



# Baseline evaluation of the Marine Estate Management Strategy (Supplementary report)

Findings and recommendations from the first evaluation

A final report prepared for The Department of Regional NSW - Department of Primary Industries

3 September 2021

## About Aither

Aither's purpose is to help governments and businesses make better decisions about globally significant issues. Natural systems are increasingly strained and under threat, creating challenges in water, infrastructure, cities, agriculture and the environment. The future is uncertain, and the stakes are high.

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Aither assisted the Department of Primary Industries and MEMA agencies to collaboratively develop the MIMP MER Framework in 2019. Aside from preparing the Framework, Aither has not been involved in delivery of the MEMS. As such, Aither was able to provide an independent evaluation, with no real or perceived conflict of interest.

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## Abbreviations

Acronym	Meaning
DPI Agriculture	Department of Primary Industries Agriculture
DPIE	Department of Planning, Industry and Environment
DPIE Crown Lands	Department of Planning, Industry and Environment – Crown Lands
DPIE Water	Department of Planning, Industry and Environment - Water
DPIF	Department of Primary Industries Fisheries
DPIE – EES / EES	Department of Planning, Industry and Environment - Environment, Energy and Science
DPIE – P	Department of Planning, Industry and Environment – Planning and Assessment
EPA	Environment Protection Authority
EWG	Evaluation Working Group
IWG	Interagency Working Group
KEQ	Key Evaluation Question
KPI	Key Performance Indicator
LI	Leading Indicator
MASC	Marine estate Agency Steering Committee
MEEKP	Marine Estate Expert Knowledge Panel
MEMA	Marine Estate Management Authority
MEMS	Marine Estate Management Strategy
MEMS staff	Staff responsible for governance and/or delivery of the Marine Estate Management Strategy
MER	Monitoring, evaluation and reporting
Monitoring and Evaluation Framework	Integrated monitoring and evaluation framework for the Marine Integrated Monitoring Program
MIMP	Marine Integrated Monitoring Program
MIMP SC	Marine Integrated Monitoring Program Steering Committee
MIMP staff	Staff responsible for governance and/or delivery of the Marine Integrated Monitoring Program
NRAR	Natural Resource Access Regulator
NSW	New South Wales
TARA	Threat and Risk Assessment
TfNSW	Transport for NSW

Acronym	Meaning
TWG	Technical Working Group

## Introduction and purpose

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This report is supplementary to *Baseline evaluation of the Marine Estate Management Strategy: Findings and recommendations from the first evaluation (Strategy evaluation report)* (Aither 2021). It provides initiative-level findings to support the overall findings and recommendations contained in the main report.

The marine estate is one of the most significant natural assets in New South Wales. The Marine Estate Management Authority (MEMA) released the [Marine Estate Management Strategy](#) (MEMS) in 2018, to provide an overarching framework for coordinated management of the marine estate. It is a ten-year strategy with nine management initiatives designed to address priority threats to the marine estate.

The Strategy evaluation report provides findings and recommendations that apply across the nine initiatives, and how the initiatives and responsible agencies collectively deliver the MEMS. It also outlines the context, purpose and approach to the evaluation. The evaluation is intended to identify achievement against short-term outcomes (0-2 years) set out in the 2019 [integrated monitoring and evaluation framework](#) (the Monitoring and Evaluation Framework), present baseline information against which to measure future performance, identify insights for continuous improvement, and support internal transparency and accountability. Although it was not the primary purpose of the evaluation, early progress towards intermediate outcomes (2-5 years) has been identified, to show the strength of MEMS delivery in these areas. The evaluation drew on quantitative and qualitative information from monitoring against outcome indicators, interviews, administrative data, MEMS strategic documents, MEMS reporting documents and processes, and MEMA reports. All information was provided by the MEMA agencies.

This supplementary report provides findings that are specific to each initiative. Findings that were common across initiatives, particularly those in relation to process, are not repeated in this report unless there was a specific challenge or implication for an individual initiative. All initiatives experienced general delivery challenges due to external factors, such as COVID-19, bushfires, floods, machinery of government changes and other events in the operating environment. These challenges and implications are discussed in the Strategy evaluation report and are only repeated in this report where there was a challenge or opportunity specific to an initiative. Therefore, findings in this report should be read alongside those in the Strategy evaluation report. However, findings for individual initiatives may be read in isolation of other initiatives.

Findings for each initiative are presented by the following evaluation types, in accordance with the MIMP Framework and the [2016 NSW Government Program Evaluation Guidelines](#):

- Context and basis
- Outcomes evaluation
- Process evaluation

Unless otherwise specified, information for each section (including results against indicators) was sourced from agency administrative data, MEMS documents, MEMA reports or interviews. All information was provided by the MEMA agencies.

# Initiative 1: Improving water quality and reducing litter

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## Context and basis for the initiative

Initiative 1 was developed to respond to the highest priority threats and stressors identified through the TARA: water pollution and run-off. Water pollution, run-off and litter are significant contributors to poor water quality in the marine estate. This in turn effects habitat, wildlife and the social, economic and cultural values of the marine estate. Water quality and litter are long-term issues, requiring a mix of policy, regulatory, community engagement and on-ground solutions. Initiative 1 has progressed through the development of pilot programs and establishing foundations that will drive improvements to water quality. Improving water quality remains important to enhancing marine estate values, and there is need to continue building on the foundations established through Initiative 1 to support further water quality improvements. Therefore, Initiative 1 remains critically important.

Stakeholders have great interest in the work of Initiative 1. There are high expectations for what the initiative can achieve and some misunderstanding of the scope of actions under Initiative 1. As a result, there has been great need for Initiative 1 staff to manage unrealistic stakeholder expectations, particularly among councils and communities regarding the scope of the pilot programs and alignment with the Coastal Management Act (see below), while ensuring they deliver on those expectations that are aligned with the intent and scope of the initiative.

There is lack of clarity regarding the alignment of the MEMS and the Coastal Management Act among stakeholders. The Coastal Management Act includes an objective to “support the objects of the Marine Estate Management Act 2014”, however, external stakeholders are confused about the different scopes of the MEMS and the Coastal Management Act, and where responsibilities lie between the two. This has created challenges for delivery of Initiative 1, particularly as there is a council misperception that the MEMS is intended to provide information for the coastal management program, which was not included the initiative's original scope and actions, and, therefore, budget. There is need to improve understanding and communication with external stakeholders regarding the scope of each, including the differences, overlaps and complementary roles of the MEMS and coastal management program.

Initiative 1 is large and has complex governance and delivery arrangements across multiple agencies. The initiative was divided into Initiative 1a and Initiative 1b, which aligned with the different responsibilities of the two lead agencies in 2019, DPI and OEH. DPI and OEH were merged into the new DPIE cluster, and DPI has since been moved to the Department of Regional NSW. Initiative 1a and Initiative 1b have shared outcomes, but continue to be administered separately. Many staff felt that the division has affected collaboration, transparency and efficiency across the initiative, and questioned whether this approach remains appropriate. Staff agreed that there is need to improve efficiency and coordination, but there were different views on the approach that would best support that. Options included better integrating Initiative 1a and 1b, formally integrating Initiative 1b and Initiative 2, merging Initiatives 1a, 1b and 2, or realigning actions and projects within the initiatives. There is no perfect way to structure initiatives 1a, 1b and 2, however, given the comments raised by staff, there is need to consider whether an alternative approach would improve efficiency and coordination compared to the current arrangements.

## Findings from the outcomes evaluation

### Summary

Staff reported that some outcomes for Initiative 1 were unrealistic for the nominated timelines and noted that many projects undertaken during Stage 1, particularly those relating to the risk-based framework and other pilot programs, provide important foundations for achieving outcomes beyond Stage 1. This includes activities to identify and inform planning for future projects in alignment with the initiative's management actions. Therefore, there has been significant effort in establishing foundations for success across the identified outcomes, however, the effect of this work is only partly reflected in outcomes findings as it is too soon to observe measurable change. Staff have identified the need to review outcomes for Initiative 1 to better reflect expected timeframes for achieving change and to improve alignment with the initiative's scope. Staff have also proposed refinements to multiple indicators and measures to improve appropriateness and alignment with outcomes, and to reflect data that is more readily available.

Initiative 1 staff continue to engage with stakeholders and the community to improve understanding of water quality issues, and their responsibilities, behaviours and practices to support improvements in water quality. Pilot programs, including applications of the new Risk-based Framework for Considering Waterway Health Outcomes and new water quality monitoring programs, have been implemented to support multiple short-term and intermediate outcomes at a local scale. These activities are expected to support outcomes across the marine estate in the future as the programs continue to be implemented, using insights from the pilots and through a stakeholder capacity building program. These future outcomes include enduring outcomes that are unlikely to be realised within the timeframe of the MEMS, as they relate to strengthened provisions for stormwater management in strategic and local planning instruments target that new developments, re-developments and infill developments that are expected to be completed following the MEMS' ten-year horizon. There have been extensive on-ground works programs delivered by multiple agencies to improve habitat, reduce nutrient and sediment runoff, improve floodplain management, and ultimately, improve water quality. These works will contribute to outcomes at different timescales, including outcomes that may not be realised until after the 10-year timeframe for the MEMS due to inherent lag times between undertaking actions and achieving change in environmental condition.

