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Healthy Waterways Strategy mid-term review - Learning by Doing

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Key Points

- The Healthy Waterways Strategy mid-term review was complex and revealing, its findings were not always comfortable, however we learnt a lot from it that can inform the remaining years of the strategy.
- We defined focus areas where effort should be prioritised and identified a number of increased threats to waterway values and barriers to implementation.
- Recommendations were developed and are being deliberated within Melbourne Water and with strategy co-delivery partners and the community.
- Additionally, a thorough mid-term review has been valuable preparation for the final strategy review in 2026 and the next strategy development process.

Abstract

A mid-term review of the Healthy Waterways Strategy 2018-2028 (Melbourne Water, 2018) was undertaken as part of a broader Monitoring, Evaluation, Reporting and Improvement plan (Melbourne Water, 2019). The process was complex and challenging and drew on data and information collected through Melbourne Water's monitoring programs, research partnerships and practitioner knowledge.

We analysed available data to answer questions regarding the trends of environmental and social values and conditions, changes to threats and the effectiveness of interventions (Science Inquiry). Additionally, we evaluated the likelihood of 10-year targets being met, documented the factors influencing strategy implementation and reviewed the effectiveness of co-delivery (Implementation Inquiry). We applied evaluative reasoning to ensure judgements were made using credible evidence with limitations explicitly identified. An external panel of waterway management and evaluation experts guided the process and provided critique, feedback and evaluation guidance and helped communicate the findings to managers, partners and the community.

The mid-term review found that: a) some key values are declining in certain areas of the region, b) efforts to treat stormwater volumes in new urbanising areas have not kept up with the rate of development, c) natural wetlands and headwater streams have been lost due to impacts associated with urban development and d) a number of threats such as climate change, declining water availability and deer impact are greater than predicted in 2018. Despite good progress being made against some strategy targets, there are a number that are unlikely to be met by the end of the strategy period and factors contributing to this were identified. A key finding was that whilst co-delivery has succeeded in improved outcomes for some place-based projects, increased effort is required to lead and coordinate across agencies and communities so that the full potential of co-delivery can be realised. A concise set of recommendation were developed that aim to re-invigorate implementation and co-delivery and concentrate effort to bring targets back on track where it matters most. A response to the review is being developed with input from the community and strategy co-delivery partners.

The mid-term review has highlighted the value of good long-term datasets, strategic research partnerships and annual reporting (Slijkerman, Grant, Rossrakesh and Grice, 2024) . The collaborative critique from the evaluation panel was essential to the success of the review and the refinement of both process and messaging. Reviewing the strategy mid-way through has resulted in analyses that will guide the design and delivery of programs for the remaining years of the strategy and form a good foundation for the final-strategy-review and renewal process.

Keywords

Healthy Waterway Strategy 2018-2028, mid-term evaluation, environmental values, social values, making meaning, re-invigorating delivery.

Introduction

The Healthy Waterways Strategy 2018-2028 (HWS) is a 10-year strategy for managing rivers, wetlands and estuaries in the Greater Melbourne region (Melbourne Water, 2018). For the first time the HWS was co-designed with other agencies and the community with the intent that it would also be co-delivered, in acknowledgement that the challenges facing our waterways are more than any single group or organisation can tackle. Though Melbourne Water (MW) is the waterway manager for the region, many actions identified in the HWS are led or are contributed to by other agencies and the community. The strategy has a Region-wide Leadership Group (RLG) with representation comprised of the key strategy agency partners.

The strategy aims to protect and enhance key environmental, social, cultural and economic values. It has a program logic including goals set by the community, long term targets (10-50 years) and shorter term 10-year sub-catchment and regional performance objective (PO and RPO) targets. A Monitoring, Evaluation, Reporting and Improvement Framework (Melbourne Water, 2019) and related Monitoring and Evaluation Plans provide the basis for evaluating progress and the effectiveness of the strategy (Melbourne Water, 2020a, Melbourne Water, 2020b, Melbourne Water, 2020c).

