clarify accountabilities of each partner organisation.	Stormwater priority areas
3.5	Internal funding mechanism	Funds are available but the mechanism to permit allocation of these funds is unclear.	An investment framework with clear roles and responsibilities and associated authorising environment to approve spend of required funds.	Stormwater priority areas
3.6	Further technical guidance and tools	Limited understanding and awareness of the types of assets that can deliver the Strategy targets and flexibility for these assets to integrate into the planning process.	Finalise an approved set of stormwater assets with associated standard designs and maintenance regimes.	Stormwater priority areas
3.7	Industry capacity building	Detail on how stormwater industry guidance cascades down into delivery of place-based targets for harvesting and infiltration is still lacking.	Demonstrate what stormwater harvesting and infiltration looks like on the ground so that these types of assets are possible, beneficial and cost effective. Foster champions and pilot projects (e.g. Monbulk Smart tank project).	Stormwater priority areas

Water for the Environment

High risk areas

Rivers

Table 46. Short-list of SCPOs for Water for the Environment that have been identified as at risk of not meeting the 10-year targets. Colours indicate rating: Orange – HIGH risk of not meeting 10-year target, Red – VERY HIGH risk of not meeting 10-year target, Grey – not applicable. Percent complete indicates proportion of 10-year target completed to 2022.

Catchment	Increase reserve volume (% complete)
Maribyrnong	0 %
Werribee	16 %
Westernport	0 %
Yarra	0 %

Wetlands

Table 47. Summary of SCPO progress for Water for the Environment in priority wetlands.

Catchment	Maintain/improve flow regime
Dandenong	Not started in 7 wetlands (out of 11 wetlands). *Braeside Park, Dwarf Galaxias Conservation Wetland, Dwarf Galaxias Habitat Ponds, Hallam Valley Floodplain Wetlands, Tamarisk Waterway Reserve, Tirhatuan Wetlands, Winton Wetlands*
Maribyrnong	In progress. Macedon Ranges Shire Council and Melbourne Water are investigating opportunities to improve the flow regime at the priority wetland in this catchment.
Werribee	Not started in 12 wetlands (out of 19 wetlands). *Cherry Lake, Deanside Marsh, Paynes Road North Swamp, Holden Road Wetland, Kirks Bridge Road West Wetland, Greens Road East Wetland No. 3, West Quandong Swamp, Balls Wetland Complex, Black Swamp, Rabbiters Lake & Swamp, Target Range Swamp, WTP - Paul & Belfrages Wetland*
Westernport	Not started in 4 wetlands (out of 6 wetlands). *Yallock Creek Floodplain Wetlands, Cardinia Creek Retarding Basin Wetlands, Lang Lang Floodplain Wetlands, Tootgarook Swamp*
Yarra	Not started in 4 wetlands (out of 15 wetlands). *Hearnes Swamp, Kalkallo Common, Ringwood Lake, Yarra Bridge Streamside Reserve*

Summary of Barriers and Opportunities

Table 48. Summary of evaluation findings for Water for the Environment (not prioritised).

Ref #	Cause / contributing factors	Barriers to implementation	Opportunities for change	Spatial extent
4.1	Alignment with co-delivery partners	Address differing mandates between partners; waterway manager vs service provider to customers who want licenses.	Melbourne Water, Southern Rural Water, VEWH working collaboratively together. Recognise and reinforce shared goals for environmental flows.	Region wide
4.2	Enforcement	Bans and restrictions not enforced uniformly across region. Some LMR's are not well defined, sometimes data not available to determine when to place restrictions.	MW and SRW have clearly defined rules for when bans are enforced.	All sub-catchments
4.3	Climate change	Water resources are limited. Accelerated rates of climate change mean that the recovery volumes are already insufficient to meet required flow regimes.	Maximise outcomes from existing entitlements and continue to look for opportunities to return water to the environment.	All sub-catchments

Ref #	Cause / contributing factors	Barriers to implementation	Opportunities for change	Spatial extent
4.4	Timing of delivery	The water recovery targets are challenging to deliver within 10-year timeframe due to legal processes and development of infrastructure projects.	Forward planning of new business cases and clarity on authorising environment to minimise delays.	All sub-catchments
23.5	Lack of Environmental Entitlement in Maribyrnong	The Maribyrnong has always struggled to have enough water to support all users and currently has no formal environmental entitlement.	Secure environmental entitlement in this catchment.	Maribyrnong catchment
4.6	Innovative solutions	Shortfall in incentives and/or capital funds to develop innovative solutions to improve flows and increase water volumes for the environment (e.g. water recovery, substitution, reconfiguration, manufactured water).	Implement IWM and manufactured water solutions and return water to the environment opportunistically (e.g. stormwater). Consider linking water efficiency measures into the Rural Land Program for unregulated systems.	All sub-catchments
4.7	Internal resourcing	Melbourne Water need more resources in planning team to coordinate strategically and consistently across agencies.	Include environmental water reps at the table when water resources are planned.	All sub-catchments
4.8	Co-delivery with CGRSWS	Previous failure of CGRSWS to meet recovery targets. Water recovery targets are in the new CGRSWS but there is not enough detail how the plan will be implemented.	Action plan to implement CGRSWS targets to improve efficient and effective delivery of the available allocation.	All sub-catchments
4.9	Passing flows	Rules for passing flows are out-dated and open to interpretation. Need to review how these rules are applied.	Improve the way that passing flows are delivered.	All sub-catchments

Water Quality

High risk areas

Rural land

Table 49. Sub-catchments that have contributed less to achieving the catchment-scale target to date.

Catchment	Sub-catchment	Reduce agricultural run-off
Maribyrnong	Emu Creek*	
	Jacksons Creek	
Werribee	Lerderderg River	
	Werribee River Upper	
Westernport	Cardinia, Toomuc, Deep and Ararat Creeks*	
	Dalmore Outfalls*	
	Mornington Peninsula North-Eastern Creeks*	
Yarra	Diamond Creek (Source)*	
	Olinda Creek	
	Watsons Creek*	
	Watts River (Rural)	

** Sub-catchments that were new to the Rural Land Program in 2018. Colours indicate rating: Orange – HIGH risk of not meeting 10-year target, Red – VERY HIGH risk of not meeting 10-year target.*

STPs

Catchment	STP loads
Maribyrnong	Slightly off-track

Recreational Water Quality

Table 50. Monitoring sites for recreational water quality and associated suitability for recreation based on annual results reported 2021-22. Tick indicates that this recreational use is specified in the SCPO. Green – meets long-term standard. Orange – Does not meet long-term standard.

Catchment	Sub-catchment	Monitoring Location	Primary contact (swimming)	Secondary contact (boating)
Dandenong	Kananook Creek	Kananook Creek at Wells St	✗	✓*
	Dandenong Creek Lower	Patterson River at the National Water Sports Centre	✗	✓

Maribyrnong	**Maribyrnong River**	Maribyrnong River at Brimbank Park	✓	✓
		Maribyrnong River at Canning St Ford	✗	✓
		Maribyrnong River at Ascot Vale West	✗	✓
Werribee	**Cherry Creek**	Cherry Lake at Millers Rd	✗	✓
	Werribee River Lower	Werribee River at Riverbend Park	✓*	✓
Yarra	**Yarra River Lower**	Yarra River at Chandler Hwy	✓	✓
		Yarra River at Warrandyte	✓*	✓
	Yarra River Upper (Rural)	Yarra River at Healesville	✓	✓
		Yarra River at Launching Place	✓	✓

**During dry weather only.*

Summary of barriers and opportunities

Table 51. Summary of evaluation findings for Water Quality (not prioritised).

