Marine and Coastal Stewardship Index Port Phillip Bay

September 2020

VICTORIA State Government | Energy, Environment and Climate Action

Author

Regan East, Marine Biodiversity Policy Officer, Biodiversity Division, DEECA

Photo credit

Marcia Riederer, DEECA

Citation

DEECA (2023) Marine and Coastal Stewardship Index Port Phillip Bay. The State of Victoria Department of Energy, Environment and Climate Action 2023.

ISBN 978-1-76136-338-2 (**pdf/online/MS word**)

We acknowledge and respect Victorian Traditional Owners as the original custodians of Victoria's land and waters, their unique ability to care for Country and deep spiritual connection to it.

We honour Elders past and present whose knowledge and wisdom has ensured the continuation of culture and traditional practices.

DEECA is committed to genuinely partnering with Victorian Traditional Owners and Victoria's Aboriginal community to progress their aspirations.

ISBN 978-1-76136-338-2 (**pdf/online/MS word**)

Disclaimer

This publication may be of assistance to you but the State of Victoria and its employees do not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for any error, loss or other consequence which may arise from you relying on any information in this publication.

Accessibility

To receive this document in an alternative format, phone the Customer Service Centre on 136 186, email customer.service@delwp.vic.gov.au, or contact National Relay Service on 133 677. Available at DEECA website (www.deeca.vic.gov.au).

Contents

List of tables

List of figures

List of acronyms

MERI	Monitoring, Evaluation, Reporting and Improvement strategy
MCSI	Marine and Coastal Stewardship Index

1. Purpose

This document has been created for the Port Phillip Bay Environmental Management Plan 2017-2027 (EMP). It identifies an evaluation methodology for stewardship activity that can be used for reporting and to drive continuous improvement. That said, the approach described may be relevant for other programs.

2. Introduction

The EMP is authorised under the Marine and Coastal Act 2018 and the State Environment Protection Policy (Waters) 2018. The MACA, section 55 (1) specifies environmental management plans must be reviewed within five years of making the plan.

The EMP's Monitoring, Evaluation, Reporting and Improvement strategy (MERI) will guide the five-yearly evaluation through an assessment of the effectiveness and efficiency of the EMP's strategies (Figure 1). As part of this, the EMP MERI will assess the effectiveness of the EMP in delivering on its overarching goal of 'Stewardship of the Bay is fostered across community, industry and government'.

Figure 1 The placement of the stewardship goal within the broader EMP framework

VISION	A healthy Port Phillip Bay that is valued and cared for by all Victorians						
GOALS	Stewardship of the Bay is fostered across community, industry and government		Water quality is improved to ensure environmental health and community enjoyment of the Bay			The Bay's habitats and marine life are thriving	
PRIORITY AREAS	Connect and inspire	Empower action (work together)	Nutrients and pollutants	Litter	Pathogens (human health)	Habitat and marine life	Marine biosecurity
STRATEGIES	Improve appreciation and understanding of Bay values and connections to catchment	Improve collaboration and partnerships across community, industry and government	Ensure nutrient and sediment loads do not exceed current levels and pollutant loads are reduced where practicable	Reduce litter loads to the Bay	Minimise risks to human health from pathogens	Conserve and restore habitats and marine life	Manage risks from marine pests
PRIORITY ACTIONS	**1.1** Work with Aboriginal groups to improve understanding of Aboriginal cultural values and interests in the Bay and support connections to Country	**2.1** Build capacity and knowledge within community and industry networks	**3.1** Effectively maintain existing stormwater infrastructure and programs to mitigate loads to the Bay, or secure via equivalent means	**4.1** Establish a baseline estimate of the volume of litter entering the Bay and support clean up activities	**5.1** Improve understanding of links between pathogen concentrations and human health for swimming and consumption of shellfish	**6.1** Monitor indicator species and key habitats at priority locations	**7.1** Prevent introduction and dispersal of marine pests
	1.2 Develop and deliver programs to inspire greater appreciation of the Bay's values	**2.2** Empower the broader community to get more actively involved in caring for the Bay	**3.2** Prevent increases in nutrient loads from wastewater systems and where practicable reduce loads of other pollutants	**4.2** Support capability and capacity building programs that target litter prevention, including reduction of microplastics	**5.2** Adopt a risk-based approach to mitigate sources of pathogens found in the bay	**6.2** Improve understanding of ecological processes, threats and pressures	**7.2** Monitor priority locations for early detection of marine pest introductions
	1.3 Build understanding of management responsibilities and programs for the Bay and its catchment	**2.3** Support stronger partnerships across community, industry and government to ensure aims and outcomes are aligned	**3.3** Ensure all urban and rural land use effectively controls impacts from stormwater and runoff, and that controls are in place to manage increases in loads	**4.3** Identify and prioritise litter sources and pathways, and take actions to prevent litter entering the Bay	**5.3** Improve monitoring and reporting to better detect and communicate human health risks from pathogens	**6.3** Improve overall extent and condition of the Bay's natural ecosystems	**7.3** Respond rapidly to new introductions of marine pests