Melbourne Water has had a range of waterway monitoring programs in place over multiple decades, as well as long-term waterway research partnerships. The mid-term review was designed to make use of all the available data and research through a comprehensive evaluation process. Evaluating the strategy at the mid-point of its implementation was a critical step as it allowed for detailed analysis of data and information to support reflection and a re-setting of priorities for the reminder of the strategy period.

Method

As this was the first time MW has undertaken a mid-term review of this scale, it was important that buy-in across the business was established to ensure confidence in the process and the subsequent findings. The design phase for the mid-term review involved interviewing a range of managers and staff internally to assess what they saw as the key purpose of the review. This informed the development of a mid-term review plan that consolidated the purpose and use of the review and refined the key evaluation questions (KEQs).

The establishment of an evaluation panel (the panel) was critical to the overall evaluation process. The panel comprised of 4 industry specialists with a broad range of waterway management and evaluation expertise. They guided the evaluation, provided critical feedback and input, and drew on their experience to ensure the MW evaluation team made meaning of the analyses using defensible and robust methods. Papers were prepared based on a key value or a particular theme (e.g. vegetation, macroinvertebrates, threats, interventions) aimed at evaluating against the KEQ's. Papers were provided to the panel ahead of a briefing session where the findings of the analyses and supporting information were discussed. A second session with the panel was typically held a few days later to present any follow up information and for the panel to ask remaining questions before deliberating together as a group and presenting their feedback to the MW evaluation team. Data and findings collated across the multiple papers was used to develop the Science and Implementation Inquiries and associated recommendations.

These two distinct pieces of work; the Science Inquiry (Melbourne Water, 2023) and the Implementation Inquiry (Melbourne Water, 2024a) were brought together in a combined HWS mid-term review Summary document (Melbourne Water, 2024b).

Science Inquiry

The Science Inquiry (Melbourne Water, 2023) comprised analyses associated with nine environmental and three social values. Analyses were conducted on all available data, science and related information and assessments against KEQs were made using a mixture of evaluation methods and the use of multiple lines of evidence. Cultural and Economic values were not assessed as part of this review.

The Inquiry also assessed whether threats had changed since 2018 and undertook a stocktake of management interventions. For some threats, such as climate change, new projections for Victoria became available in 2019 (Clark, et al., 2019). Habitat Suitability Models (HSMs), used during the strategy development process to set priorities (Chee, Coleman, Rossrakesh, Bond, & Walsh, 2020), were re-run with updated climate projections to explore potential impacts to in-stream values of new warmer and drier climate projections and to model the effectiveness of works undertaken to date (Chee, Coleman, Burns, Walsh, & Burrows, 2023; Chee, Walsh, Rossrakesh, Grant, & Coleman, 2023; Coleman, Chee, Burrows, Grant, & Rossrakesh, 2024)

Limitations with the analyses were identified and gaps in the available data were highlighted to support improvements that can be made before the end of strategy review.

The multiple analyses were synthesised together to draw out what was most important across these bodies of work (Figure 1). In brief, this synthesis identified focus areas (sub-catchments) that represent areas where key values are increasingly vulnerable to current and future threats – including sub-catchments where 1) there are multiple declining values, 2) values are vulnerable to climate change, 3) there are multiple stable or improving values and 4) values will be retained under climate change (strongholds). These were a key input to the Implementation Inquiry.