Ref #	Cause / contributing factors	Barriers to implementation	Opportunities for change	Spatial extent
5.1	**Align MW and CMA functions**	The transition into one organisation is underway but there are further opportunities to combine of CMA and MW functions for an integrated catchment management approach.	Working with rural land-owners to improve multiple environmental outcomes e.g. water quality, riparian vegetation, across various aspects of land management via whole farm planning.	Rural sub-catchments
5.2	Data management and reporting	There are differences in method between how Strategy counts hectares of land improvement compared to CMA data.	Some opportunities to use monitoring tools to determine outcomes of the CMA program to attribute hectares of land.	Rural sub-catchments
		There are also other datasets from other programs (e.g. Landcare, and other key partners that could be integrated into the reporting framework).	Identify other data sources that contribute to catchment target for reducing agricultural runoff.	Rural sub-catchments
5.3	Internal resourcing	There is plenty of demand but the main limitation is human resourcing to process and assess applications, particularly in areas with high interest.	Funding for RLP support officers to assist with processing of applications. Identify efficiencies between existing programs.	Rural sub-catchments
5.4	Relationship development	Engaging with landholders and building trust takes time and resources. It takes time to build relationships and this may take even longer in sub-catchments that are relatively new to the program.	Tap into communities with strong existing networks and/or industry sectors. Stronger alignment with industry sectors to leverage existing sustainability frameworks and targets.	Rural sub-catchments
5.5	Incorrect target	The original data set for Westernport upon which the target was set has been had been incorrectly mapped and calculated.	Update the Westernport target to 7,000Ha.	Westernport

Community

High risk areas

Access and Participation

Table 52. Short-list of SCPOs for community that have been identified as at risk of not meeting the 10-year targets. Colours indicate rating: Orange – HIGH risk of not meeting 10-year target, Red – VERY HIGH risk of not meeting 10-year target, Grey – not applicable. Increase access – percent indicates the length of path (km) required to meet target. Increase participation - percent indicates the number of people required to meet target based on the annual average from 2018-19 to 2021-22.

Catchment	Sub-catchment	Increase access (% complete)	Increase participation (% complete)
Dandenong	Bayside		8%
	Dandenong Creek Lower		65%
	Dandenong Creek Middle	40%	
	Dandenong Creek Upper	0%	
Maribyrnong	Deep Creek Lower	0%	
	Emu Creek	0%	
	Jacksons Creek	5%	25%
	Maribyrnong River	11%	
	Steele Creek	0%	
	Stony Creek		4%
	Taylors Creek		4%
Werribee	Cherry Creek	0%	
	Skeleton Creek		18%
	Werribee River Lower	11%	
Westernport	Bunyip River Middle and Upper	0%	
	Cardinia, Toomuc, Deep and Ararat Creeks	43%	
	Mornington Peninsula North-Eastern Creeks	8%	
	Mornington Peninsula South-Eastern Creeks	0%	
	Mornington Peninsula Western Creeks	5%	
	Tarago River	0%	
Yarra	Brushy Creek		3%
	Gardiners Creek		24%
	Mullum Mullum Creek		7%
	Plenty River Upper	0%	
	Yarra River Lower	14%	

Summary of Barriers and Opportunities

Table 53. Summary of evaluation findings for Community (not prioritised).

Ref #	Cause / contributing factor	Barriers to implementation	Opportunities for change	Spatial extent
6.1	Timing assumption of access delivery	The timing of greenfield development to create new access will not occur with the Strategy timeframe.	Recognise the timing assumptions are incorrect but acknowledge that the target will be met post strategy. Provide an explanation in the HWS annual report on this issue. Revisit assumptions for target development for next Strategy.	Jacksons Creek, Emu Creek, Maribyrnong River, Cardinia, Toomuc, Deep and Ararat Creeks, Werribee River Lower
6.2	Limited public land for access in sub-catchment	Potential for new or improved access in sub-catchments with limited public land available likely to prevent attainment of target.	Recognise that the assumption of the amount of public land in some sub-catchments needs to be corrected and that meeting the target is unlikely. Consider altering specifications as outlined below.	Deep Creek, Mornington Peninsula North-Eastern Creeks, Mornington Peninsula South-Eastern Creeks, Mornington Peninsula Western Creeks, Bunyip River Middle and Upper
6.3	Conflict between social and environmental values	Potentially conflicting SCPOs for different values is limiting progress.	Progress piece of work required under RPO to guide decision making in locations where trade-off between values needs to occur.	Plenty River Upper, Dandenong Creek Upper
6.4	Funding	Melbourne Water funding is constrained to directly increase or improve access which limits opportunity to influence other organisations access priorities.	Consider different levers to help fund multi-benefit river health projects with access improvements.	All sub-catchments but particularly Steele Creek and Werribee River Lower
		A reduction in the investment into the current programs is a risk to sustaining and increasing participation.	Sustained funding for community programs over the next five years.	All sub-catchments
6.5	Access SCPO specification	Access specification limiting attribution for access in non SCPO sub-catchments.	Alter specification to provide flexibility for new access projects in non SCPO catchments to be counted towards the catchment target.	All sub-catchments
6.6	Securing participation data	Sourcing participation data from other organisations is challenging due to the resourcing, processes and data quality required.	Investigate potential additional data sources and prioritise effort and resources on securing data to fill major gaps.	All sub-catchments
6.7	Incentive process	New incentive process and software has impacted the number of applications.	Evaluate and improve the incentive process to make it easier for landholders and community to apply.	All sub-catchments
6.8	Community incentives	Less community groups are applying for incentives (and therefore there is less participation) for a variety of reasons.	Consider a targeted campaign and support to encourage community groups to apply for incentives.	All sub-catchments

Appendix 12 RESULTS POs for Review

Outcomes

Stakeholders have identified issues with 21 river, seven wetland and two estuary Performance Objectives that potentially require alteration (Table 54) The Science Inquiry recommendations highlight an additional 10 issues where performance objectives could be developed or altered to improve on-ground action and reporting.

A review of the Traditional Owner Regional Performance Objectives will be undertaken separately through a self-determined process with the intention that reflection on progress will be the outcome.

Traditional Owner reflections on Regional Performance Objectives may recommend that changes be made to the wording of the RPO's. There may also be specific sub-catchment performance objectives added to HWS catchment programs to reflect and align with the work they are leading across the region.

In accordance with advice from DEECA, agreement to the changes will be made through consultation with relevant stakeholders. Changes will be communicated clearly via updating the HWS website and through a brief, stand-alone communication on the changes (published on the website). The Rivers, Wetland and Estuaries Monitoring and Evaluation Plans will also be updated to reflect the changes made.

For issues where stakeholder consultation is considered feasible within the mid-term review time frame, it's recommended that changes are made to improve the accuracy of reporting and to provide transparency. Where stakeholder engagement was not feasible over the mid-term review time frame, POs will not be changed. However, a narrative to explain changed circumstances or issues will occur via the HWS Annual Report.

One way to improve the way that progress is being reported is to update the target specifications. For example, altering the access target specification so that new or improved waterway access in excess of the sub-catchment target can contribute toward catchment scale targets. Similarly, participants in events and social media that cannot be attributed to a sub-catchment or catchment (but can be attributed to the region) could be divided across the five major catchments or 69 sub-catchments according to the proportion of resident population.

Changes to target specifications are not included as recommendations in the mid-term review as target specifications are often periodically adapted to reflect improved tracking over time and to better acknowledge the contributions of partner organisations to overall targets.

There are other examples of modification to target specifications that could be explored further to better align program contribution across stakeholder organisations. For example, the Water Stewardship Program run by the Westernport Biosphere works with property owners to develop and implement plans to improve water quality in rivers and streams in the catchment and the Westernport Landcare Network works with participants to improve land management under the Smart Farms Program. Whilst both programs contribute to participation targets, neither currently contributes to the Westernport catchment 'improve agricultural run-off' target because target mapping does not align with the HWS target specification. Opportunities to explore improved target alignment would better reflect the contributions made by multiple organisations.