This section provides a summary of findings against outcomes, identifies any unexpected or unintended outcomes (where relevant), provides commentary on ongoing appropriateness of outcomes and indicators, and notes any insights for future success.

## Short-term outcomes

Indicator results and other findings for short-term outcomes (0-2 years) for Initiative 1 are provided below (Table 1). Results for some indicators, including outcome indicators that reflect changes in stakeholder understanding, awareness, clarity, values and behaviour, are intended to be drawn from surveys. Baseline surveys were being conducted at the time of this evaluation and could not be included in the results below. Initiative staff have requested refinements to multiple outcomes and indicators to reflect more realistic timeframes and to capture more appropriate or readily available monitoring data and information, including identifying indicators or measures to replace or complement those that draw on survey data. Refinements to outcomes, indicators and measures will be agreed following this evaluation, and are expected to improve data availability in the future. Findings from other data sources have been integrated and are also included for each outcome below.

Table 1 Findings against short-term outcomes for Initiative 1

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	2020 result	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
1K: Greater clarity of roles, responsibilities and accountabilities among all agencies responsible for water quality and litter management	Responsible agencies demonstrate clarity of roles, responsibilities and accountabilities for managing the marine estate (LI 5)	<b>Responsible agency staff:</b> proportion of survey respondents demonstrating clarity	Not available. Survey yet to be conducted.	<ul style="list-style-type: none"> <li>Staff have mapped roles and responsibilities for water quality management, which staff report has supported clarity of roles and responsibilities among responsible agencies.</li> <li>A survey of ESS staff conducted as part of actions to develop the RBF found that approximately 35% of staff reported they understood their role with EES in delivering the State's Water Policy (approximately 40% skipped the question).</li> <li>Outcome 1K is linked to outcomes 1L and 1N, and findings against these outcomes will also support change against Outcome 1K.</li> </ul>	1.1 1.2 (a) 1.2 (c) 1.4	Communities - Coordinated and inclusive approach to management  Aboriginal People - Coordinated and inclusive approach to management  Landowners: Rural and Urban - Coordinated and inclusive approach to management  Boat users - Coordinated and inclusive approach to management
		<b>Targeted stakeholders:</b> proportion of survey respondents demonstrating clarity	Not available. Baseline survey being conducted at the time of this evaluation.			
1L: Improved access to, use, coordination and efficiency of frameworks, policies and processes by responsible agencies for managing water quality and litter	Relevant agency staff demonstrate use of the risk-based framework and other relevant frameworks, policies and processes for managing water quality (LI 2)	*Proportion of survey respondents reporting awareness, use and/or recommending use of Risk-based Framework	Proportion of surveyed EES staff reporting understanding of RBF: ~48% (40% skipped the question) <sup>1</sup>  Proportion of surveyed EES staff reporting awareness of tools to support RBF: ~35% (40% skipped the question) <sup>2</sup>	<ul style="list-style-type: none"> <li>The <i>Risk-based Framework for Considering Waterway Health Outcomes in Strategic Landuse Planning Decisions</i> (RBF) is a significant action for Initiative 1, and is expected to contribute to multiple short-term, intermediate and long-term outcomes. It has been applied in pilot areas for South Creek, Northern Beaches LGA, Hornsby Shire LGA, Lake Illawarra Catchment and Richmond River Catchment. It has been adopted through various mechanisms, for example:               <ul style="list-style-type: none"> <li>Regional planning, through the Greater Sydney Regional Plan and the North District Plan</li> <li>Revisions to Local Strategic Planning Statement, Local Environment Plans (LEPS) and Development Control Planning (DCPs).</li> </ul> </li> </ul>	1.1 1.2 (a) 1.2 (b) 1.2 (c)	Communities - Coordinated and inclusive approach to management  Aboriginal People - Coordinated and inclusive approach to management  Landowners: Rural and Urban - Coordinated and inclusive approach to management

<sup>1</sup> RBF OEH Engagement Outcomes and Recommendations Report. Internal administrative data.

<sup>2</sup> RBF OEH Engagement Outcomes and Recommendations Report. Internal administrative data.

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	2020 result	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
			Level of application among surveyed stakeholders: 61% reported application in some waterways. <sup>3</sup>  Level of familiarity with RBF among stakeholders prior to consultation: average 36% (between "not at all" and "partially" familiar) <sup>4</sup>	<ul style="list-style-type: none"> <li>- The draft Aerotropolis State Environmental Planning Policy (SEPP) and Development Control Plan (DCP)</li> <li>- Stormwater strategies</li> <li>• Through the application of the RBF in the South Creek catchment, water quality and related developer controls have been included in a legislated planning instrument for the first time in NSW. This is a fundamental change that sets a precedent for improving stormwater management, and therefore waterway, estuary and marine estate health, across NSW.</li> <li>• For each RBF pilot, partner agencies (local councils, Sydney Water) have invested in adapting their business to apply the framework, indicating their support for the RBF and recognising the benefits it can deliver.</li> <li>• There is significant work being undertaken through the risk-based framework pilot projects to develop guidelines, data sets, tools, fact sheets, case studies and other information to support councils to implement the framework. This support information is being released publicly upon completion, where appropriate. Workshops are also being conducted with local councils to build awareness of the framework.</li> <li>• At least one Local Land Services (South East LLS) has reported including the risk-based framework in its prioritisation process for on-ground works to improve water quality, including riparian rehabilitation, bank protection and road/track works.</li> <li>• Staff have identified that confidence among local government can be a barrier to using the frameworks for managing water quality and litter effectively. Staff continue to engage with stakeholders to build capacity to implement the Risk-based Framework.</li> </ul>		Boat users - Coordinated and inclusive approach to management
	*Number of times toolkit on Risk-based Framework is accessed	Not available. This will begin in 2021 when the toolkit is released.				
	*Proportion of documents demonstrating use of DMPs or Floodplain study information.	Not available.				
	*Number of 'new' BCA and FMA PLC sites (related to marine estate) and Aquatic Offsets	Not available				
	*Number of works approvals done under new processes	Not available.				
	*Agency staff survey: Proportion of survey respondents' confidence	Not available. Baseline survey not yet conducted.				

<sup>3</sup> Survey of workshop participants from various catchments and LGAs

<sup>4</sup> Survey of workshop participants from various catchments and LGAs

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	2020 result	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
	Responsible agencies report confidence with capacity to fulfil governance roles and responsibilities (LI 11)	Proportion of survey respondents' confidence	Not available. Baseline survey not yet conducted.	<ul style="list-style-type: none"> <li>The delivery of pilot projects across Initiative 1 actions is also helping to develop consistent approaches and data sets that can be eventually used across the state, and will further support improved use, coordination and efficiency of processes for managing water quality and litter. In addition, the engagement undertaken during pilot programs is building the knowledge of the MEMS and Initiative 1 actions and scope, and driving further collaboration.</li> <li>Fish Friendly Council Workshops and associated workshop booklets and videos have been completed to outline key requirements to reduce the impact of works on fish habitats. Four Fish Friendly videos have been produced, with a total of 1090 views</li> <li>Initiative 1 staff propose the following measures be added to Leading Indicator 2: <ul style="list-style-type: none"> <li>Proportion of survey respondents reporting awareness, use and/or recommending use of Risk-based Framework</li> <li>Number of times toolkit on Risk-based Framework is accessed (replacing "Proportion of planning instruments that reflect the risk-based framework for water quality and river flow objectives")</li> <li>Agency staff survey: Proportion of survey respondents' confidence</li> </ul> </li> </ul>		
1M: Greater community awareness of the sources and effects of water pollution and litter on the marine estate	Community members and targeted stakeholders demonstrate awareness of benefits of, and threats to, the marine estate (LI 10)	<b>*Community:</b> Proportion of survey respondents reporting awareness and clarity	Not available. Baseline survey being conducted at the time of this evaluation.	<ul style="list-style-type: none"> <li>The "Don't be a Tosser" song, intended to encourage behaviour change in relation to litter, has had more than 275,000 views, exceeding the target for the campaign by 48%. Most (96%) views occurred through YouTube Discovery, where contextually relevant ads are promoted, suggesting that users were interested in the content. This campaign will continue in Stage 2.</li> <li>The EPA was conducting a social research evaluation of the marine litter campaign at the time of this evaluation, which is expected to provide results on behaviours once completed.</li> <li>A marine based litter measure, the Key Litter Item Study (KLIS) is tracking marine debris in NSW. This study is providing critical data on the composition of marine debris. The findings will be used to identify reduction in debris densities as well as sources of marine litter debris, and to communicate with key stakeholders' and community groups on upstream solutions.</li> </ul>	1.1 1.2 (d) 1.3 1.4 1.5	Communities - Improved communication and education  Landowners: Rural and Urban - Improved communication and education
		<b>*Targeted stakeholders:</b> Proportion of survey respondents reporting awareness and clarity	Not available. Baseline survey being conducted at the time of this evaluation.			
		<b>*Post-event:</b> Proportion of survey respondents reporting awareness and clarity	Not available. Baseline survey being conducted at the time of this evaluation.			