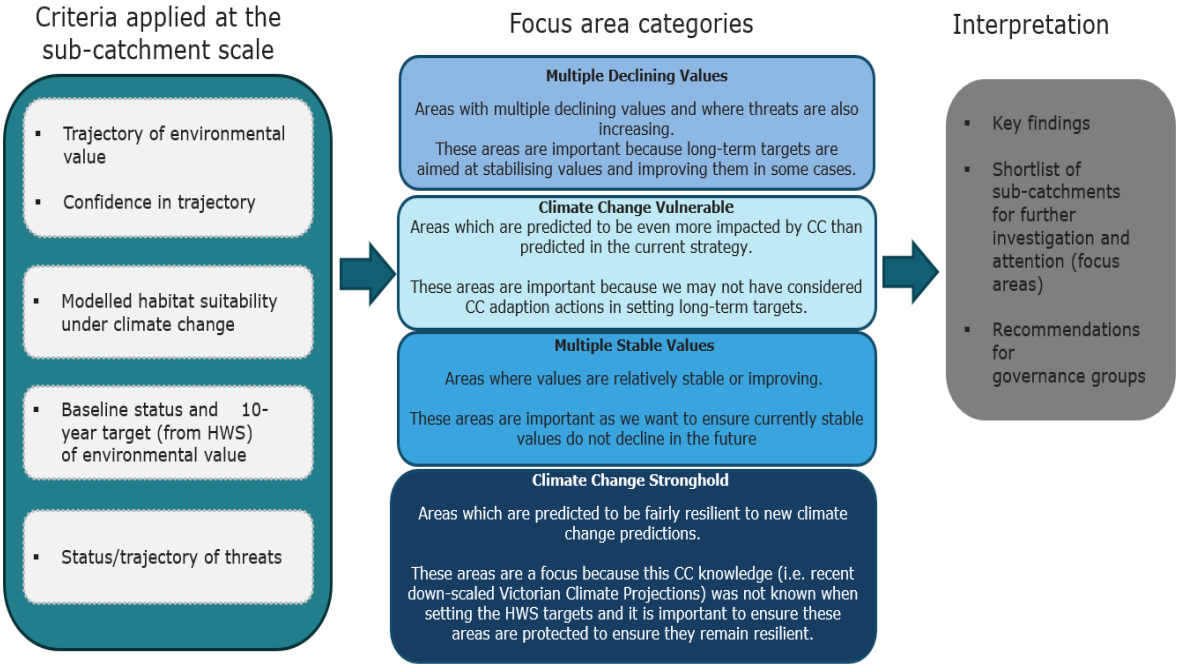

Figure 1. Overview of the synthesis process.

Implementation Inquiry

The Implementation Inquiry (Melbourne Water, 2024) incorporated three main lines of inquiry; assessment of the likelihood of meeting short term implementation targets (POs), evaluation of the effectiveness of co-

delivery in achieving strategy outcomes and assessment of the accuracy and intent of POs. These findings were synthesised with the focus areas (sub-catchments) from the Science Inquiry to identify where implementation efforts should be brought back on track as a priority and what actions needed to be the focus moving forward.

The assessment of likelihood of meeting targets used a mixture of methods. Regional performance objectives (RPOs) were assessed against pre-defined performance criteria. Sub-catchment POs were assessed based on the current status (e.g. on-track, slightly off-track or significantly off-track against a rubric) combined with the future operating environment (i.e. increased effort, decreased effort or business as usual) that resulted in a risk rating.

The evaluation of collaboration and co-delivery was conducted by external consultants using an appreciative inquiry approach (Cooperrider & Sivastsva, 1987). This used a sample of subject matter experts from MW and HWS co-delivery partners across selected performance objective groups such as stormwater, water for the environment and vegetation. The results provide a good indication of the range of views within MW and delivery partners and some stakeholders, but did not represent the views of all HWS stakeholders.

Some sub-catchment PO's have been flagged through the annual reporting process as likely to be inaccurate or missing, and the mid-term review was a good opportunity to review and alter these. A systematic process was used to assess and propose changes and lines of evidence to support the change were documented.

The progress and subsequent evaluation of cultural value POs was acknowledged as a significant gap in the mid-term process and is being undertaken subsequently in a process with local Traditional Owner Groups through a self-determined process.

Results

Building buy-in early, across MW managers and the RLG meant that the review findings were met with significant interest. While the evaluation resulted in multiple detailed analyses, it was important to simplify findings and group recommendations to form a short summary that represented the rich detail and intent of the full range of recommendations.

The Evaluation Panel was central to the process as they provided the structure and rigour around which the evaluation revolved. The small size of the panel and their collegiate approach worked well to cover a range of expertise at a scale that was workable and where opinions and questions could be managed.