Table 54. Summary of PO's flagged for review by stakeholders.

Waterway	Group	PO type	Issue type	Number of PO's
Rivers	Water for the Environment	Maintain /improve flow regime	PO location or wording not appropriate	1
		Increase reserve volume	PO missing	1
			PO unclear/ too broad	7
	Stormwater	Harvest and Infiltrate	PO numerical targets incorrect	2
			PO missing	1
	Habitat	Protect specific habitat	PO location or wording not appropriate	2
	Water Quality	Reduce industrial run-off	PO location or wording not appropriate	1
		Reduce agricultural run-off	PO numerical targets incorrect	1 catchment target
			PO missing	2
		Maintain for recreational use	PO wording or location not appropriate	3
		Reduce STP load	PO missing	1
Wetlands	Water for the Environment	Maintain/improve flow regime	PO wording or location not appropriate	1
			PO unclear/ too broad	1
	Stormwater	Maintain systems	Inappropriate group/theme	1
		Build systems	PO wording or location not appropriate	1
	Vegetation	Establish buffers	PO wording or location not appropriate	1
		Protect/maintain/improve		1
	Habitat	Manage pests	PO wording or location not appropriate	1
Estuaries	Vegetation	Protect/maintain/improve	Inappropriate group/theme	1
	Water for the Environment	Maintain/improve flow regime	PO wording or location not appropriate	1

A summary of the recommendations raised through the Science Inquiry is presented in Table 55. A further breakdown of proposed changes to POs at mid-term is provided in Table 56. Changes identified through the Science Inquiry should be considered as part of the response report process.

Table 55. Summary of performance objective related recommendations from the Science Inquiry.

Value/Condition	
Vegetation	Prioritise locations for deer management using modelling and field data and consider developing targets and metrics for annual reporting.
	Review additional high quality vegetation sites (not currently included in performance objectives) identified through the VV18 and VV21 datasets and determine if they should be added to existing performance objectives or whether new ones are required.
Frogs	Review location of performance objectives for Bibron's toadlet and add new priority sub-catchments where data indicates populations are more likely to be present.
Social Values	Develop social values performance objectives and targets for priority wetlands. Consider the potential for conflicting impacts between social and environmental values on different wetland typologies
	Utilise data from the implementation of the new litter monitoring method to validate threat rating and identify litter prioritisation hotspot spatial analysis. Ensure high litter areas are reported either through the RPO or consider the addition of sub-catchment PO's.
Water for Environment	Consider improved ways of assessing and reporting on the delivery of existing environmental entitlements and allocations on the strategy website to allow greater transparency and progress tracking.
Water Quality	Develop indicators and rubrics for construction runoff to ensure progress can be more quantitatively assessed for these performance objectives.
	Review the location of performance objectives for managing run-off from industrial areas and associated water quality impacts and develop indicators, targets and/or quantitative metrics for assessing progress, including the required actions necessary to achieve sub-catchment and regional targets. Further develop spatial mapping of existing and future hotspot areas for industrial pollution. Consider the development of a 'toolkit' for structural and non-structural management options in industrial estates.
Wetlands, headwaters and floodplains	Strengthen reporting on the need for protection of natural wetlands from the specific threat of urban development. Consider the addition or alteration of RPOs.
	Ensure new regional priority wetlands identified since 2018 (that do not have performance objectives) are managed to maintain existing values for example risk-based predator control.

Table 56. Breakdown of changes to PO's proposed for the Mid-term Evaluation.

Group – PO type	Issue type	Waterway type	Catchment -and Sub-catchment	Existing Performance objective	Issue description	Proposed change to PO	Key stakeholders consulted	PO unique ID
Water for the Environment – Increase reserve volume	PO unclear/ too broad	Rivers	Werribee -Werribee River Middle Werribee -Upper Werribee River Westernport -Tarago River Yarra – Watts River (Source) Yarra River Middle Yarra River Upper (Rural) Yarra River Upper (Source)	Environmental water recovery targets are captured at lowest downstream sub-catchment (*Werribee River Lower/Bunyip River Lower/Yarra River Lower*), which reflects targets for whole catchment.	This is not clear as a target and requires that people search across the website to find the target.	Change PO wording to align with the *Werribee River Lower, Bunyip River Lower and Yarra River Lower* sub-catchment wording. 'Investigate options to increase the environmental water reserve by 7 GL by 2028 to meet ecological watering objectives and cover projected shortfalls in the Werribee catchment'. "Investigate options to increase the environmental water reserve by 1 GL by 2028 to meet ecological watering objectives and cover projected shortfalls in the Westernport catchment". Identify and implement opportunities to increase environmental water reserve by 10 GL by 2028 to meet ecological watering objectives and cover projected shortfalls in the Yarra catchment.	MW E flows team	341 350 587 842 865 875 884
Water for the Environment – Increase reserve volume	Missing PO in HWS	Rivers	Yarra – Watts River (Rural)	No existing PO. Needs to add to align with other similar PO's in relevant sub-catchments downstream of reservoirs.	PO was missed in the original HWS. Add new PO so there are increase reserve volume POs in Watts River Rural and Source sub-catchments, consistent with Yarra River Upper (Rural) and Yarra River Upper (Source), Yarra River Middle and Yarra River Lower.	Add PO 'Identify and implement opportunities to increase environmental water reserve by 10 GL by 2028 to meet ecological watering objectives and cover projected shortfalls in the Yarra catchment'.	MW E flows team	New PO 959

Group – PO type	Issue type	Waterway type	Catchment -and Sub-catchment	Existing Performance objective	Issue description	Proposed change to PO	Key stakeholders consulted	PO unique ID
Water for the environment - Maintain/ improve flow regime	PO location or wording not appropriate	Wetlands	Dandenong - Eumemmerring Creek - Dwarf galaxias Conservation Wetland, Cranbourne Road, Narre Warren	Maintain critical water regime components in wetlands along Eumemmerring Creek to protect wetland environmental values, Yarra pygmy perch and dwarf galaxias.	Yarra Pygmy Perch do not occur here. The wetland isn't located along Eumemmerring Creek (but it is located in the Eumemmerring Creek sub-catchment).	Change PO wording to 'Maintain critical water regime components in wetlands in the Eumemmerring Creek sub-catchment to protect wetland environmental values including dwarf galaxias.	Will Steele MW	108
Water for the environment - Maintain/ improve flow regime	PO location or wording not appropriate	Wetlands	Werribee Kororoit Creek Lower - Deanside Marsh, Rockbank	Maintain the current water regime, and ensure that future urban stormwater is not diverted into the two last remaining wetlands.	PO wording not appropriate anymore.	Change PO wording to 'Manage the effects on the wetland of recovering stormwater, through actively managing the wetland water regime.'	Kathy Preece, Sara Johnson, Will Steele (MW)	362
Water for the environment - Maintain/ improve flow regime	PO location or wording not appropriate	Estuaries	Werribee -Little River Lower - Little River Estuary	Maintain critical flow components in refuge reaches to protect instream environmental values and platypus.	Platypus don't use estuaries as permanent habitat. No PO's in Rivers specific for platypus because no population known. No platypus have been captured in the catchment for a decade. eDNA recently detected platypus in the sub-catchment but likely to be vagrant or issues with new eDNA method.	Delete PO.	Trish Grant (MW)	483