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	2020 result	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
				<ul style="list-style-type: none"> <li>Research to understand the source of faecal indicator bacteria (FIB) at two sites with high contamination found contamination was due to sewage infiltration of stormwater. A toolkit developed alongside this research will assist in source tracking at other sites.</li> <li>Initiative 1 staff continue to engage with the community through project delivery, webinars, consultative committees, behaviour change campaigns, and stewardship groups. These activities will likely support further measurable change for this outcome.</li> <li>Post-event surveys will be conducted in the future, including following the upcoming community meeting for Tilba Tilba. These surveys will assist in measuring this outcome.</li> <li>Some of the additional data collection processes listed for Outcome 1N will also support future measurement of this outcome.</li> </ul>		
1N: Improved community, landholder, urban planner and developer understanding of best practice land management, rules and regulations for managing water pollution and litter	Community and targeted stakeholders report awareness and clarity of rules, regulations, guidelines, best practice and their responsibilities for undertaking activities related to the marine estate (LI 21)	* <b>Community:</b> Proportion of survey respondents reporting awareness and clarity	Not available. Baseline survey being conducted at the time of this evaluation.	<ul style="list-style-type: none"> <li>Overall, staff felt that there has been improved understanding among stakeholders.</li> <li>The risk-based framework (see Outcome 1L) supports this outcome. A range of guidance and tools, the online toolkit and training with agency staff and local government, industry and other stakeholders delivered through the pilot programs are important for supporting understanding of best practice land management, rules and regulations for managing water pollution and litter.</li> <li>DPI staff reported being approached by other organisations for information on how to implement best practice oyster reef restoration, reflecting growing awareness and desire to adopt best practice.</li> <li>The research and capacity-building work undertaken through the MEMS to assist agriculture and horticulture industries to improve operations to reduce nutrient and sediment runoff has been endorsed by peak bodies, including Protected Cropping Australia and Berries Australia. Letters of support from these organisations indicate that they see value in this groundwork and highlight the need for continuing engagement and support to ensure growing adoption of best practice management.</li> </ul>	1.1 1.2 (d) 1.4	<p>Communities - Improved communication and education</p> <p>Landowners: Rural and Urban - Clearer guidelines and better land use management</p> <p>Landowners: Rural and Urban - Reduced loss of topsoil and erosion events</p> <p>Landowners: Rural and Urban - Better support to implement best management practices</p> <p>Landowners: Rural and Urban - Improved communication and education</p> <p>Landowners: Rural and Urban - Improved capacity building</p>
		* <b>Targeted stakeholders:</b> Proportion of survey respondents reporting awareness and clarity	Not available. Baseline survey being conducted at the time of this evaluation.			
		* <b>Post-event:</b> Proportion of survey respondents reporting awareness and clarity	69% of oyster farmers had limited or no knowledge of oyster reef restoration. <sup>5</sup>			

<sup>5</sup> NSW Government, Oyster Reef Restoration NSW Oyster Industry Survey, July 2019, [https://www.marine.nsw.gov.au/\\_data/assets/pdf\\_file/0020/1149131/Summary-report-Oyster-reef-restoration-industry-survey.pdf](https://www.marine.nsw.gov.au/_data/assets/pdf_file/0020/1149131/Summary-report-Oyster-reef-restoration-industry-survey.pdf)

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	2020 result	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
				<ul style="list-style-type: none"> <li>Initiative 1 staff also work with farmers on improving awareness of best practice. While the changes in attitude and awareness have not been measured, staff indicated that changes can be inferred through the increased interest and participation in incentive programs for improved orchard and blueberry farm management. For example, the number of blueberry farms applying for grants to complete on-farm works to improve water, nutrient and erosion management grew from five in the first round (all of whom were approached by agency staff to participate) to 60 in the second round. This indicates growing awareness in the benefits of improving farming practices. Similarly, for the pilots of the Risk-based Framework, staff reported that partner councils were now in the process of expanding the pilots in their Local Government Area through additional investments.</li> <li>The "Don't be a Tosser" marine litter campaign (see Outcome 1M) also supports this outcome.</li> <li>A website is being prepared to provide the community with all relevant information regarding NSW estuaries.</li> <li>Initiative 1 staff continue to engage with the community and stakeholders through project delivery, webinars, consultative committees, behaviour change campaigns, and stewardship groups. These activities will likely support further measurable change for this outcome.</li> <li>Staff reported a range of additional post-event surveys, consultative committee interviews and other processes that will be used to capture changes in community and stakeholder awareness and clarity of rules, regulations, best practice and their own responsibilities. Data from these processes will be available in the future and are expected to include feedback from a range of stakeholders, including oyster farmers, recreational fishers, farmers, agronomists and councils. Post-event surveys are expected to provide a more meaningful approach than the community survey to measure Leading Indicator 21 for this initiative. Measures can be updated to reflect future data availability.</li> </ul>		

## Intermediate outcomes

Intermediate outcomes have expected timeframes of 2-5 years. Therefore, intermediate outcomes were not expected to be achieved at the time of this evaluation. However, there is early progress against some intermediate outcomes for Initiative 1. Those intermediate outcomes where there is early progress are shown below (Table 2). This includes indicator results where available and findings from other sources.

Table 2 Findings against intermediate outcomes for Initiative 1

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	Results	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
1D: Improved consistency, coordination and integration among responsible agencies	Community and stakeholders report satisfaction with governance of the marine estate (KPI 12)	Average satisfaction rating based on Likert scale for each measure	Not available. Baseline survey being conducted at the time of this evaluation.	<ul style="list-style-type: none"> <li>This outcome is linked to outcomes 1L and 1K, findings against these outcomes are also relevant for Outcome 1D.</li> <li>There has been significant engagement and collaboration with multiple agencies through the development of the risk-based framework, the application of the framework in pilot areas, and through sharing education and support materials with relevant agencies. This includes engagement and partnerships with other state government departments, local government, water utilities, local land services, Coastal Council and stormwater practitioners. Current and future applications of the framework, in conjunction with ongoing engagement and materials to support agencies to apply the framework, is expected to support this outcome.</li> <li>New partnerships are being established that support consistency, coordination and integration among responsible agencies. For example, DPI, National Parks and Wildlife Service (NPWS), Roads and Maritime Services and councils are working in partnerships to identify sites and plan for wetland rehabilitation works. So far, this has resulted in the purchase of a 174 ha property for important wetland rehabilitation adjacent to the Clarence River estuary.</li> </ul>	1.1 1.2 (a) 1.5	Communities - Coordinated and inclusive approach to management
	Relevant agency staff demonstrate use of the risk-based framework and other relevant frameworks, policies and processes for managing water quality (LI 2)	*See Outcome 1L	See Outcome 1L			
	Responsible agencies demonstrate clarity of roles, responsibilities and accountabilities for managing the marine estate (LI 5)	See Outcome 1K	See Outcome 1K			
1E: Frameworks, policies and processes for managing water quality are embedded in responsible agencies' business-as-usual operations	Relevant agency staff demonstrate use of the risk-based framework and other relevant frameworks, policies and processes for managing water quality (LI 2)	*See Outcome 1L	See Outcome 1L	<ul style="list-style-type: none"> <li>This outcome is linked to outcomes 1L, 1K and 1I, and findings against these outcomes is expected to support Outcome 1E.</li> <li>For each RBF pilot, partner agencies (local councils, Sydney Water) are embedding the framework into their business-as-usual operations by investing in adapting their business to apply the framework.</li> <li>At least one Local Land Services (South East LLS) has reported including the risk-based framework in its prioritisation process for on-ground works to improve water quality, including riparian rehabilitation, bank protection and road/track works.</li> </ul>	1.1 1.2 (a) 1.2 (b) 1.2 (c)	Communities - Coordinated and inclusive approach to management  Aboriginal People - Coordinated and inclusive approach to management  Landowners: Rural and Urban - Coordinated and inclusive approach to management  Boat users - Coordinated and inclusive approach to management
	Responsible agencies demonstrate clarity of roles, responsibilities and accountabilities for managing the marine estate (LI 5)	See Outcome 1K	See Outcome 1K			
	Responsible agencies report confidence with capacity to fulfil governance roles and responsibilities (LI 11)	See Outcome 1L	See Outcome 1L			