Science Inquiry Findings

Trajectories of Environmental Values

The trajectory of environmental values were assessed for most of the 69 sub-catchments across the five major catchments. In-stream environmental values (platypus, fish and macroinvertebrates) were largely on the target trajectory ('on-track') to achieve long-term targets, with stable trajectory ratings in greater than 72% of assessable sub-catchments (Table 1).

While regional scale data on vegetation condition is lacking, there is evidence that the condition of vegetation is improving along reaches that are being actively managed. Sites which have been revegetated for over 10 years have similar species richness to remnant areas however weeds still dominate the understorey and the sites lack important structural components such as recruitment (Foley-Congdon, Jellenek, Chee, & Greet, 2024)

Many environmental values were on track in most sub-catchments where assessments were possible however gaps in data prevented a full assessment of all values across all sub-catchments or all priority wetlands.

Table 1. Summary of sub-catchments assessed as stable through environmental values analyses.

Environmental value	**Number of sub-catchments rated as stable/ number sub-catchments assessable (% of the total 69 sub-catchments)**
Macroinvertebrates	50/69 (72%)
Platypus	61/69 (88%)
Fish	43/54 (62%)
Riparian vegetation	Not assessable at sub-catchment scale
Riparian birds	37/45 (54%)
Wetland birds	18/25 priority wetlands

Further work is required to determine how to assess stability for birds given fluctuations in bird observation records are known to be influenced by external factors like such as rainfall in other parts of the country.

An interim assessment of threatened frog species trajectory pointed to possible widespread declines across the Melbourne region, including in sub-catchments not associated with rapid urbanization, mirroring similar declines elsewhere (regionally and globally). Further investigation is in progress to confirm this finding.

Where values were not on the trajectory to achieve long-term targets, particularly for instream values, this was often associated with the longer-term degradation of waterway condition caused by multiple threats.

Trajectories of Social Values

Social values (Community connection, Recreation, and Amenity) were evaluated at a larger scale than sub-catchments and only 3 out of 11 assessable management units for each social value were found to be on the trajectory to achieve long-term targets. This result was not considered a cause for concern as most of results have stabilised or improved since 2018. Further work is underway to review the indicators used for social values as the social values framework matures.

Effectiveness of Works

HSMs provided new insights into the potential effectiveness of selected management activities for environmental conditions and the predicted impacts on some values. The removal of in-stream barriers in several sub-catchments is associated with improvements in the habitat suitability of migratory fish species, highlighting the immediate benefits of enabling river connectivity. Vegetation canopy cover is predicted to have increased across the region since 2018 due to revegetation activities (i.e. attributed 2 years post planting), but the change is less than what was expected due to revegetation activities mostly involving 'in-fill' planting not new canopy cover. As a result, the changes in canopy cover are relatively minor and not enough to achieve detectable effects on habitat suitability yet. There has been limited implementation of stormwater control measures designed to meet new flow standards in urban growth areas which is associated with an increase in directly connected imperviousness.

Overall, these changes to environmental conditions between 2018 and 2022, principally driven by unmitigated urbanisation and limited new canopy cover, are associated with a slight deterioration to no discernible improvement in habitat suitability for macroinvertebrates, platypus and native fish species.

Status of threats

The evaluation identified urbanisation (unmitigated stormwater and wetland loss), decreased water availability, and increased pest animals (mainly deer) as having increased since the strategy began in 2018. In

particular, the Victorian Government long-term water resources assessments for each catchment in the region indicated significant declines in water availability, particularly since the Millennium Drought (Government of Victoria, 2020). Additionally, updated climate change predictions indicate that we have likely underestimated the impact of climate change for the HWS long-term targets (10 to 50 years) and, to a lesser extent, the 10-year POs. Air temperature is predicted to be greater, and flow conditions generally drier, than originally suggested. The impact of these updated climate predictions for our index of macroinvertebrate health are minimal. However, for platypus, and selected vulnerable native fish species assessed (River blackfish and Ornate galaxias), climate change may pose a greater risk than was originally modelled in 2018, with reductions in the highest quality habitat predicted even with planned interventions that improve riparian vegetation and manage stormwater.