Group – PO type	Issue type	Waterway type	Catchment -and Sub-catchment	Existing Performance objective	Issue description	Proposed change to PO	Key stakeholders consulted	PO unique ID
Stormwater – Harvest	PO numerical targets incorrect	Rivers	Maribyrnong – Jacksons Creek	For every hectare of new impervious area, harvest 4.5 ML/y. This equates to 400 ML over the life of the HWS.	Estimate of 10-year target is incorrect	Revise and update target in PO.	MW staff, Interagency Stormwater working group	209a
Stormwater – Infiltrate	PO numerical targets incorrect	Rivers		For every hectare of new impervious area, infiltrate 1.1 ML/y. This equates to 96 ML over the life of the HWS.	Estimate of 10-year target is incorrect.	Revise and update target in PO.	MW staff, Interagency Stormwater working group	209b
Stormwater – Harvest	PO numerical targets incorrect	Rivers	Yarra – Yarra River Middle	For every hectare of new impervious area, harvest 5.1 ML/y. This equates to 314 ML over the life of the HWS.	Targets include upstream sub-catchments and need to more accurately just represent the sub-catchment.	Revise and update target in PO.	MW Interagency Stormwater working group	866a
Stormwater – Infiltrate	PO numerical targets incorrect	Rivers		For every hectare of new impervious area, infiltrate 1.6 ML/y. This equates to 97 ML over the life of the HWS.	Targets include upstream sub-catchments and need to more accurately just represent the sub-catchment.	Revise and update target in PO.	MW Interagency Stormwater working group	866b
Stormwater – Harvest	Missing PO in HWS	Rivers	Werribee – Kororoit Creek Upper	No existing PO.	Priority area but PO was missed in HWS.	Add new PO, to read 'For every hectare of new impervious area, harvest 3.8 ML/y. This equates to 86 ML over the life of the HWS'.	MW staff, Interagency Stormwater working group	New 957a
Stormwater – Infiltrate	Missing PO in HWS	Rivers		No existing PO.	Priority area but PO was missed in HWS.	Add new PO to read 'For every hectare of new impervious area, infiltrate 0.7 ML/y. This equates to 15 ML over the life of the HWS'.	MW staff, Interagency Stormwater working group	New 957b

Group – PO type	Issue type	Waterway type	Catchment -and Sub-catchment	Existing Performance objective	Issue description	Proposed change to PO	Key stakeholders consulted	PO unique ID
Stormwater - Build systems	PO location or wording not appropriate.	Wetlands	Yarra - Yarra River Middle - Domain Chandon Billabongs	Implement urban stormwater improvements upstream to reduce water quality threat to wetland.	PO not appropriate in this rural catchment (no urban stormwater).	Delete PO.	MW staff Sarah Gaskill (billabongs) Alison Rickard (stormwater wetlands), Will Steele (wetlands), Trish Grant (WQ)	912
Stormwater Build systems	PO location or wording not appropriate.	Wetlands	Yarra - Merri Creek Lower - Growling Grass Frog Reserve wetlands	Implement urban stormwater treatment measures in the catchment to reduce the threat of poor water quality in the Growling Grass Frog Reserve wetlands.	GGF Masterplan Program doesn't operate in this catchment.	a. Move the GGF wetland to the spot on the map layer to where GGF prog is working in Merri Creek Upper. b. Change PO to Habitat group as no stormwater impacts. or Report that urban stormwater is not appropriate as a use for GGF and can describe that bores are being used. Or Rephrase to 'Deliver rolling program of GGF habitat creation and .enhancement for the Victorian state government as part of the Melbourne Strategic Assessment.'; delete 'in the catchment' and change to 'in the GGF Conservation Area'.	Kathy Preece, Sara Johnson, Will Steele, Trish Grant.	900

Group – PO type	Issue type	Waterway type	Catchment -and Sub-catchment	Existing Performance objective	Issue description	Proposed change to PO	Key stakeholders consulted	PO unique ID
Water Quality – Maintain STP Load	Missing PO in HWS 2018	Rivers	Werribee – Werribee River Lower	No existing PO.	Surbiton Park Wastewater Treatment Plant was not included in HWS development – it has no permanent discharge license and is planned to fully used as recycled water source so potentially it was thought to not be necessary to include. However feedback is that it makes sense to include it as discharges are released to the river from time to time when storage onsite capacity is exceeded and customer demand is low.	Add new PO for sub-catchment and catchment. 'Protect water quality for Port Phillip Bay and waterways by limiting unlicensed discharges to waterways from Surbiton Park Recycled Water treatment plant, and ensuring that any discharges are released in a manner that ensures environmental values are supported in the waterway.'	Greater Western Water (Nigel Corby)	New 958 (catchment PO 1130)
Water quality – Reduce agricultural run-off	Missing PO in HWS	River	Yarra – Diamond Creek (Rural)	No existing PO.	Priority area has been identified in map but PO was missed in Diamond Creek (Rural) sub-catchment.	Add new PO to sub-catchment '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'.	MW Rural Land Program staff Trish Grant MW	New 960
Water quality – Reduce agricultural run-off	Missing PO in HWS	Rivers	Yarra – Plenty River (Source)	No existing PO.	Priority area has been identified in map but PO was missed in Plenty River (Source) sub-catchment.	Add new PO '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'.	MW Rural Land Program Trish Grant MW	New 961

Group – PO type	Issue type	Waterway type	Catchment -and Sub-catchment	Existing Performance objective	Issue description	Proposed change to PO	Key stakeholders consulted	PO unique ID
Water quality – Reduce agricultural run-off	PO numerical targets incorrect	Rivers	Westernport	Reduce nutrient and sediment run-off from rural land through improved management of 16,000 ha of land including works to protect and increase vegetation along headwater streams.	Target for Westernport catchment was mis-calculated in HWS. Errors have been identified and documented and improvements made in target setting approach. This is further outlined in 'Review of Performance Objectives for the Mid-term Evaluation'.	Revise and update target in catchment scale PO. Reduce nutrient and sediment run-off from rural land through improved management of 7,000 ha of land including works to protect and increase vegetation along headwater streams.	MW Rural Land Program and integrated CMA programs, Westernport Biosphere	1066
Water quality - Maintain for recreational use	PO location or wording not appropriate.	Rivers	Yarra - Yarra River Middle	Protect recreational water quality in the Yarra River to support existing recreational activities.	Should be Yarra River Lower (no monitoring occurs in Yarra Middle).	Move PO to Yarra River Lower sub-catchment.	EPA Trish Grant MW	870
Water quality - Maintain for recreational use	PO location or wording not appropriate.	Rivers	Yarra - Yarra River Middle	Protect water quality for key recreation areas on the Yarra - characterise, communicate and mitigate sources of microbial risk.	Should be Yarra River Lower (no monitoring occurs in Yarra Middle).	Move PO to Yarra River Lower sub-catchment.	EPA Trish Grant MW	871
Water quality - Maintain for recreational use	PO location or wording not appropriate.	Rivers	Yarra - Yarra River Upper (Source)	Protect water quality for key recreation areas on the Yarra, characterise, communicate and mitigate sources of microbial risk.	Should be Yarra River Upper (Rural) (no monitoring occurs in Upper Yarra Source), but there is already a PO there, so delete this one.	Delete PO.	EPA Trish Grant MW	890