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	Results	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
1F: Improved understanding among responsible agencies of methods, associated effectiveness and benefit of investment for managing water quality and litter	Relevant agency staff demonstrate use of the risk-based framework and other relevant frameworks, policies and processes for managing water quality (LI 2)	*See Outcome 1L	See Outcome 1L	<ul style="list-style-type: none"> <li>Initiative 1 continues to build understanding of methods, associated effectiveness and benefit of investment for managing water quality and litter and to address knowledge gaps. The improved understanding resulting from this work is not reflected in the results against indicators for this outcome. Staff have requested new measures to better capture this progress in the future.</li> <li>Staff have identified that existing funding arrangements for stormwater management were not fit for purpose, and have identified alternative options.</li> <li>Staff listed more than 15 knowledge gaps that are currently being addressed, or will be addressed in the future. Examples include: <ul style="list-style-type: none"> <li>Mapping extent and attributes of remnant oyster reefs in NSW estuaries</li> <li>Raising community awareness of oyster reefs</li> <li>Investigating best practice management techniques to reduce erosion and nutrient run-off from agriculture to the marine estate</li> <li>Risks to existing landuse and practices from sea level rise, including impacts on floodgate functionality and drainage capacity across the floodplains through the WRL Coastal Floodplain Prioritisation Studies</li> <li>Nutrient capture/sequestration and soil accumulation in riparian intercept plantings and mangrove nursery structures</li> <li>Monitoring of the new oyster reefs created through MEMS actions reveal that the reefs are supporting new habitat (through presence of young oysters and marine snails) and providing water quality benefits through water filtration.</li> <li>Staff and research partners have developed new methods and guidelines for monitoring water quality and waterway health and to assess effectiveness of interventions. Projects include: <ul style="list-style-type: none"> <li>Developing new indicators for monitoring estuary health.</li> <li>Conducting stream health assessments to test usefulness of various water quality, visual and aquatic macroinvertebrate indicators of catchment disturbance.</li> <li>Manual to guide LLS staff and the community on collecting water quality indicators to monitor the effectiveness of stream and catchment remediation works.</li> </ul> </li> </ul> </li> </ul>	1.1 1.2 (a) 1.2 (b) 1.2 (d) 1.5	Communities - Improved communication and education  Landowners: Rural and Urban - Research and monitoring to inform adaptive management
	Knowledge gaps adequately addressed. Knowledge gaps relate to threats, stressors, risks, condition, value and management approaches (LI 3)	*Number of knowledge gaps with status changing from 'inferred' to 'adequate'	Not available – to be assessed during 2022 review of the TARA. Alternative measure(s) requested by MEMS staff.			
	Responsible agencies report confidence with capacity to fulfil governance roles and responsibilities (LI 11)	See Outcome 1L	See Outcome 1L			

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	Results	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
1G: Maintained or improved water quality and waterway health in pilot areas	*Water quality supports community values and uses at targeted sites (LI 1)	Protection of Aquatic Ecosystems: Proportion of sites with Estuary Health Grade A or B.)	North region <ul style="list-style-type: none"> <li>2015/16: 64%</li> <li>2018/19: 76%</li> </ul> Central region: <ul style="list-style-type: none"> <li>2016/17: 36%</li> <li>2019/20: 44%</li> </ul> South region: <ul style="list-style-type: none"> <li>2017/18: 84%</li> <li>2020/21: 83%</li> </ul>	<ul style="list-style-type: none"> <li>Initiative 1 staff have identified the need to review this outcome and LI 1 (including measures). Staff propose using a measure of reduction in annual inputs of nutrients, sediments and runoff volume to waterways in urban pilot areas, based on modelled estimates comparing business as usual with new stormwater controls.</li> <li>Staff have also suggested removing LI 4 as it does not strongly align with the outcome.</li> <li>Modelling has been completed to estimate baseline water quality in RBF pilot areas at Wianamatta-South Creek, Northern Beaches LGA, Hornsby Shire LGA, Lake Illawarra Catchment and Richmond River Catchment. The baseline model reflects business-as-usual stormwater controls in the pilot areas Water quality will be monitored to identify changes against the baseline resulting from implementing the Risk-based Framework.</li> <li>Staff report that pilot applications of the risk-based framework are contributing towards maintained or reduced likelihood of stormwater discharges affecting community values.</li> <li>Water quality data has been collected in 170 estuaries, including the pilot areas, over the past 12 years and is being converted to health grades. This will provide a baseline and standardised method for measuring future change for these areas. Health grades will be included in publicly available report cards.</li> <li>Monitoring of ecological health in waterways is also being undertaken to support implementation of the risk-based framework. Staff continue to establish and implement site-based water quality monitoring programs to provide data to inform adaptive management and measuring change in this outcome. Water quality monitoring programs include: <ul style="list-style-type: none"> <li>Richmond River Water Quality Monitoring Strategy</li> <li>The Tilba Tilba water quality monitoring program, in partnership with the local community</li> <li>Monitoring bushfire impacts for water quality, in partnership with local councils</li> <li>Water quality monitoring for pilot application of Risk-based Framework</li> <li>Hunter Local Land Services water quality monitoring</li> <li>Monitoring at agricultural demonstration sites for the macadamia and blueberry industries</li> </ul> </li> </ul>	1.1 1.3	Communities - Improved water quality, healthier habitats and less litter  Aboriginal People - Improved water quality, healthier habitats and less litter
		Protection of Aquatic Ecosystems: Proportion of sites with Estuary Health Grade D or E	North region <ul style="list-style-type: none"> <li>2015/16: 8%</li> <li>2018/19: 7%</li> </ul> Central region: <ul style="list-style-type: none"> <li>2016/17:32%</li> <li>2019/20: 20%</li> </ul> South region: <ul style="list-style-type: none"> <li>2017/18: 0%</li> <li>2020/21: 6%</li> </ul>			
		Overall beach performance (% of Beachwatch sites graded good (B) or very good (A))	2018-19: 86% 2019-20: 89%			
		Edible Seafood	Not available - measure being further developed.			
	*Aquatic and marine habitat connectivity (LI 4)	Refer to Outcome 1J	Refer to Outcome 1J			

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	Results	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
				<ul style="list-style-type: none"> <li>Staff also continue to investigate new methods for monitoring water quality, such as DNA analysis to help determine whether water quality at monitored sites is suitable for recreation activities.</li> <li>Staff are continuing to review data relating to edible seafood and anticipate using a grading system to measure this in the future.</li> </ul>		
1H: Reduction in input litter in target regions	* National Litter Index results for NSW (to be replaced with Key Littered Items Study (KLIS))	*Litter items per 1000 square metres (NSW) (terrestrial)	<p>National Litter Index:</p> <ul style="list-style-type: none"> <li>2018-19: 44 items/1000m<sup>2</sup></li> <li>2019-20: 46 items/1000m<sup>2</sup></li> </ul>	<ul style="list-style-type: none"> <li>The NLI was ceased at the end of 2020.</li> <li>The Key Litter Item Study (KLIS) is a marine debris monitoring program established in NSW. It has supplemented the NLI and will replace it from 2021.</li> <li>Target litter densities for this outcome have not yet been established. The Waste and Sustainable Materials Strategy 2041 will provide a foundation to reduce litter (60% by 2030,) The KLIS will track progress against MEMA outcomes.</li> <li>The Marine Debris TARA is expected to guide selection of target marine debris/ litter items in the future.</li> <li>Results shown for LI 29 reflect terrestrial litter. Initiative 1 staff have worked to supplement and replace the current index to include marine litter (litter items per square metres). Results are: <ul style="list-style-type: none"> <li>– Baseline 2018-19 – 190 items per 1000m<sup>2</sup>**</li> <li>– 2019-20 – 158.66 items per 1000m<sup>2</sup></li> </ul> </li> <li>**The 2018-19 baseline year comprises data from all eight litter counts across both 2018 and 2019. The baseline item density and ongoing monitoring values refer to a sub-set of program target items. These indicator values exclude certain items such as fragments and larger categories such as commercial fishing, which are captured in the broader KLIS but are outside the current NSW litter prevention scope.</li> <li>The Key Littered Item Study monitoring sites are in mangroves in urban estuaries and on select remote beaches which span the full length of the NSW coast. A baseline density of debris items across the 2018-2019 period has been created with which future reductions will be measured (KPI29)</li> </ul>	1.1 1.4 1.5	Communities - Improved water quality, healthier habitats and less litter
1I: Improved adoption of best practice land management and compliance with rules and regulations for managing water pollution and litter	*Adoption of best practice approaches and processes for undertaking activities related to the marine estate among the community and targeted stakeholders (KPI 15)	* <b>Community:</b> Proportion of survey respondents self-reporting use of best practice approaches and processes	Not available. Baseline survey being conducted at the time of this evaluation.	<ul style="list-style-type: none"> <li>Outcome 1I builds on short-term outcomes, particularly outcomes 1N and 1L. Achievement against outcomes 1N and 1L will support progress against outcome 1I.</li> <li>Staff suggest adopting a measure of the number of planning instruments and land use plans that reference the RBF. Results for this measure are:</li> </ul>	1.1 1.2 (d) 1.3	Landowners: Rural and Urban - Reduced loss of topsoil and erosion events