Our ability to mitigate urbanisation with adequate stormwater interventions in priority areas has not kept pace with the rate of development. The loss of wetlands and headwater streams to urban development continues to remain an area of concern despite annual reporting highlighting the issue.

While a comprehensive review of threats to social values was not undertaken, it was recognised that in many cases threats to environmental values are also threats to social values (i.e. good environmental condition underpins many aspects of social values).

Focus areas (sub-catchments)

Using this combined information, the Science Inquiry identified focus areas based on a set of criteria that were used for further investigation through the Implementation Inquiry. Focus areas are sub-catchments identified as having multiple stable values (18/69 sub-catchments), multiple declining values (16/69 sub-catchments) (Figure 2), and either being climate change strongholds (14/69 sub-catchments) or climate change vulnerable (18/69 sub-catchments) (Figure 3).

Climate change stronghold and climate change vulnerable sub-catchments were mostly situated in the upper, least-disturbed parts of the region's catchments. Some sub-catchments were identified as both strongholds for some species and vulnerable locations for others. These areas support some of the region's greatest ecological values, including threatened species and ecosystems, and the findings indicate that greater effort may be required to support their resilience into the future.

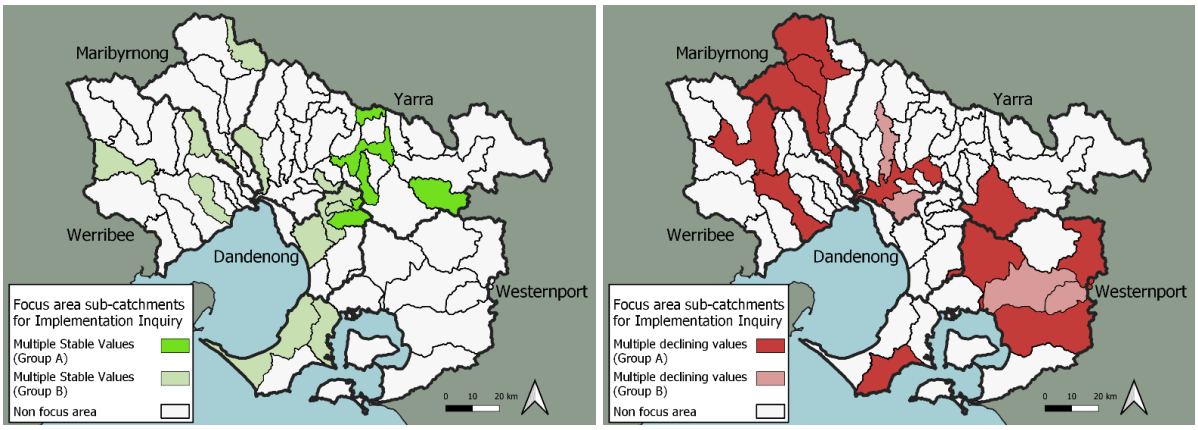

Figure 2. Sub-catchments identified as having multiple stable (left) and multiple declining (right) values. This information was used in the Implementation Inquiry to develop the Environmental Values priorities in

Figure 5. Group B sub-catchments have environmental value scores of low or very low. Group A sub-catchments have environmental value scores of moderate or higher.