There are currently 192 activities listed in the EMP's Delivery Plan. Of these 105 activities are delivering the stewardship goal.

To evaluate the effectiveness of this work the proposed outcome is 'Improved stewardship of the Bay across community, industry and government' measured by the Marine and Coastal Stewardship Index (MCSI).

Indexes enable simplified reporting on complex information for broad audiences (McIntosh et al 2019) and are used worldwide for reporting on environmental condition and management actions (Logan 2016). Inclusion of stewardship activities and outcomes in environmental condition reporting products, such as report cards, is a growing trend both within Australia and internationally.

The proposed MCSI draws heavily on the Land Under Active Stewardship Headline Indicator report completed in 2009 by Sinclair Knight Merz and the follow up study, Feasibility of developing Marine Stewardship Indicator for Victorian marine environments by CEE Consultants Pty Ltd in 2010.

For the proposed MCSI, Marine and Coastal Stewardship is defined as community participation in activities that achieve positive environmental change and avoidance of environmental harm in the marine and coastal environment (CEE Consultants Pty Ltd 2010).

The MCSI has been developed to represent the concentration of effort and interest in marine and coastal environments, and track changes in this over time.

3. Method

3.1 Categories

The MCSI is based on four categories of stewardship activity as defined in Table 1. These categories are underpinned by five indicators - environmental objectives, effort, outcomes, accountability and adaptive management (CEE Consultants Pty Ltd 2010). These indicators were selected as, when combined, they can answer the question of "to what extent is there confidence this activity has contributed to positive environmental outcomes" (Sinclair Knight Merz 2009).

Table 1: MCSI category definitions

Category	Definition
Comprehensive	Activity is highly targeted and delivers protection, enhancement and restoration of the marine and coastal environment
Focused	Activity contributes to the protection, enhancement and restoration of the marine and coastal environment
Enterprising	Untargeted on-ground activity is occurring, but its contribution to the protection, enhancement and restoration of the marine and coastal environment is small or unknown
Supporting	Activity develops skills and knowledge vital for effective stewardship

The progression of activities from Supporting through to Comprehensive represents an increasing confidence in delivery of environmental benefits. Supporting activities provide the essential foundation required for targeted stewardship work to be completed in the future.

3.2 Indicators

The MCSI category, or result, for an activity is assigned based on the combined score from the five key indicators. These indicators are outlined in Table 2 below.

Indicators are weighted equally with one key exception. If an activity scores zero for environmental objectives, the first indicator assessed, the assessment process is halted and the activity is assigned an MCSI result of 'Supporting'. This is to ensure capacity and knowledge building activities, regardless of the investment, adaptive management and reporting approaches taken, are efficiently assessed.