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	Results	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
		<b>*Targeted stakeholders:</b> Proportion of survey respondents self-reporting use of best practice approaches and processes	Not available. Baseline survey being conducted at the time of this evaluation.	<ul style="list-style-type: none"> <li>– 2018: 8 (DCPs, Local Strategic Planning Statements, SEARS, Greater Sydney Water Strategy, Castle Hill area, Greater Sydney Harbour CMP, Cooks, Georges, Bayside CMPS, Hawkesbury CMP (Hornsby))</li> <li>• It is important to note that the number of fines issued (LI 12) may partially reflect rates of community reporting rather than just reflecting rates on non-compliance. There was effort to promote the "Report to EPA" program, which may have influenced reporting rates.</li> <li>• Staff continue to audit Fisheries Management Act permits on a local government area (LGA) basis. 108 audits were conducted across 10 (LGAs), and feedback provided on how councils can improve compliance and minimise impacts on the marine estate.</li> <li>• Staff suggested that the types of permit breaches measured through LI 12 could be extended beyond fisheries permits for future measures.</li> <li>• Current council controls for erosion and sediment management have been assessed against best practice, and the findings will be used to assist in improving use of best practice in the future.</li> <li>• Oyster reef restoration has been reflected in the coastal management plan for Tweed Estuary, and in draft plans for Wagonga, Mumaga and Moruya estuaries. Fact sheets are available online to support councils to embed oyster reef restoration in coastal management programs.</li> <li>• The Australian Macadamia Society reports that approximately 300 ha of orchards have adopted integrated orchard management and improved quality of water runoff as a result of MEMS projects.</li> <li>• A collaboration between DPI, LLS, Wagonga Local Aboriginal Land Council and landowners of the Tilba Tilba region has seen adoption of best practice land management through extensive revegetation and stock exclusion works to protect the health of Tilba Tilba Lagoon and Victoria Creek.</li> <li>• Staff have questioned the appropriateness of the community survey as a data source for measuring this outcome. They have proposed multiple additional or alternative measures, or data sources that could inform measures, for KPI 15 and LI 12, including: <ul style="list-style-type: none"> <li>– Number of planning instruments and land use plans providing direction to use the Risk-based Framework</li> <li>– Works contracts and maintenance agreements</li> </ul> </li> </ul>		
	*Non-compliance among the community and targeted stakeholders with rules, regulations, guidelines and their responsibilities for undertaking activities related to the marine estate (LI 12)	Total litter fines issued in NSW	2018-19: 7369 fines 2019-20: 7820 fines			
		*Proportion of fisheries permit breaches	NA			
		Proportion of building sites compliant with runoff requirements	2018: 50% across Syd and Central Coast 2019: 62% across Syd and Lake Macquarie			

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	Results	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
				<ul style="list-style-type: none"> <li>– Adoption of improved nutrient management practice through uptake of nutrient best management practices. For example, blueberry nutrition guidelines, erosion mitigation practices and nutrient management in cropping, berry, macadamias and livestock industries.</li> <li>– Compliance audits undertaken through the Fish Friendly Local Council Program</li> <li>– Number of landholder agreements signed, as these will always reflect relevant best practice for the intended water quality projects and works</li> <li>– Post-event survey results (refer to Outcome 1N)</li> </ul>		
1J: Increased area of coastal landscape managed for biodiversity, habitat or to reduce diffuse source water pollution	*Aquatic and marine habitat connectivity (LI 4)	*Waterway length opened up (km)	Not available	<ul style="list-style-type: none"> <li>• Initiative 1 staff have identified alternative measures to LI 4, which are now considered more appropriate to this outcome and the work undertaken through this initiative. These alternative measures reflect the following data, which will be collected in the future: <ul style="list-style-type: none"> <li>– Area managed for habitat or to reduce diffuse source water pollution (km<sup>2</sup>/ha),</li> <li>– Tonnes of soil/sediment reduced,</li> <li>– Water quality metrics, including phosphorus, pH, nitrogen, and dissolved oxygen,</li> <li>– Additional metrics collected through the oyster reef program, such as fish and invertebrate abundance and diversity, oyster growth and abundance, water filtration, presence of invasive species.</li> </ul> </li> <li>• Staff continue to undertake a range of on-ground works to support this reduction of diffuse source water pollution, often working closely with councils. On-ground works include: <ul style="list-style-type: none"> <li>– Sealing dirt roads to reduce sediment in run-off</li> <li>– Upgrading road drainage infrastructure to reduce erosion and sediment and nutrient runoff</li> <li>– Fencing and managing riparian and wetland vegetation</li> <li>– Planting new riparian and wetland vegetation</li> <li>– Bank protection in estuaries and foreshore area to manage erosion and protect habitat</li> </ul> </li> </ul>	1.1	<p>Communities - Improved water quality, healthier habitats and less litter</p> <p>Aboriginal People - Abundant and diverse marine life for current and future generations</p> <p>Aboriginal People - Improved water quality, healthier habitats and less litter</p>
	Area of coastal landscape managed for habitat or to reduce diffuse source water pollution (LI 28)	Area of land (Hectares)	Purchase of 174 ha of wetland for inclusion into reserved estate			

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	Results	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
				<ul style="list-style-type: none"> <li>• In some areas, such as the Mid Coast Council, MEMS-funded on-ground works have attracted additional funding from other sources, extending the reach of these programs. For example, in the Mid Coast Council area, \$105,000 of MEMS funding was matched by \$758,000 in funding from landholders for wetland protection in the Karuah catchment, while \$806,000 of MEMS funding for treating unsealed roads attracted an additional \$2m for an erosion hotspot project.</li> <li>• Staff have data reflecting the length and area of land and sites addressed through the on-ground works noted above, which can be included for revised measures in the future.</li> <li>• Other activities that support this outcome include: <ul style="list-style-type: none"> <li>– Large-scale oyster reef restoration trial in Port Stephens, providing 2.5 ha of habitat</li> <li>– Hydrologic studies and other site assessments in preparation for future on-ground works</li> <li>– Monitoring of ecological health in waterways undertaken to support implementation of the risk-based framework</li> </ul> </li> </ul>		

## Unintended or unexpected outcomes produced by the initiative

The following unintended or unexpected outcomes were identified for the Initiative 1:

- Improved overall data collection as a result of input and collaboration from the different agencies. Improvements include the breadth of monitoring sites and efficiencies between agencies.
- Bushfires had negative consequences for water quality, but allowed MEMS staff to undertake additional monitoring to assess the impact of fires on affected waterways. The additional monitoring provided additional information and insights to inform planning. The additional monitoring also helped improve collaboration with local governments, leverage local government data collection and better align data consistency and compatibility between MEMS agencies and local government.
- The Coastal Management Program is delivered in parallel with the MEMS, but was not originally intended to be part of the MEMS. Through working in parallel, staff have identified unexpected efficiencies and mutual benefits between the programs.
- Local actions have helped raise the profile of the responsible agencies and reinvigorated local relationships, especially in the Richmond River catchment.
- Initiative 1 staff are concerned that stakeholders have unrealistic expectations of what can be achieved for water quality through the MEMS alone. Water quality is an issue for which responsibility is shared beyond MEMA agencies and their partners, yet there are concerns that stakeholders expect the MEMS actions and projects to drive the desired improvements.
- The approach of developing pilot programs in Stage 1 was intended to provide frameworks, approaches and insights that would be informative and beneficial for similar programs elsewhere. Initiative 1 staff felt that stakeholders outside the pilot areas believed that they were missing out as a result of this approach, rather than seeing how the results from the pilot program could be of benefit to them.

## Appropriateness of outcomes and indicators

Initiative 1 staff indicate that refinements to outcomes and specifications are required to better reflect:

- the complexity and long-term nature of achieving improvements in water quality, including the extent to which water quality outcomes are within the scope of influence of the MEMS program.
- the emphasis of management actions in the short-term.
- alignment with community values.

Initiative 1 staff also suggested multiple refinements to indicators and measures. These have been noted where relevant in the outcomes findings above.

## Insights to inform future planning and implementation

Insights for ensuring success across the MEMS are provided throughout the main report. These are generally applicable across all the initiatives. A summary of insights specific to Initiative 1 for ensuring success is maintained and further outcomes achieved in the future is provided below.

- In practice, Initiative 2 and Initiative 1b are closely linked and have become increasingly integrated in the way they are managed and delivered. However, this is not reflected in formalised MEMS reporting, resourcing or governance arrangements. There would be efficiencies in formalising the arrangement.

- Initiative 1 is significantly larger than the other initiatives. Staff identified multiple areas, including leading and coordinating the initiative, where additional resourcing would benefit existing staff and overall delivery.
- There is need to improve clarity of the initiative lead role and responsibilities, both for the benefit of initiative leads and for those outside the MEMS.
- Funding is allocated based on identified actions or projects, but not for identifying, scoping and planning actions or projects. This is particularly challenging for Initiative 1, where staff reported that funding is required to scope and plan future actions, including to undertake modelling and other investigations to determine where and what projects should be undertaken next, and at what scale.
- There were challenges communicating the basis for site selection for Stage 1 projects with stakeholders, particularly councils. As a result, some councils felt excluded, and there was need for Initiative staff to undertake careful stakeholder management. There is need to improve communications with stakeholders to manage stakeholder expectations and maintain support for the MEMS actions.
- The public and local government expectations upon Initiative 1 need to be managed effectively through reporting and clear communication of the scope, timelines and intent of actions, and the specific outcomes Initiative 1 is seeking to achieve over the 10-year strategy.