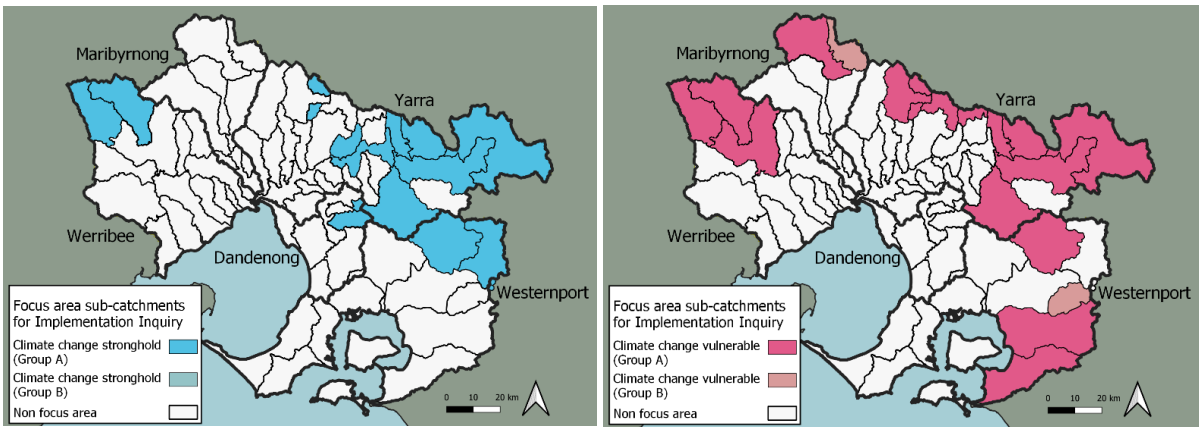

Figure 3. Sub-catchments identified as being a climate change strongholds (left) and climate change vulnerable (right) for one or more of four aquatic species: macroinvertebrates, River blackfish, Ornate galaxias, and platypus. Classifications were based on differences between "baseline" habitat suitability model predictions and updated predictions using temperature and runoff projections. Sub-catchments are shown as those with moderate or greater underlying environmental conditions (Group A) and those with a high proportion of low or very low conditions (Group B). This information was used in the Implementation Inquiry to develop the Environmental Values priorities in

Figure 5.

Further information on the trajectories of values, status of threats, a stocktake of interventions and detailed recommendations can be found in the HWS mid-term review Science Inquiry Report (Melbourne Water, 2023) and associated reports (e.g. White and Rossrakesh, 2024).

Implementation Inquiry findings

The Implementation Inquiry found that the strategy is making good progress on a number of targets and there is evidence of collective action in some areas to support strategy targets. However, there are areas of the strategy implementation where re-focussed effort is required.

Likelihood of meeting short-term implementation targets

The evaluation of RPOs identified that 22 of the 45 (48%) are meeting performance expectations for mid-term. Many of the RPOs that are slightly or significantly off-track represent issues that are *wicked problems* (Rittel & Webber, 1973) that require multi-agency coordination or represent the application of research findings into policy and delivery (e.g. stormwater).

The evaluation of quantitative targets for rivers highlighted that good progress has been made in some areas (i.e. protect high quality vegetation, maintain vegetation, increase participation), for instance some sub-catchments are almost certain to meet 10-year targets (Figure 4). However, targets relating to water for environment and stormwater are unlikely to be met for the majority of sub-catchments under the current operating environment. This represents a potential issue for progress towards long-term targets for environmental values such as macroinvertebrates, platypus and birds, as outlined in the Science Inquiry (Melbourne Water, 2023). It was uncertain whether the targets for vegetation establishment, participation and access will be met by the end of strategy period because the likelihood of meeting 10-year targets for a large number of sub-catchments is assessed as 'possible'.