Table 2: MCSI Indicator scoring definitions

Indicator	Definition	Score			
		1 - Assessment stops here	**2 - Low**	**3 - Medium**	**4 - High**
Environmental objectives	The extent to which the activity is targeted to documented environmental priorities, including the EMP	The activity aims to develop skills and knowledge vital for effective stewardship, rather than contributing directly to the achievement of recognised environmental objective(s) For example, educational resources on the hazards of plastic waste developed and distributed to schools	The activity aims to contribute to recognised, ongoing broad, environmental objective(s). For example, opportunistic, one off litter clean ups	The activity aims to address recognised environmental objective(s). For example, recurring litter collection and audit in targeted locations	The activity targets specific priority or time critical environmental objective(s). For example, weed removal and revegetation of a specific location in order to enhance the degraded habitat of a patchily distributed endangered or threatened species
Indicator	**Definition**	**Score**			
		1 - Minimal	**2 - Low**	**3 - Medium**	**4 - High**
Effort	Effort expended on the activity as measured by time, cost and resources. The highest scoring contribution for effort is the allocated score for any given activity. For example, an activity with a $19 million budget but 0 volunteer	Minimal effort expended. Invested up to: • $10,000 budget • 500 volunteer hours • $10,000 value of in-kind contributions (excluding volunteer hours)	Low effort expended. Invested up to: • $200,000 budget • 5,000 volunteer hours • $200,000 value of in-kind contributions (excluding volunteer hours)	Medium effort expended. Invested up to: • $1 million budget • 10,000 volunteer hours • $1 million value of in-kind contributions (excluding volunteer hours)	High effort expended. Invested over: • $1 million budget • 10,000 volunteer hours • $1 million value of in-kind contributions (excluding volunteer hours) High effort projects can also be identified by, for

	hours would be allocated a score of 3, or high, for effort				example, multiple funding sources, high time investment from skilled resources and participation from/collaboration with a large number of stakeholders
Outcome	Extent of environmental outcomes achieved	Essential capacity building and/or knowledge development occurred, though no direct environmental benefit has been achieved. For example, interpretative signage was installed	Producing either no or little measurable environmental benefit. For example, a litter collection was conducted and participants were informed of the hazards of marine litter, but no records were made of the specific location or volume of litter removed	Producing significant measurable environmental benefit. For example, recurring litter collection and audits at a local beach	Producing substantial measurable environmental benefit. For example, recurring litter collection and audits in targeted locations following an industrial microplastic spill of unknown origin
Accountability	The degree of confidence that the identified management actions are being undertaken to the agreed standard	No evaluation plan, results self-reported estimates	Some evaluation planning results self-reported	Evaluation methodology planned and results publicly reported	Evaluation methodology carefully planned and reviewed by experts, potentially implemented by a third party and/or results and method publicly reported
Adaptive management	Ability of the activity lead to identify and adapt the activity to changes in environmental or social	No adaptive management. For example, changes in environmental or social	Low adaptive management. For example, basic and required health and safety risks	Medium adaptive management. For example, comprehensive risk register and	High adaptive management. For example, actively updated risk register and

	conditions, such as covid-19, and still deliver outcomes	conditions result in the cancellation or discontinuation of the activity. No adaptive management plans have been made	identified (trips, slips, falls, covid) and mitigation plans put in place. Some broader risks and adjustments noted. Typically only considered at the beginning of an activity as a mandatory element of a funding application and not revisited during delivery	plans to use lessons learnt during activity delivery to refine future activities	lessons log. Activity adapted during delivery based on circumstances and knowledge development

3.3 Score ranges

Table 3 outlines the MCSI category score ranges.

Table 3: MCSI category scoring results

Total score				
MCSI category	Supporting	Enterprising	Focused	Comprehensive

4. Example activity results

4.1 MCSI Supporting category

A hypothetical education activity, summarised in Table 4 below, has been assessed using the MCSI approach to be a Supporting activity. The results are outlined in Table 5. The activity's stated objectives and achievements are firmly in the capacity building space necessary for establishing a culture of good environmental stewardship.