## Findings from the process evaluation

### Highlights of management actions to date

Several highlights from implementation of management actions to date have been noted in the section on outcomes. Other highlights include:

- Completing the first large-scale oyster reef restoration project in NSW.
- Completing the *Risk-based Framework for Considering Waterway Health Outcomes*.
- Establishing new partnerships between DPI, National Parks and Wildlife Service, Roads and Maritime Services and councils to identify sites and plan for wetland rehabilitation works. This includes purchasing a 174 ha property adjacent to the Clarence River estuary for important wetland rehabilitation.
- Progressing work to streamlining approvals pathways for coastal floodplain management.
- A comprehensive floodplain study to fill knowledge gaps on floodplain infrastructure, soil and ground water characteristics, land-use, economic values and climate change vulnerability, to assist identifying priority locations for future investment.
- Engaging with stakeholders to understand barriers to implementing the Risk-based Framework, and challenges associated with managing and monitoring water quality and marine litter, to inform future actions and capacity-building.
- Establishing partnerships and identifying opportunities for aligning MEMS actions with the Coastal Management Programs.
- Foundational work relating to litter management, including the Marine Litter Campaign, the Marine Debris TARA and the establishment of the Marine Litter Working Group.

## Implementation successes and enablers

The following success factors were considered important for supporting implementation:

- Using the MEMS to raise awareness of water quality issues, secure senior support and drive change.
- Drawing on on-ground monitoring through projects to build knowledge and to guide adaptive management.
- MEMS funding enabled work to be undertaken on a larger scale and for additional outcomes than would otherwise have occurred through business-as-usual activities.
- The MEMS recognises the significant role that agriculture has in addressing water quality issues. The MEMS has enabled responsible agencies to engage with industry, ultimately leading to on-farm actions or changes to farming practices.
- The breadth and strength of relationships and networks held by key initiative staff, and establishing new cross-agency relationships that have been facilitated through the MEMS, including relationships with on-ground staff. As a result, there are greater interactions between different levels of planning and delivery and a more holistic approach to managing water quality.

## Implementation challenges, constraints and/or areas for improvement:

There are challenges, constraints and areas for improvement that are shared across the initiatives and are collated in the main report. The following issues created challenges or constraints for implementation, or have been identified as areas of improvement in the future specific to Initiative 1:

- Staff felt that there would be benefit in engaging more with the technical working groups, but felt that this has been limited by resourcing constraints for the initiative.
- Not all partner agencies are funded through MEMS, which results in differences in interest and/or ability to collaborate on MEMS projects.
- The key responsible agencies have MoUs that set out what each is doing for delivery of Initiative 1. Collaboration between the agencies has improved in some areas, but staff reported that the agencies continue to largely operate independently and that there is need for better integration and sharing of knowledge, skills and resources.
- Funding delays, short-term funding cycles funding uncertainty and the time taken to execute MoUs between the key responsible agencies can negatively affect activities such as recruitment, external engagement, and commencing on-ground works. Works in waterways can only be undertaken in winter and early spring, so delays can place these projects at risk. Funding delays and uncertainty can also have flow-on effects for partner agencies and researchers.
- The opportunity cost for preparing funding bids on an annual basis is particularly burdensome for a large and complex initiative like Initiative 1.
- Extensive cross-agency collaboration is necessary for delivering Initiative 1. Partnership and collaboration arrangements are complex and take time to establish, both formally and in practice. Staff feel that they have made progress in navigating initial challenges of collaboration and expect to see collaboration and efficiency improve over time.

## Delivery status at the end of Stage 1

The following projects were identified to be progressed during Stage 1 to contribute towards delivery of management actions for Initiative 1 over the MEMS's 10-year delivery period:

- Risk-based framework for waterway health (Greater Sydney region, Shellharbour and Wollongong, Northern Beaches, Richmond and Wianamatta South Creek catchments, and the Hornsby, Illawarra, Shoalhaven, Eurobodalla and Bega Valley Shires)
- Build capacity to implement the Risk-based Framework (Statewide)
- Estuary water quality monitoring (Statewide)
- Marine litter campaign (Statewide)
- Marine litter working group (Statewide)
- Improved management of diffuse source water pollution (Statewide)
- Review of the NSW Water Quality Objectives (Local government areas in the South Creek catchment and Northern Beaches)
- Risk-based framework for waterway health (Richmond River, Northern Region)
- Coastal floodplain management (Northern Region, and the Tweed, Richmond, Clarence, Macleay, Hastings, Manning and Shoalhaven estuaries)
- Reducing erosion from roads & tracks (locations across the North Coast, South Coast and Mid Coast)
- Riparian vegetation rehabilitation (locations across the North Coast, South Coast and Mid Coast)
- Estuary bank protection works (locations across the North Coast, South Coast and Mid Coast)
- Oyster reef restoration (Port Stephens pilot and Statewide)
- Biodiversity offsets (Statewide)
- Clean coastal catchments (Lismore, Ballina and Coffs Harbour)
- Wetland restoration (Tuckean Swamp and Tomago Wetland, Crookhaven, Kalang and Clarence Rivers)
- Fish friendly workshops (Statewide)
- Erosion and sediment management (Statewide)

At the end of Stage 1, most projects for Initiative 1a had been delivered against their objectives. However, the loss of key staff, COVID-19 restrictions and extreme natural events caused some delays. Two projects were heavily impacted by COVID-19, The Marine Litter Campaign and the community engagement project to inform water quality objectives, and were rescheduled to occur early in Stage 2.

There had been effective delivery of Initiative 1b projects over Stage 1, with most on-ground works projects meeting or exceeding their contracted deliverables. COVID-19 affected the schedule of some projects, particularly those that required community engagement, however it also enabled greater online participation for other projects. Project delays are expected to reduce as Stage 2 progresses.

# Initiative 2: Delivering Healthy Coastal Habitats with Sustainable Use and Development

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## Context and basis for the initiative

Initiative 2 was developed in recognition of the need to appropriately plan for and manage foreshore development, land use and waterway infrastructure to minimise impact on the marine estate habitats and species, and provide important social and economic benefits for NSW.

The focus of Initiative 2 is on developing the strategies, plans and other catalysts of change needed to guide better coastal and foreshore planning and management across NSW, with the intention that these will be incorporated into business-as-usual practice. These strategies and supporting processes provide critical foundations for future work, including embedding on-ground work undertaken through Initiative 1 into standard practice. Initiative 2 remains important for establishing these foundations, supporting outcomes across multiple initiatives, and creating an enduring MEMS legacy.

Initiative 2 projects are closely linked with projects in Initiative 1b. At the commencement of MEMS, these initiatives and projects were delivered separately, but since then have become increasingly integrated by addressing similar issues through complementary approaches and coordination to reduce duplication. In practice, Initiative 2 and Initiative 1b are now managed and coordinated in close alignment and through some sharing of resources. However, this is not reflected in formal MEMS reporting, resourcing or governance arrangements, and there are overlaps and inefficiencies for the two initiatives as a result. There would be benefit in formalising the coordinated management arrangements for initiatives 2 and 1b, and reflecting these in reporting requirements, resourcing and governance.

## Findings from the outcomes evaluation

### Summary

Initiative 2 staff continue to build the body of knowledge required to inform appropriate land use and best practice management for coastal and foreshore environments. There is improved clarity and understanding of the regulatory framework among core staff with responsible agencies, and further work to extend this improved clarity externally. Initiative 2 has established foundations for future success across a range of intermediate outcomes, including preparations for on-ground works, developing templates and processes for simplifying and integrating information, and strategies for coastal and foreshore planning and management.

This section provides a summary of findings against outcomes, identifies any unexpected or unintended outcomes (where relevant), provides commentary on ongoing appropriateness of outcomes and indicators, and notes any insights for future success. .

## Short-term outcomes

Indicator results and other findings for short-term outcomes (0-2 years) for Initiative 2 are summarised below (Table 3). Results for some indicators, including outcome indicators that reflect changes in stakeholder understanding, awareness, clarity, values and behaviour, are intended to be drawn from surveys. Baseline surveys were being conducted at the time of this evaluation and could not be included in the results below. Initiative staff have requested refinements to some indicators, including identifying indicators or measures to replace or complement those that draw on survey data. Refinements to indicators and measures will be agreed following this evaluation, and are expected to improve data availability in the future. Findings from other data sources have been integrated and are also included for each outcome below.