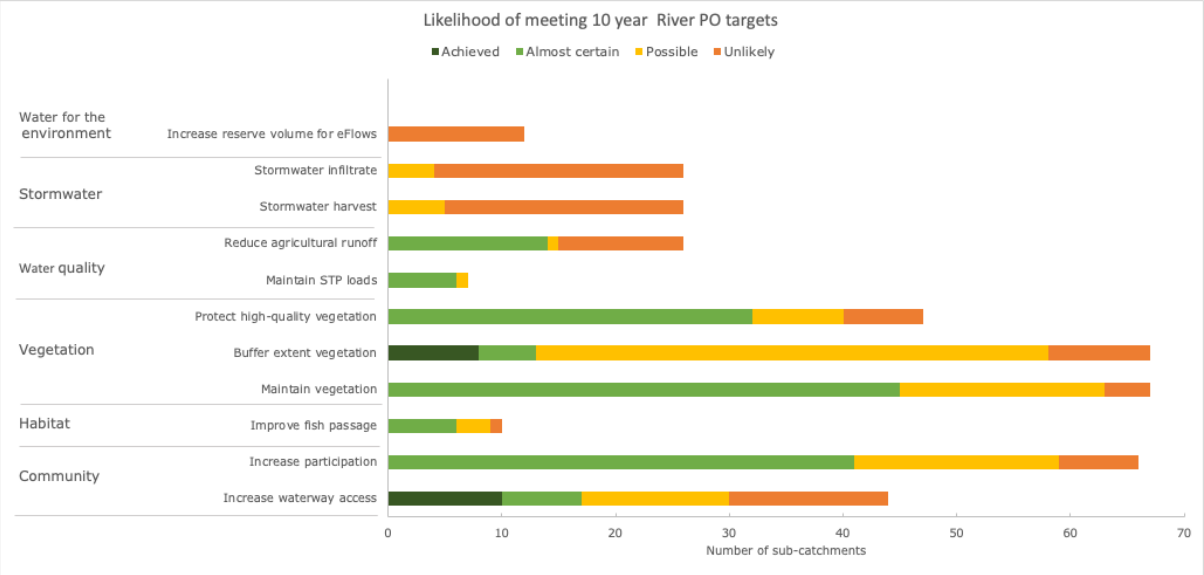

Figure 4. Summary of evaluation of likelihood of meeting 10-year targets for rivers by end of strategy.

The evaluation of wetland POs (e.g. buffer vegetation and water for environment) found that many are off-track and targets are unlikely to be meet 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 and 14 more are currently at risk.

Evaluation of estuary POs was not possible due to insufficient data, which has been highlighted as a gap in the evaluation.

Further information on the barriers and opportunities for implementation for the PO groups and detailed recommendations can be found in the HWS mid-term review Implementation Inquiry Report (Melbourne Water, 2024).

Effectiveness of co-delivery

The mid-term review 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.

The findings identified opportunities for improving effective collaboration and co-delivery including improving:

- the visibility of the HWS to drive co-delivery,
- catchment scale planning across agencies,
- MW driving co-delivery as lead agency,
- guidance on when and how to collaborate and
- systems, resources, processes and mindsets to support collaborative delivery.

Priority Focus Areas (sub-catchments)

Findings of the Implementation Inquiry were further synthesised with the focus areas (sub-catchments) identified in the Science Inquiry to identify priority focus areas (sub-catchments) where future implementation efforts should be brought back on track as a priority moving forward. The focus sub-catchments for rivers (environmental values), community places (waterway social values) and wetlands is presented in Figure 5.

Increased effort to bring strategy implementation back on track should be made, at a minimum, in the focus areas (sub-catchments). These focus sub-catchments are important because they represent areas where

multiple key values are increasingly vulnerable to current and future threats. In a constrained environment, getting implementation back on track in these areas is important.