Group – PO type	Issue type	Waterway type	Catchment -and Sub-catchment	Existing Performance objective	Issue description	Proposed change to PO	Key stakeholders consulted	PO unique ID
Vegetation – Protect/ maintain/ improve	PO location or wording not appropriate	Wetland	Dandenong -Kananook Creek – Tamarisk Waterway Reserve, Langwarrin	Ensure appropriate aquatic macrophyte habitat is protected in the habitat ponds.	Area is managed and known for swamp skink. A dwarf galaxias survey was conducted and they are not present. Delete reference to habitat ponds; change to manage vegetation for swamp skink (they prefer the woodland on site not macrophytes).	Change PO wording to 'Ensure appropriate habitat for swamp skink is protected'.	Will Steele (MW)	138
Vegetation - Establish buffers	PO location or wording not appropriate	Wetlands	Werribee Kororoit Creek Lower - Deanside Marsh, Rockbank	Increase wetland buffer to 50 per cent of the wetland perimeter.	This is Growling Grass Frog habitat and any revegetation should be appropriate for the species (i.e. Grassland species, limited woody species).	Change PO wording to 'Increase wetland buffer to 50 per cent of the wetland perimeter in accordance with the Melbourne Strategic Assessment Growling Grass Frog Habitat Design Standards (2017)'.	Will Steele, Kathy Preece, Sara Johnson, Trish Grant (MW).	360
Vegetation - Establish buffers	PO location or wording not appropriate.	Wetlands	Yarra - Merri Creek Lower - Growling Grass Frog Reserve wetlands	Improve wetland buffer to 50 per cent of the wetland perimeter.	GGF Masterplan work will be in the Merri Creek Upper sub catchment.	Move the GGF wetland location to the spot where GGF program is working at moment in Merri Creek Upper. Move PO wording to Merri Creek Upper.	Kathy Preece, Sara Johnson, Will Steele, Trish Grant.	901
Habitat - Manage pests	PO location or wording not appropriate	Wetlands	Werribee -Lollypop Creek - Western Treatment Plant - Paul & Belfrages Wetland	Reduce invasive flora threat to low focusing on salt tolerant weeds in saltmarsh communities.	Saltmarsh vegetation not appropriate for this inland site.	Change PO to 'Reduce invasive flora threat to low'.	Heather Graham (MW WTP) Will Steele (MW)	408

Group – PO type	Issue type	Waterway type	Catchment -and Sub-catchment	Existing Performance objective	Issue description	Proposed change to PO	Key stakeholders consulted	PO unique ID
Habitat - Protect specific habitat	PO location or wording not appropriate.	Rivers	Werribee - Kororoit Creek Lower	Target three areas (min. 2 ha) for habitat improvement for Bibron's toadlet.	Investigations show no suitable opportunities for habitat enhancement/ protection for Bibron's Toadlet in this sub-catchment.	Move PO to Lerderderg sub-catchment (Werribee catchment) where suitable habitat is available.	Will Steele (MW)	267
Habitat - Protect specific habitat	PO location or wording not appropriate.	Rivers	Werribee - Kororoit Creek Upper	Target three areas (min. 2 ha) for habitat improvement for Bibron's toadlet.	Investigations show no suitable opportunities for habitat enhancement/ protection for Bibron's Toadlet in this sub-catchment.	Move PO to Merri Creek Upper sub-catchment (Yarra catchment) where suitable habitat is available.	Will Steele (MW)	274

Appendix 13 RESULTS Directions from the Evaluation of Collaboration

Drawing on the findings and insights of the evaluation of collaboration and co-delivery, the evaluator (Clear Horizon) has made four overarching directions - primarily focused on Melbourne Water in its role as the lead facilitator of Strategy implementation over the next five years. These are presented below, together with a short rationale for each. Also presented below in Table 57 are a series of PO group specific directions, made by the evaluator.

Four overarching directions of the evaluation

1. Melbourne Water to embrace and strengthen its role as the Strategy lead, including its role as leading the coordination of co-delivering the Strategy.

This first area responds to the findings that collaboration and co-delivery require a leader to co-ordinate and, to date, there has not been sufficient leadership or coordination to drive the co-delivery of the Strategy. There is an opportunity for Melbourne water to more fully deliver on its commitment to take 'the lead role in facilitating co-delivery with all partners' (HWS, p6) and 'lead the collaborative implementation of Co-Designed Catchment Programs' (HWS, p13).
It is appropriate for Melbourne Water to take up this Strategy lead role due to its statutory responsibility for waterway management and the development and implementation of the Strategy.

2. In their role as Strategy lead, Melbourne Water need to facilitate the collaborative development of supporting structures and processes to advance collaboration and co-delivery throughout the remaining implementation period, including:

a. Establish a collaboration framework to support understandings of, and decisions about, collaboration and co-delivery, including definitions and descriptions of the spectrum of collaboration types, and guidance about when and how each should be applied. This should include processes for understanding the enabling conditions for collaboration, the different scales of collaboration required, and guidance for piloting different models and approaches to collaboration and co-delivery

b. Establish collaboration plans that clarify the roles, responsibilities and accountabilities for the co-delivery of the Strategy and Catchment Programs both within Melbourne Water and across Strategy Partners (beyond the statutory commitments made within the Strategy), and

c. Pursue opportunities to align internal funding processes and resources to support and enable collaboration and co-delivery.

This second area responds to the findings that a lack of clear and consistent guidance about what constitutes collaboration under the Strategy and how and when it should be done, coupled with widespread confusion about roles, accountabilities and responsibilities as well as internal processes and systems, has significantly hindered co-delivery. There is an opportunity to take what has been learnt through implementation to date and use it to develop context-specific guidance that will provide a clearer structure for the remaining implementation work. For example, recognising that certain enabling conditions are crucial for place-based collaborations to succeed, and that when those conditions are not in place stakeholders should focus on either establishing the conditions, or simply selecting a different type of collaboration.

3. In their role as Strategy lead, Melbourne Water need to determine how to effectively co-deliver the Strategy at multiple geographic scales, and plan for this to occur. This should include consideration of:

a. The respective roles for place-based, whole of catchment and regional co-delivery, and what is required to enable them.

This direction responds to the findings that co-delivery to date has mostly not occurred at the catchment level (as was originally intended with the Co-designed Catchment Programs) and collaboration projects operating at smaller place-based scales as well as the regional scale are seen as having significant potential to deliver meaningful results. There is an opportunity to build on the original intent of the Strategy, as well as what has been learnt to date through place-based and regional-scale collaborations and consider how collaboration may be applied through the full range of geographic scales to enable the achievement of holistic on-ground outcomes.

4. **In their role as Strategy lead, Melbourne Water need to continue building and embedding a culture of collaboration both internally and with partners, including via the establishment of:**
    a. Building the collaborative skills and, mind-set and capabilities of staff, especially those in leadership positions
    b. Establishing peer learning opportunities and forums to facilitate knowledge sharing and collective learning about what is working and what is not in relation to collaboration and co-delivery, and to nurture the collaborative mind-set, and
    c. Drawing on the wide body of expertise and evidence to guide effective collaboration, such as through establishing an expert panel for collaboration.

This direction recognises that the Strategy presents collaboration and co-delivery as a novel and essential approach to achieving its visions and acknowledges that implementation will require a transformative shift in culture and mind-sets, not just systems and processes. It builds on the findings that the work done to date generated significant insights and lessons for those involved, and that providing opportunities for knowledge sharing and peer learning can help to ensure that future implementation adapts and responds to evidence of what is working, and what is not. There is an opportunity to better embed the specific collaborative skill-set and wider body of evidence and theory to continue to inform and improve Melbourne Water and its partners' approach to co-delivery. The 'expert panel' structure is already familiar to and used by Strategy stakeholders, and it may be appropriate to use this approach for collaboration (as suggested by an interviewee).