Table 4: Hypothetical activity A summary information

Title		
Summary	This project will develop curriculum-based resources for educating school students and the community about sustainable manufacturing, which produces essential products while protecting the Bay.	
Timeframe	2017	
Budget	<$3,000	
Volunteer time	70 hours	
In-kind value	$0	
Achievements	**Sustainability Fund Outcomes**	**Sustainability Fund Indicators**
	Improved awareness and understanding	• 150 People attending training or receiving support • 1 Education/information session

Table 5: Hypothetical activity A MCSI scoring

Indicator	Score			
	1 – Minimal	**2 – Low**	**3 – Medium**	**4 – High**
Environmental objectives	1 – The activity aims to educate the community on stewardship practices. Assessment stops at this point.			
Effort	Not applicable			
Outcome	Not applicable			
Accountability	Not applicable			
Adaptive management	Not applicable			
Total	1 – This is a Supporting activity			

4.2 MCSI Enterprising category

A hypothetical litter management activity, summarised in Table 6 below, has been assessed using the MCSI approach to be an Enterprising activity. The results are outlined in Table 7. The activity delivered a small environmental benefit through untargeted on-ground activity.

Table 6: Hypothetical activity B summary information

Title		
Summary	The activity will work with local groups to raise awareness of the impacts of litter. Signs will be installed near bins at an annual festival and cigarette butt bins will be installed near piers. At the conclusion of the festival a litter clean up will be scheduled.	
Timeframe	2019	
Budget	$4,004	
Volunteer time	40 hours	
In-kind value	$0	
Achievements	**Sustainability Fund Outcomes**	**Sustainability Fund Indicators**
	Increased partnerships/ collaborations	• 1 new partnership formed to deliver projects
	Littering decreased	• 1 litter initiative • 0.5 tonnes of litter removed

Table 7: Hypothetical activity B MCSI scoring

Indicator	Score			
	1 – Minimal	**2 – Low**	**3 – Medium**	**4 – High**
Environmental objectives	2 – Litter is recognised as an environmental concern at all levels of government			
Effort	1 – Minimal time and resources invested			
Outcome	3 – Measured litter collection and education and awareness activities were completed			
Accountability	1 – Results self-reported, no evaluation was undertaken to identify the impact of the education program			
Adaptive management	2 – Minimum health and safety risks identified, and basic mitigation measures proposed			

Total	9 – This is an Enterprising activity

4.3 MCSI Focused category

A hypothetical threatened species activity, summarised in Table 8 below, has been assessed using the MCSI approach to be a Focused activity. The results are outlined in Table 9. The activity delivered targeted on-ground works and achieved measured environmental outcomes.

Table 8: Hypothetical activity C summary information

Title		
Summary	Up to 70% of the Orange-bellied parrot population occurs at three sites around Port Philip Bay and the Bellarine Peninsula (Department of Sustainability and Environment, 2003). This activity will install permanent fencing to protect Orange-bellied parrot feeding and resting places during migration. This activity will also direct bushwalkers away from parrot feeding and resting places using formalised paths to discourage use of informal tracks through the area.	
Timeframe	2020	
Budget	$40,000	
Volunteer time	3,500	
In-kind value	$2,000	
Achievements	**Sustainability Fund Outcomes**	**Sustainability Fund Indicators**
	Improved awareness and understanding	• 2,000 People attending training or receiving support • 8 Education/information sessions
	Area protected by fencing	• 57 hectares

Table 9: Hypothetical activity C scoring

Indicator	Score			
	1 – Minimal	**2 – Low**	**3 – Medium**	**4 – High**
Environmental objectives	4 – The Orange-bellied parrot is listed as threatened under the *Flora and Fauna Guarantee Act 1988*. The Orange-bellied parrot Flora and Fauna Guarantee Action Statement states the major conservation objectives include to protect the existing Victorian population by maintaining habitat and ensuring the bird can continue to breed successfully (Department of Sustainability and Environment 2003).			
Effort	2 – Project budget $40,000 and 3,500 volunteer hours contributed			
Outcome	4 – This activity completed all deliverables, however it is noted that outcomes listed in the activity summary do not reflect the entirety of work delivered. This is a weakness of the grant program's reporting rather than the activity's delivery.			
Accountability	2 – Results self-reported, no monitoring conducted.			
Adaptive management	2 – Minimum health and safety risks identified, and basic mitigation measures proposed			
Total	14 – This is a Focused activity			