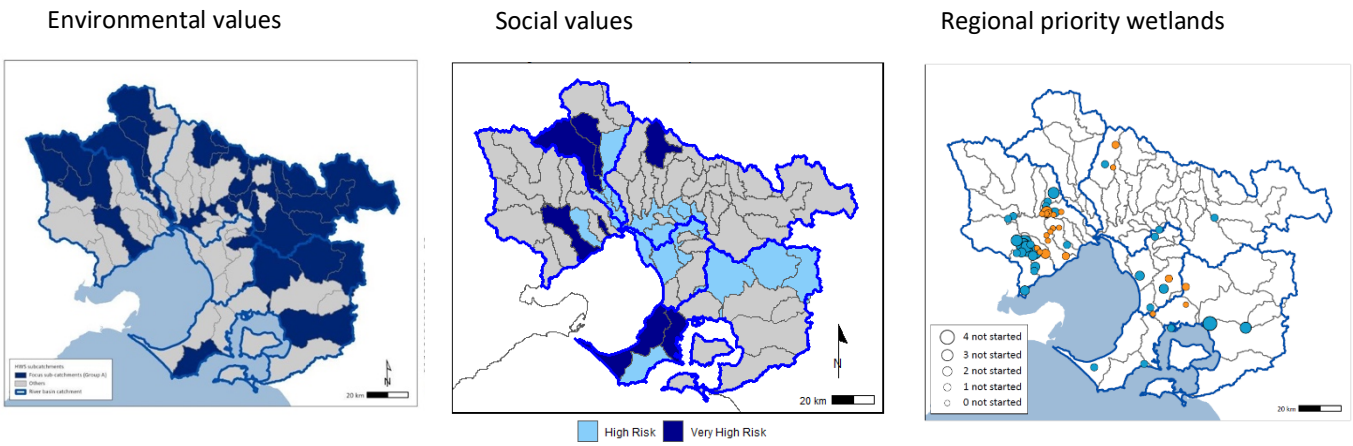

Figure 5. Critical areas identified through the mid-term review where efforts should be focussed to bring the strategy implementation targets back on track. Dark blue is the most urgent (Very high Risk), followed by light blue (High Risk). Wetlands at risk from urban development are depicted in orange. Status of wetland target attainment is depicted by circle size.

Priority focus areas (sub-catchments) for environmental values where greater implementation effort is required are mostly in located in forested areas of the region and along major rivers of the Werribee, Maribyrnong, Yarra and Westernport catchments

The priority focus areas (sub-catchments) for social values at very high risk include the lower Werribee, Jacksons Creek, Plenty River Upper and sub-catchments along the Mornington Peninsula.

Many priority focus wetlands at high risk from urban development occur in the Werribee catchment, with others in the Yarra, Dandenong and Westernport catchments.

Conclusions

The MW evaluation team led a comprehensive mid-term review of the HWS, with support from internal managers and staff, and oversight and guidance from an expert evaluation panel. Two key pieces of work, the Science Inquiry and the Implementation Inquiry, were completed that identified areas for improvement to refocus effort for the remainder of the strategy. The inquiries identified multiple recommendations that were summarised and grouped into the following themes:

1. **Refocus Effort** in critical areas
2. **Reinvigorate Co-delivery** between strategy partners
3. Enable **Traditional Owner**-led input to evaluation processes and implementation
4. Accelerate delivery of **Stormwater and Pollution Management** targets
5. Improve protection of **Natural Wetlands and Headwater Streams**
6. Coordinate efforts across agencies to deliver **Water for the Environment**
7. Find new ways of working with private landholders on **Vegetation Management and Deer Control**
8. Expand understanding, assessment and improvement of **Social Values**
9. Continue to improve **Monitoring and Evaluation**

Melbourne Water are developing a response to the HWS mid-term review recommendations and will gather input from the strategy partners and the community.

In addition, there are a number of important reflections on the HWS mid-term review process, including:

- Developing buy in early amongst mangers was important in building trust in the evaluation process.
- Conducting most of the evaluation in-house, through an active learning process was essential in developing capacity and helped to establish trust and credibility within the organisation.
- Considering multiple lines of evidence was useful when assessing a mixture of quantitative and qualitative data and information.
- Establishing an evaluation panel that is experienced in the sector and importantly is willing to work collaboratively was a crucial support in the learning journey.
- The process was complex and uncomfortable at times but the MW team developed significant capacity that will be invaluable for the final strategy review and in preparing the next strategy.
- Although the HWS mid-term review took time and resources, it provided a reflection point that will revitalise delivery efforts. It also provided an opportunity to thoroughly examine all the available data and evidence in a way that busy strategy development processes does not afford.
- The HWS mid-term review helped make apparent to MW the benefits of long-term investment in data, monitoring and research.

The process and findings of the HWS mid-term review has prepared MW well for the final strategy review in 2026 and the next strategy development process.

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