HWS PO group specific directions of the evaluation

Table 57. PO group specific directions from the evaluation of collaboration and co-delivery

PO group	Recommendations to consider
Stormwater	• A single Melbourne Water position on the Healthy Waterways Strategy stormwater targets. • Melbourne Water to take the leadership role in facilitating Strategy co-delivery. • Melbourne Water to establish clear internal leadership accountabilities for progressing the Stormwater targets to establish the authorising environment to support ongoing officer-level collaborations. • Build a culture of collaboration that includes engaging with and sharing risk with co-delivery partners. • Establish a formal mechanism for engaging industry on Strategy co-delivery. • Establish clear roles and responsibilities for co-delivery with executive buy-in across partners that align with their priorities and agendas.
Water for the Environment	• Establish clear internal leadership accountabilities for progressing the Environmental Watering targets to establish the authorising environment internally to support collaboration. • Continue to actively participate, collaborate and advocate for environmental water recovery through the IWM forums and seek to influence state-level strategies and policies. • Build collaborative relationships at the executive level with urban and rural water authorities to provide the leadership and authorising environment necessary for IWM officers across organisations to seek opportunities to collaborate on shared agendas.
Litter and Pollution	• Seek to engage stakeholders with sufficient seniority and authority when undertaking region-level collaboration. • Continue to seek and support opportunities for collaborative projects where the enabling conditions are in place. • Seek opportunities to align the Strategy with stakeholders' own strategic priorities.
Community Places (Chain of Ponds)	• Continue to seek and support opportunities for collaborative projects where the enabling conditions are in place. • Continue to evaluate and document the outcomes and learnings from the Chain of Ponds collaboration, possibly using a place-based evaluation approach. • Seek opportunities to share the learnings and insights from this collaboration both within Melbourne Water and among its partners, so that opportunities for similar place-based collaborations may be capitalised upon and other collaborations can learn from what has been achieved.
Vegetation and Pests (Deer)	• Engage councils through the Catchment Implementation Forums. • Balance engaging motivated partners in locations outside of priority areas, with un-motivated partners in high priority areas.

Appendix 14 CGRSWS Actions

Actions and polices from the Central and Gippsland Region Sustainable Water Strategy relating to HWS Water for the environment and Stormwater PO groups.

Actions and policies related to Stormwater targets and IWM

- Policy 3-2: Clarifying roles and responsibilities for delivering IWM outcomes (i.e. the Victorian Government will clarify existing roles and responsibilities to ensure the water, land-use planning and urban development sectors can deliver on IWM outcomes).
- Action 3-4: Investigating options for large-scale recycled water and treated stormwater networks in Greater Melbourne.
- Policy 3-3: Contribute to achieving the targets in the catchment-scale IWM plans.
- Action 3-8: Use of recycled water and stormwater for greener, open spaces.
- Action 3-12: Improving stormwater regulations to support increased capture and use. The Victorian Government will work with water corporations and councils to review statewide stormwater licensing and supply arrangements and determine preferred statutory and non-statutory implementation options.
- Action 3-13: Implement Melbourne Urban Stormwater Institutional Arrangements (MUSIA).
- Action 3-15: Develop a stormwater offsets framework. The Victorian Government will develop a stormwater offsets framework to enable robust and consistent application of offsets for developers and local governments to meet stormwater requirements in the Victoria Planning Provisions.

Actions and policies related to water recovery targets

- Action 4-1: Investigate options to return water to the environment and Traditional Owners as manufactured water sources are planned for Greater Melbourne and Geelong.
- Action 4-2: Commitment to consider how river entitlements can be reduced via water efficiency, IWM and substitution with manufactured water sources.
- Action 4-11: Investigating optimisation of Yarra system passing flow arrangements.
- Action 8-11: Improving the health of the Mirrangbamurn (Maribyrnong River) (The Victorian Government will improve the health of the Mirrangbamurn (Maribyrnong River), increase the effectiveness of environmental water releases and address constraints to their delivery by exploring options to: upgrade Rosslynne Reservoir outlet to allow larger releases of environmental water).
- Action 8-3: Improve flows in Stony Creek.
- Action 8-10: Improve fish passage in the Wirribi Yaluk (Werribee River).

Actions and policies related to unregulated systems

- Action 4-13: Review of water resource risks in small, dry, peri-urban catchments. (Southern Rural Water will lead a project over two years to review resource risk and share evidence and reporting to build a shared understanding with communities on the risks, consequences and mitigation options we can use to address the increasing effects of small catchment dams).
- Action 4-18: Updating groundwater management arrangements and implementing priorities for reform. (The Department of Environment, Land, Water and Planning and rural water corporations will lead a staged approach to improve state-wide groundwater management and licensing for the future).
- Policy 4-6: Continuing to improve information about water management rules and compliance. (The Victorian Government will work with Melbourne Water and Southern Rural Water to ensure that licence holders and the community have access to consistent and accessible information about water management rules, including licensing and compliance arrangements, so that the framework for managing water resources in specific systems is clear.)
- Policy 7-1: Maximising water efficiency in agriculture. (The Victorian Government will continue to invest in improvements to agricultural water-use efficiency and best-practice land and water management. This will be achieved by helping irrigators continue to use water wisely, with targeted extension and support for on-farm changes and more information on making the most of their water.

Appendix 15 Mid-term Review Panel Charter

Extract from Group Charter

This charter sets out terms of reference and working arrangements for the Healthy Waterways Strategy mid-term review Evaluation Panel. Below we provide an extract that outlines the background, roles and responsibilities of the panel.

Background

Melbourne Water is the waterway manager in the Port Phillip and Westernport region and is periodically required to develop a Regional Waterway Strategy under the Water Act 1989. The Healthy Waterways Strategy (HWS) was developed in 2018 through a collaborative process led by Melbourne Water with participation by government agencies, stakeholders and the community. The HWS is a co-delivered strategy, led by Melbourne Water but contributed to by a range of other partner agencies and the community. It is overseen by a Region-wide Leadership Group (RLG) which includes key delivery partners.

The HWS website provides an overview of the HWS along with links to key documents, an annual report card to track progress and information on the science underpinning the HWS such as pages on each of the key values and condition.

In collaboration with HWS delivery partners, Melbourne Water has developed a monitoring, evaluation, reporting and improvement (MERI) framework and monitoring and evaluation plans (MEP's) for rivers, wetlands and estuaries to enable evaluation and reporting on activities and progress towards targets and outcomes. The strategy is in place for 10 years (2018-2028) and the MERI outlines two opportunities for review - at mid-term (2022) and end-of-Strategy review (2026).

There are two internal governance groups in Melbourne Water; the Internal Working Group (IWG) comprised of managers across relevant parts of the business and the Internal Steering Group (ISG) who are General Managers across waterways delivery and planning. Communication of the mid-term review process and key findings to these groups is critical for the review to be constructive and successful and to drive the progress of the strategy.

The RLG is a multi-agency group which is tasked with overseeing the implementation of the HWS. With respect to the mid-term evaluation the RLG will endorse the evaluation plan, champion involvement of members of their organisations and respond to evaluation by enabling implementation of evaluation recommendations.

Mid-term Review Focus

Key focus areas for mid-term review will be:

- Using available data and analyses to determine (where possible) whether key values and conditions are on the target trajectory
- The extent to which collaboration and co-delivery contribute to strategy implementation, and
- How the latest data and research can help to inform decision making.

The outcomes of the mid-term review are anticipated to drive the improvement, efficiency and effectiveness of strategy implementation as well as increase preparedness for end-of-Strategy evaluation.

As outlined in the mid-term review plan, which has been endorsed by the RLG, the focus on this evaluation is to:

1. Evaluate the effectiveness and appropriateness of implementation
2. Assess the potential for achieving targets at the end of strategy
3. Check that assumptions and external conditions that underpinned the strategy development have not changed, and
4. Identify remaining knowledge gaps.

To meet these objectives the evaluation will include a Science inquiry, an Implementation Inquiry and an formal Response.

The Science Panel, which was established when the HWS was being developed, has been reformed to support the mid-term evaluation. It will be referred to as the HWS Evaluation Panel. While the panel will focus largely on the Science inquiry it will also contribute to the Implementation inquiry. The mid-term review will be coordinated by the Waterways and Biodiversity Planning team at Melbourne Water. The HWS Evaluation Panel is not responsible for the conduct of the evaluation, however the panel has a review role and will provide advice to the evaluation coordinator(s), Melbourne Water governance groups and Regional Leadership Group on the evaluation process and findings including recommendations for operationalising findings and addressing knowledge gaps.