4.4 MCSI Comprehensive category

A hypothetical riverbank restoration activity, summarised in **Error! Reference source not found.**Table 8 below, has been assessed using the MCSI approach to be a Comprehensive activity. The results are outlined in Table 11. The activity delivered targeted on-ground works and achieved measured environmental outcomes.

Table 1010: Hypothetical activity D summary information

Title		
Summary	River A is the largest contributor of litter into estuary B of Port Phillip Bay. The litter gets trapped in the riverbank vegetation and accumulates before being washed into Port Phillip Bay. This activity will conduct fortnightly litter audits, seasonal revegetation work and simultaneously host volunteer sessions to train volunteers in litter auditing.	
Timeframe	2018-2020	
Budget	$190,000	
Volunteer time	4,444	
In-kind value	$50,000	
Achievements	**Sustainability Fund Outcomes**	**Sustainability Fund Indicators**
	Improved awareness and understanding	• 2,000 People attending training or receiving support • 8 Education/information sessions
	Area protected by fencing	• 57 hectares

Table 11: Hypothetical activity D scoring

Indicator	**Score**			
	1 – Minimal	**2 – Low**	**3 – Medium**	**4 – High**
Environmental objectives	4 – This activity aimed to complete ongoing litter removal and revegetation of a highly polluted area noted as a priority location by the Victorian Government and local council Y.			
Effort	2 – Project budget $190,000, 4,444 volunteer hours contributed and $50,000 value of in-kind contributions			
Outcome	4 – This activity completed recurring litter audits and revegetation in a highly polluted area over three years. The activity met all stated objectives.			
Accountability	4 – The litter audit methodology was planned and reviewed by experts and the results have been made publicly available.			
Adaptive management	3 – A thorough risk register was maintained throughout the activity. Adaptations to the activity were made following identification of lessons learnt were identified.			
Total	17 – This is a Comprehensive activity			

5. Applications

5.1 Reporting

5.1.1 For the PPB EMP

For the EMP MERI, the MCSI can be used to assess each individual activity in the Delivery Plan, or a subset, such as those listed under the stewardship goal or those funded by community grants programs. When applied to the EMP activities for the purposes of the five-yearly evaluations, fixed term activities should be scored on completion, while ongoing activities should be scored every five years.

These individual activity results will then be averaged to provide a MCSI score for the EMP for designated geographical areas. These areas can be at any scale though catchment level is recommended as this matches other reporting products which will be incorporated into the five-yearly evaluation, such as Environment Protection Authority Victoria's annual water quality report card.

When combined with the EMP theme on CoastKit, the MCSI will provide a high-level, map-based visualisation of stewardship activity across the EMP jurisdiction. This is crucial as stewardship and volunteer activity fulfils a key role in environmental management (Measham & Barnett 2008).

Communication of these results needs to be very clear that all MCSI categories are essential and valued and the results do not compare the relative importance of the categories or the varying environmental outcomes. The MCSI simply visualises the continuum of stewardship activities. It is expected that as activities mature, they will move beyond the Supporting category. This has been seen for previous activities that have progressed from capacity building exercises through to exercises targeting specific, time critical environmental objectives.

5.1.2 For other programs

The MCSI can also be applied to any activity, under any program.

5.2 Improvement

5.2.1 For the PPB EMP

The EMP's primary objective is to ensure the ongoing health and resilience of the Bay and consequently, the EMP has a strong focus on environmental outcomes. However, as indicated previously, the EMP does have a stewardship goal. The stewardship goal aims to increase people's appreciation of both the biodiversity and cultural heritage of the Bay, and the impact of their behaviour in the broader catchment on the Bay's health. Currently this goal is primarily delivered through capacity building and knowledge development activities classified as Supporting under the MCSI. These activities lay the foundation for targeted contributions to environmental outcomes in the future.