Table 3 Findings against short-term outcomes for Initiative 2

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	Results	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
2G: Improved clarity of roles and responsibilities for coastal and foreshore planning and management among agencies, landholders, developers and the community	*Responsible agencies demonstrate clarity of roles, responsibilities and accountabilities for managing the marine estate (LI 5)	Proportion of survey respondents demonstrating clarity	Not available. Baseline survey not yet conducted.	<ul style="list-style-type: none"> <li>Staff report that there has been improved understanding of the regulatory framework for coastal and foreshore planning and management among those who are closely involved in coastal and foreshore planning and management, however this has not been measured through indicator monitoring.</li> <li>The process of developing strategies through initiative 2, such as the Domestic Waterfront Structure Strategies, has required agencies to thoroughly examine their relevant legislation and policy, ensure integration with other relevant legislation, and identify gaps. This has helped staff to improve clarity of legislated roles and responsibilities.</li> <li>The publication of strategies has also seen that information shared with stakeholders and the public, which supports improved clarity of roles and responsibilities among these stakeholders, as well as supporting improved management of these areas more generally.</li> <li>The Coastal Floodplain Drainage Management project (originally in Initiative 1) is seeking to improve access to, use, coordination and efficiency of policies and processes and to assist agencies to better understand and fulfill their governance roles.</li> <li>Staff have requested an alternative measure for LI 5.</li> </ul>	2.3 (a) 2.3 (b) 2.3 (c) 2.4 (a)	Communities - Coordinated and inclusive approach to management
	Community members report awareness and clarity of agencies' respective roles and responsibilities in managing the marine estate (LI 24)	Proportion of survey respondents reporting awareness and clarity	Not available. Baseline survey being conducted at the time of this evaluation.			
<p><i>Outcomes 2H and 2I share LI 3 and are discussed together here.</i></p> <p>2H: Improved understanding of current coastal and foreshore environments and land uses in prioritised regions among responsible agencies.</p>	Knowledge gaps adequately addressed. Knowledge gaps relate to threats, stressors, risks, condition, value and management approaches. (LI 3)	*Number of knowledge gaps with status changing from 'inferred' to 'adequate'	Not available – to be assessed during 2022 review of the TARA. Alternative measure(s) requested by MEMS staff.	<ul style="list-style-type: none"> <li>Initiative 2 staff continue to develop the body of knowledge relating to appropriate land use and best practice design in coastal and foreshore zones and to address knowledge gaps. The growing body of knowledge is not reflected in the results against Leading Indicator 3 as the TARA assessment has not been revisited, but could be reflected in new, complementary measures for this indicator. Staff suggestions for complementary measures could reflect: <ul style="list-style-type: none"> <li>Auditing to better understand the extent of threat and risk and documenting case studies of successful and unsuccessful works to improve best management practice.</li> </ul> </li> </ul>	2.1 (c) 2.2 (a) 2.2 (b) 2.3 (b) 2.3 (c) 2.4 (a) 2.5	Communities - Improved communication and education  Landowners: Rural and Urban - Research and monitoring to inform adaptive management  Landowners: Rural and Urban - Clearer guidelines and better land use management

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	Results	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
2I: Improved understanding of environmentally, socially, culturally and economically appropriate land use and best practice design in coastal and foreshore zones among agencies, landholders, developers.				<ul style="list-style-type: none"> <li>- Length of foreshore where a foreshore structure strategy applies (current total of 387 km across Richmond and Brunswick estuaries, see below).</li> <li>- Areal extent of estuary foreshore and coastal floodplain managed by strategy (km<sup>2</sup>) for improved social, cultural, economic and environmental values (for example, marine vegetation strategies, see below).</li> <li>- Areal extent of estuary foreshore and coastal floodplain wetlands where blue carbon opportunities can be prioritised (current statewide total of 61 km<sup>2</sup>, with 19.85 km<sup>2</sup> in the Richmond and Tweed estuaries).</li> <li>- Undertaking assessments to progress on-ground fish passage barrier remediation (total 27 assessment reports completed to date).</li> </ul>		<p>Landowners: Rural and Urban - Clearer guidelines on appropriate location for development and access infrastructure</p> <p>Landowners: Rural and Urban - Better support to implement best management practices</p> <p>Landowners: Rural and Urban - Improved capacity building</p>
	Community and targeted stakeholders demonstrate improved capacity to anticipate and adapt to climate change impacts (LI 9)	*Number of permit applications for works in floodplains and low-lying areas that give consideration to potential climate change impacts	Not available. Alternative Indicator requested by MEMS staff.	<ul style="list-style-type: none"> <li>• Initiative 2 staff suggest that a more appropriate alternative to Leading Indicator 9 could reflect the areal extent of estuary foreshore and coastal floodplain to be managed as Marine Vegetation Priority Areas. Data for this indicator can be collated from catchment-based planning reports.</li> <li>• Staff have undertaken activities that are expected to contribute towards outcomes 2I and 2H, including: <ul style="list-style-type: none"> <li>- a web-based map to assist private landholders to identify and understand planning policies relevant to them. The map is complemented by a clear explanation of the assessment process. The map and complementary explanations are expected to support improved understanding among responsible agencies and landowners or developers.</li> <li>- Foreshore structure strategies to support best practice decision-making and information sharing for installing foreshore structures. Strategies have been completed and approved for the Richmond and Brunswick estuaries, supporting improved decision-making for foreshore structures of 285 km and 102 km of estuarine foreshore, respectively.</li> <li>- Marine vegetation strategies. Strategies are being finalised for the Tweed and Richmond estuaries to guide improved vegetation management of 231 km<sup>2</sup> and 1024 km<sup>2</sup>, respectively, of estuary foreshore and coastal floodplain.</li> <li>- Development and validation of a visual rapid assessment framework for identifying potential key fish habitats in freshwater streams in various landscape settings.</li> </ul> </li> </ul>	2.2 (a) 2.2 (b) 2.3 (a) 2.3 (c) 2.4 (a) 2.5	<p>Communities - Improved communication and education</p> <p>Landowners: Rural and Urban - Clearer guidelines and better land use management</p> <p>Landowners: Rural and Urban - Clearer guidelines on appropriate location for development and access infrastructure</p> <p>Landowners: Rural and Urban - Better support to implement best management practices</p> <p>Landowners: Rural and Urban - Improved capacity building</p>
	Community and targeted stakeholders report awareness and clarity of rules, regulations, guidelines, best practice and their responsibilities for undertaking activities related to the marine estate (LI 21)	Proportion of survey respondents reporting awareness and clarity	Not available. Baseline survey being conducted at the time of this evaluation.			

## Intermediate outcomes

Intermediate outcomes have expected timeframes of 2-5 years. Therefore, intermediate outcomes were not expected to be achieved at the time of this evaluation. However, there is early progress against some intermediate outcomes for Initiative 2. Those intermediate outcomes where there is early progress are shown below (Table 4). This includes indicator results where available and findings from other sources.

Table 4 Findings against intermediate outcomes for Initiative 2

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	2020 result	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
2C: Improved coordination, consistency and efficiency in coastal and foreshore planning and management	Community and stakeholders report satisfaction with governance of the marine estate (KPI 12)	Average satisfaction rating based on Likert scale for each measure	Not available. Baseline survey being conducted at the time of this evaluation.	<ul style="list-style-type: none"> <li>This outcome is linked to Outcome 2D, and initial progress against Outcome 2D is expected to support Outcome 2C.</li> </ul>	2.2 (a) 2.3 (a) 2.3 (b) 2.3 (d) 2.3 (e) 2.4 (a)	Communities - Coordinated and inclusive approach to management  Aboriginal People - Coordinated and inclusive approach to management  Landowners: Rural and Urban - Coordinated and inclusive approach to management  Boat users - Coordinated and inclusive approach to management
	Responsible agencies report satisfaction with efficiency and effectiveness governance of the marine estate (KPI 16)	Average satisfaction rating based on Likert scale for each measure	Not available. Baseline survey not yet conducted.			
2D: Improved simplicity, efficiency and clarity of processes for land use and development planning and approvals in coastal and foreshore zones	Responsible agencies report improved processing times for regulatory processes and approvals (LI 6)	*Reported change in processing times	Not available – concerns raised over the appropriateness of this indicator	<ul style="list-style-type: none"> <li>Improvements in simplicity, efficiency and clarity of processes have been made in the pilot Richmond River catchment, where Domestic Waterfront Structure Strategies maps show the areas of estuary waterfront that are not suitable for development and why. A Structures Strategy has also been prepared for the Brunswick River estuary. As a result, landowners are clearly informed of locations where development applications will not be approved, thus saving time and expense for landholders in preparing applications and agency staff in responding to applications.</li> <li>The method and templates for estuary-wide strategies were developed in Stage 1, enabling efficient development of these strategies across the state in Stage 2. The estuary strategies bring together previously separate strategies into a single point of reference for each estuary, improving simplicity, coordination and efficiency.</li> </ul>	2.3 (a) 2.3 (b) 2.3 (c) 2.3 (d) 2.4 (a)	Landowners: Rural and Urban - Clearer guidelines and better land use management  Landowners: Rural and Urban - Clearer guidelines on appropriate location for development and access infrastructure  Landowners: Rural and Urban - Better support to implement best management practices  Landowners: Rural and Urban - Reduced red tape in permits and administration