Role and Responsibilities

Role

- Review evaluation plan and provide feedback.
- Critique science to ensure evidence is credible and explicit evaluative reasoning is applied.
- Prioritise and finalise recommendations for Science Inquiry and Implementation Inquiry.
- Endorse the Science Inquiry and implementation Inquiry final Reports.
- Communicate to RLG about findings from both enquiries.

The responsibilities of the HWS Evaluation Panel include:

- Providing critical, independent expertise to help distil the findings of the evaluation process into key priorities and recommendations
- Assessing whether the evidence for the trajectory of a key value or condition is sufficient to inform a change in direction for HWS implementation
- Exploring and recommending options to operationalise findings
- Checking in on key strategy assumptions and the feasibility of integrating new insights
- Attending meetings as required and reviewing associated briefing materials, papers and outputs including the Science Inquiry Report, and
- Entering into robust, constructive discussion with other panel members to collaboratively come to conclusions, drawing on group experience and knowledge with a view to informing and guiding the practical implementation of the strategy moving forward.

The HWS Evaluation Panel's role in developing the Science Inquiry Report is to:

- Contribute to and endorse the table of contents
- Discuss the findings presented to the Panel and provide recommendations to ensure the information has sound reasoning, the evidence used is credible and that any limitations or uncertainties associated with the analysis are explicit
- Discuss what is important for the relevant HWS governance groups to consider for implementation. Review the draft report and recommendations and provide input to finalise the Science Inquiry Report
- Recommend priorities for further knowledge gathering to refine assumptions, fill knowledge gaps improve confidence and inform current and future evaluation, and
- Agree on how to communicate findings to relevant governance groups (i.e. RLG and IWG/ISG).

The Evaluation Panel's role in the Implementation Inquiry Report is to:

- Ensure the findings of the Science Inquiry are considered in the Implementation Inquiry where relevant
- Provide feedback on the findings of the inquiry report particularly with respect to any matters relating to the Science Inquiry
- Review and endorse any recommendations for changes to performance objectives or catchment targets which stem from the mid-term review, and
- Provide advice on specific findings of the implementation inquiry report as requested by Melbourne Water's Team Leader and Principal, Waterways.

Additional Responsibilities of Chairperson

The Chairperson will play a crucial leadership role in ensuring that the HWS Evaluation Panel operates effectively. The role will require the Chair to:

- Guide the conduct of all HWS Evaluation Panel Members
- Work closely with the Melbourne Water project team to ensure the HWS Evaluation Panel achieves the outcomes sought to inform the mid-term review process
- In conjunction with Melbourne Water project team, plan for each meeting/workshop and prepare an agenda, outlining topics and issues to be discussed, posing questions for members to consider prior to the workshop
- Effectively chair meetings and workshops in a timely manner, involve the views of all members and remain outcomes focused
- Keep discussion specific to the subject, drawing out real outcomes and suggestions
- Facilitate effective communication between the panel members and the Melbourne Water project team.
- Provide regular feedback to panel members on their performance in contributing to HWS Evaluation Panel objectives
- Actively engage panel members during and outside meetings to resolve any issues
- Present panel recommendations and priorities to IWG and RLG if required and
- Lead a process with panel members to provide reflection on the mid-term review process and how it can be improved for the end-of-Strategy review.

Responsibilities of Melbourne Water

- Melbourne Water is ultimately accountable for decision making in relation to the HWS Science Portfolio and the mid-term review.
- Provide all administrative and secretariat support to the HWS Evaluation Panel, including organising meetings and circulation of associated documents in a timely manner.
- Undertake the analysis of data and evidence, clearly identify the associated limitation and uncertainties, present the findings as they relate to the KEQ's and developed rubrics.
- Draft the Science Inquiry Report and provide initial recommendations to the Panel for their discussion. Reflect the final recommendations of the HWS Evaluation Panel in the Science Inquiry Report.
- Report to the HWS Evaluation Panel on how its advice and decisions have shaped the formal response and the mid-term review more broadly.
- Communicate key concerns and findings from the Science Inquiry into the Implementation Inquiry and similarly ensure the key findings of the Implementation Inquiry are linked back to inform the finalisation of the Science Inquiry Report.
- Melbourne Water's project team (and their research partners and contractors) may participate in meeting discussions to clarify and explore the feedback provided by the HWS Evaluation Panel.
- Melbourne Water's Principal, Waterways will provide the link between the HWS Evaluation Panel and the mid-term review.

HWS Evaluation Panel Operation, Governance and Decision Making

Evaluation Panel Matters

The Evaluation Panel will consider and report on the following as part of its deliberations:

- The extent to which the evaluation design and data collection methods align with the purpose of the evaluation and the KEQs
- The extent to which analysis and findings are reliable, accurate with the limitations and uncertainties clearly described
- The extent to which evaluative reasoning has been applied to the analysis and findings, interpretations and judgements, and
- The implications of the findings, uncertainties, and limitations for the evaluation and HWS implementation

The Panel will report on its deliberations and will advise on the extent to which the Panel supports the findings and judgements. The Panel will make recommendations to the evaluation coordinators and the HWS Governance Groups on improvements/adjustments to the HWS implementation and priority knowledge gaps to be addressed prior to the final evaluation.

Items out of scope for the Evaluation Panel include the evaluation focus and KEQs which have been previously defined through extensive stakeholder consultation. Decisions as to the selection of indicators and methods as well as the analysis of evidence and data and preparation of initial findings are the responsibility of the evaluation coordinator/s, however the Panel will require an understanding of the planning and design considerations to inform its advice and recommendations.

Operation, Governance and Decision Making

- Each meeting will involve discussion and debate involving both the panel members and relevant members of Melbourne Water project teams, secretariat and observers. The aim of distilling appropriate advice to guide the strategy direction should be the desired outcome.
- The panel will do this by leading by example; it will act in an intellectually open and critical way; it will embrace a diversity of views and seek to work together to gain new insights by the intersection of diverse perspectives to provide advice that is actionable and outcome focussed (i.e. don't get lost in the weeds).
- Melbourne Water is responsible for distributing relevant information prior to panel meetings. If material is lengthy or requires considerable time to review then information will be provided at least one week prior to the meeting. Agendas will be circulated a week prior to panel sessions. Agendas will provide clarity about the focus of each meeting and the discussion topics for the panel.
- Draft minutes of each panel meeting shall be prepared by Melbourne Water within one week of the meeting for review by the Chairperson and subsequent circulation within two weeks of the meeting. These minutes will include Recommendations which summarise the key messages/outcomes, highlights, future issues and needed directions that have been decided by the panel.
- Melbourne Water will provide a written response to Recommendations back to the HWS Evaluation Panel prior to the following meeting. A log of recommendations and responses will be maintained and made available.

Procedures and Decision Making

Discussions within HWS Evaluation Panel meetings will be moderated by the Chair. A consensus process will provide for discussion of diverse opinion and used to develop recommendations. Where objections exist, a simple majority will be used with provision to record objections in the meeting outcomes.

Appendix 16 Background Reports and Factsheets Developed for the Mid-term Review Process

Planning

- Mid-term Evaluation Plan (2022).

Main reports

- Science Inquiry (2023).
- Implementation Inquiry (2023).
- Summary Report (2024).

Key Values papers (2023)

- Macroinvertebrates: A technical report to inform the Healthy Waterways Strategy Mid-term Evaluation.
- Vegetation: A technical report to inform the Healthy Waterways Strategy Mid-term Evaluation.
- Fish: A technical report to inform the Healthy Waterways Strategy Mid-term Evaluation.
- Platypus: A technical report to inform the Healthy Waterways Strategy Mid-term Evaluation.
- Riparian birds: A technical report to inform the Healthy Waterways Strategy Mid-term Evaluation.
- Wetlands: A technical report to inform the Healthy Waterways Strategy Mid-term Evaluation.
- Social values: A technical report to inform the Healthy Waterways Strategy Mid-term Evaluation.