As outlined, the MCSI can be used to identify the level of stewardship and accompanying environmental outcomes achieved during any given timeframe or spatial area. This information can inform decision making during the Delivery Plan revision and five-yearly evaluation processes to ensure activities included represent the desired balance of MCSI categories and consequently, greater environmental outcomes are achieved.

5.2.2 For other programs

The MCSI framework can be readily adopted into other programs as the indicators and scoring are not specific to the EMP. The framework can be used to target funding in the future to, for example, support community grant programs to achieve an appropriate balance between capacity building

and environmental outcomes through allocating funding proportionally to Supporting through to Comprehensive projects.

The ideal split may be hierarchical, such as the pyramid in Figure 2, or an equal distribution, such as Figure 3. Though it is more likely the preferred split will be different for each individual program based on its individual objectives. Some programs may preference community engagement and capacity building, while others target greater environmental outcomes.

Figure 2 Potential hierarchical distribution target of MCSI categories

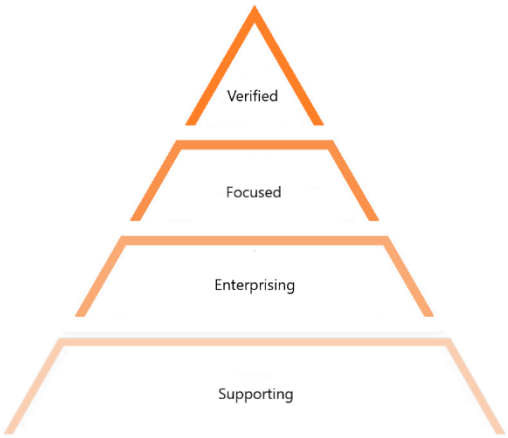
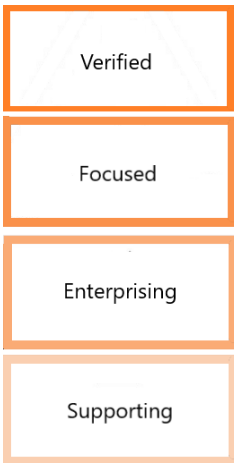


Figure 3 Potential equal distribution target of MCSI categories



6. Conclusion

The MCSI will enable efficient reporting and evaluation of the delivery of the EMP's stewardship goal. It will also support informed decision-making during planning processes to ensure a purposeful approach is taken to stewardship activities and their accompanying environmental outcomes. While developed for the EMP, the MCSI can be used in any environmental management setting where stewardship has been identified as a priority.

It is recommended that the MCSI be adopted for ongoing use in evaluation of the EMP, and the MCSI results for the first five-yearly evaluation be used as a benchmark to identify stewardship priorities and set targets for the following five years.

7. References

CEE Consultants Pty Ltd, November 2010. Feasibility of developing Marine Stewardship Indicator for Victorian marine environments. Final Report. Department of Sustainability and Environment

Department of Sustainability and Environment, 2003. Flora & Fauna Guarantee Action Statement: Orange-bellied parrot

Logan, M., Hu, Z., Brinkman, R., Sun, S., Sun, X. and Schaffelke, B., 2020. Ecosystem health report cards: An overview of frameworks and analytical methodologies. Ecological Indicators, Volume 113, page 105834

McIntosh, E. J., Rolfe, J., Pinto, U., Kirkwood, J., Greenlee, M. and Poiner, I. R., 2019. Designing report cards for aquatic health with a whole-of-system approach: Gladstone Harbour in the Great Barrier Reef. Ecological Indicators, Volume 102, pages 623 – 632

Measham, T. G. and Barnett, G. B., 2008. Environmental volunteering: Motivations, modes and outcomes. Australian Geographer, Volume 39(4), pages 573 - 552

Sinclair Knight Merz, 2009. Land Under Active Stewardship Headline Indicator. Final Report. Department of Sustainability and Environment