Science Inquiry support papers (2023)

- Threats: A technical report to inform the Healthy Waterways Strategy Mid-term Evaluation.
- Interventions: A technical report to inform the Healthy Waterways Strategy Mid-term Evaluation.
- Rerunning HSMs with Climate-impacted projections.

Science Inquiry – research factsheets

List of Factsheets for HWS Website from Waterways and Wetlands Research Group

Melbourne Waterway Research Practice Partnership

1. Birrarung's billabongs: vegetation response to environmental watering
2. Managing the impacts of deer on riparian vegetation and water quality
3. Optimizing constructed wetland design: management and performance prediction
4. Yellingbo hydrology works monitoring program
5. Geomorphic change and disturbance threshold for the protection or recovery of stream form in urban catchments
6. Improved biomonitoring of urban freshwater ecosystems using DNA barcodes
7. Urban flow ecology: investigating relationships between flow, channel form, instream vegetation and ecosystem function
8. Major sources and fate of sediments in streams, wetlands, estuaries and bays to inform management opportunities
9. Understanding the interactions between groundwater, surface water and Groundwater Depended Ecosystems (GDEs)

10. Re-designing streetscapes for managing stormwater and increasing tree canopy cover
11. Optimised real-time monitoring and control of networked stormwater harvesting systems to augment household water supply, reduce nuisance flooding and provide environmental flows to streams
12. Understanding the role of small headwater streams in urbanizing catchments for supporting waterway health
13. Community engagement with Melbourne's blue spaces before, during and after the COVID-19 pandemic
14. How can retention, use and treatment of urban stormwater protect or provide nature flow regimes for waterway health? Sunbury sub-project
15. Effectiveness of rural land interventions to improve stream flows and water quality
16. The impacts of 'next-generation' citizen science programs
17. Evaluating direct seeding as a cost-effective revegetation technique

Aquatic Pollution Prevention Partnership

1. What are the effects of chemicals frequently used by Melbourne Water on or near waterways on aquatic ecosystems and human health?
2. Understanding the impacts of litter, including microplastics, on the social and ecological values of waterways and bays
3. Understanding the contaminants risk to environmental sensitive areas
4. Identifying and managing emerging contaminants of concern
5. Understanding the ecological impacts of treated and untreated sewage inputs in waterways
6. Developing methods to increase the efficiency and effectiveness of waterways health assessment within streams, wetlands and estuaries
7. Indicators and approaches to monitor the performance of stormwater wetlands
8. Identification of cost-effective opportunities for addressing pollutants from industrial catchments
9. Impacts of sediments from urban and rural stormwater on stream health

Other projects outside of partnerships

1. Developing nursery and field methods for seagrass restoration in Western Port
2. Understanding functional links between riparian zones and streams: Restoring instream organic matter retention to complement riparian revegetation works
3. How environmental DNA survey methods are informing management of waterways across Greater Melbourne
4. Remote sensing of vegetation – using Landsat to characterise the condition of riparian vegetation across the catchments
5. Novel synthetic seed technology for the mass production of recalcitrant Australian Native Plants for large-scale land restoration
6. Threatened invertebrate assessment – alternative methods
7. Status, threats, ecology and potential direction for recovery of River Blackfish (*Gadopsis marmoratus*) in Melbourne Water catchments

Implementation Inquiry support papers (2023)

- Healthy Waterways Strategy: Mid-term review of collaboration and co-delivery - Summary Findings Report.
- Review of Performance Objectives for Mid-term Evaluation.

Appendix 17 Sub-catchments Reference Map

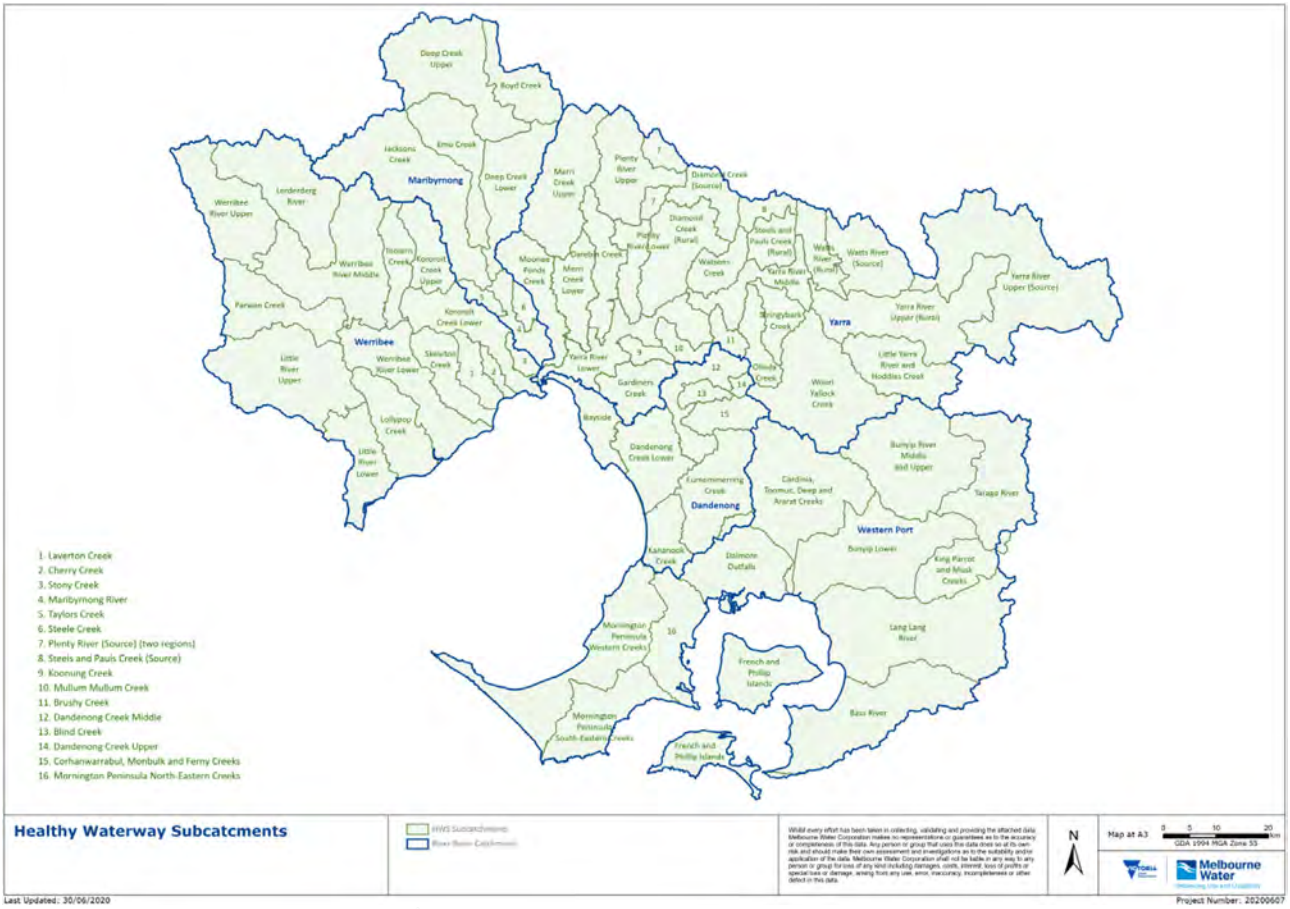

Figure 54. Healthy Waterways Strategy sub-catchments reference map.

978-1-921603-64-8 (PDF)

More Information

Healthy Waterways Strategy
Access the Mid-term Review Summary Report >>
Access the Science Inquiry Report >>
Contact: Waterway.Strategy@melbournewater.com.au