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	2020 result	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
				<ul style="list-style-type: none"> <li>Initiative 2 staff raised concerns about the current focus of LI 6, as processing times for approvals and regulatory processes can fluctuate and are affected by factors outside the control of the MEMS. Staff have suggested an alternative to measure simplicity, efficiency and clarity of processes could be to measure the change (reduction) in lineal length of estuary or areal extent of intertidal coastal wetlands where referrals may be generated for assessment by staff.</li> </ul>		
2E: Increased adoption of best practice design and management of foreshore and coastal planning, development and use	Adoption of best practice approaches and processes for undertaking activities related to the marine estate among the community and targeted stakeholders (KPI 15)	*Proportion of survey respondents self-reporting use of best practice approaches and processes	Not available. Baseline survey being conducted at the time of this evaluation.	<ul style="list-style-type: none"> <li>There has been a focus on establishing foundations for increased adoption of best practice through relationships, governance, developing draft strategies and guidelines, and knowledge sharing. This is expected to translate into increased adoption of best practice in the future.</li> <li>Initiative 2 staff proposed changing the measure for KPI 15 to capture the documented use of best practice approaches and processes, rather than relying on self-reporting through surveys. Staff cited several examples where best practice has been used. Refer to Outcome 11 for proposed changes to this indicator that may also be relevant to Initiative 2.</li> </ul>	2.1 (a) 2.1 (b) 2.1 (c) 2.2 (a) 2.2 (b) 2.3 (a) 2.3 (c) 2.3 (e) 2.4 (a)	Landowners: Rural and Urban - Reduced loss of topsoil and erosion events  Landowners: Rural and Urban - Improved capacity building
2F: Improved habitat connectivity in prioritised regions	Aquatic and marine habitat connectivity (LI 4)	Waterway length opened up (km)	0	<ul style="list-style-type: none"> <li>Progress has been made in preparing to undertake on-ground works that will contribute towards this outcome and will be captured in the indicator results in future. This includes site assessments and studies, and developing designs.</li> <li>On-ground works are planned for multiple sites to remove fish barriers, construct fishways and undertake waterway remediation. Detailed assessments required for works in waterways, such as fishways, have been commissioned and completed for several sites.</li> <li>The rapid assessment framework for identifying fish habitat (see Outcome 2H) is expected to support this outcome.</li> </ul>	2.4 (b)	Communities - Abundant and diverse marine life for current and future generations  Aboriginal People - Abundant and diverse marine life for current and future generations

## Unintended or unexpected outcomes produced by the initiative

Unintended or unexpected outcomes (both positive and negative) that apply across the MEMS initiatives are provided throughout the main report. Some of these were observed by Initiative 2 staff. In addition, Initiative 2 staff noted that engagement with non-MEMA agencies on Initiative 2 actions has helped raise awareness among these agencies of the marine and coastal issues that they need to consider in their own activities.

## Appropriateness of outcomes and indicators

Outcomes remain appropriate; however, Initiative 2 staff have suggested multiple refinements to indicators and measures. These have been noted above where relevant in the outcomes findings above.

## Insights to inform future planning and implementation

Insights for ensuring success across the MEMS are provided throughout the main report. These are generally applicable across all the initiatives. A summary of insights specific to Initiative 2 for ensuring success is maintained and further outcomes achieved in the future is provided below.

- Some of the actions in the initiative, such as the foreshore structure strategies, focus on crown lands. The Marine Vegetation Strategies focus on public land because these locations are the most likely candidates for swift action. Extending to other land types would enable better outcomes.
- There is need for better reflection of climate change impacts in planning, particularly in the vicinity of coastal wetlands.
- There are opportunities for improving coordination and collaboration with other agencies, particularly with staff in different roles in delivery and governance. This could help identify further opportunities to align and leverage the work of other agencies.
- Continuing to fund dedicated staff positions across a suite of MEMS agencies is required for continuation of the initiative.
- Initial funding has been provided to undertake on-ground works. Ongoing maintenance will need to be resourced appropriately to ensure these works perform as intended in the future and continue to support the desired outcomes.

## Findings from the process evaluation

### Highlights of management actions to date

Several highlights from implementation of management actions to date have been noted in the section on outcomes. Other highlights include:

- Completing two estuary Foreshore Structure Strategies and draft two estuary Bank Management Strategies. These will be integrated in local government Coastal Management Programs (CMPs).
- Completing a range of outputs for the breakwater project, including a workshop report; literature review; guidance notes for asset owners, designers and project managers; and an audit of NSW trained river entrances, armoured harbours and groynes and their multi-use and eco features (including three appendices).

- Completing analysis of marine vegetation potential within estuaries to inform the development of the Management Vegetation Strategies (mapping estuaries and specific areas at risk of clearing and climate change adaptation, including management options).
- Developing draft state-wide coastal design guidelines.
- Auditing current and historic commercial dredging operations to improve conditions and management outcomes in partnership with Crown Lands.
- Developing new methods for improving mapping of estuarine habitats.
- Mapping macrophytes in nine estuaries.
- Establishing site-based or project-based monitoring arrangements, enabling extrapolation to other sites (while being mindful of the limitations of this).

### Implementation successes and enablers

The following success factors were considered important for supporting implementation:

- Drawing on results of the TARA to inform development of outputs, such as the foreshore structure strategies.
- Effective (though not formalised) integration of initiatives 2 and 1b to work as a coordinated and cohesive team, and drawing on the complementary approaches and skillsets to address shared issues.
- Effective and ongoing collaboration between DPIE-Fisheries and Crown Lands. This has been helped by dedicated funding for specific positions, memorandums of understanding and working together on specific site issues.
- The breadth and strength of relationships and networks held by key initiative staff, and establishing new cross-agency relationships that have been facilitated through the MEMS.

### Implementation challenges, constraints and/or areas for improvement

There are challenges, constraints and areas for improvement that are shared across the initiatives and are collated in the main report. The following issues created challenges or constraints for implementation, or have been identified as areas of improvement in the future specific to Initiative 2:

- Funding delays and uncertainty can negatively affect activities such as recruitment, external engagement, and commencing on-ground works. Works in waterways can only be undertaken in winter and early spring, so delays can place these projects at risk.
- Project planning underestimated the time required to access funds, recruit and train new staff, build knowledge and establish relationships.

### Delivery status at the end of Stage 1

The following projects were identified to be progressed during Stage 1 to contribute towards delivery of management actions for Initiative 2 over the MEMS's 10-year delivery period:

- Estuary domestic foreshore structure strategies (North Coast)
- Estuary bank management strategies (North Coast)
- Bank management strategies (North Coast)

- Marine vegetation management strategies (Tweed and Ballina local government areas, Statewide)
- Research and monitoring of estuarine habitats (Wagonga Inlet, Lake Illawarra and Port Stephens)
- Restoration of fish passage
- Commercial dredging audit (Statewide)
- Coastal design guidelines review (Statewide)
- Breakwater improvements
- Coastal Crown Lands policy development (Statewide)
- Catchment and floodplain management (Statewide)

At the end of Stage 1, the overall delivery of Initiative 2 was on track, with several policies, management strategies and key works associated with fish passage nearing completion. This is despite recruitment delays, bushfires, floods, fish kills and the COVID-19 pandemic causing minor delays to project schedules.

## Initiative 3: Planning for Climate Change

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### Context and basis for the initiative

Initiative 3 was developed in recognition that the impacts of climate change are expected to increase over time. However, the specific likelihood and consequence of these impacts are not well understood or reflected in planning for the marine estate. These issues have become even more relevant since the MEMS was developed. Since 2019, the marine estate has been subjected to extreme bushfires in its catchments, significant coastal storm events and associated erosion, and flooding. These kinds of events are expected to increase in frequency and intensity due to climate change, with impacts for many of the values recognised in the MEMS.

Staff working across the MEMS reported that the risk of climate change for the marine estate was not adequately recognised in the Threat and Risk Assessment (TARA). The complexity, uncertainty and perceived longer time frames for climate change impacts led to it being considered as a future threat, understating the importance of climate change as an existing threat and the need for proactive management. This may inhibit the ability to address climate change issues across the MEMS.

Initiative 3 was intended to be delivered through a close partnership between DPI and the then Office of Environment and Heritage (now EES), however only DPI received funding. Therefore, projects led by EES could not be undertaken during Stage 1 as originally intended and, as a result, there are significant risks to achieving intermediate and long-term outcomes. The reduced funding has had significant implications for implementation in Stage 1, and the ability of Initiative 3 to contribute to MEMS implementation and meeting the outcomes more broadly.

### Findings from the outcomes evaluation

#### Summary

Implementation for Initiative 3 has been significantly limited by funding constraints. Funding has not been provided for actions relating to capacity building, climate change adaptation or managerial response, which were critical to achieving intermediate and long-term outcomes and to collecting data and information against indicators. These actions and associated projects, which were to be led by EES, could not be commenced during Stage 1. As a result, some intermediate and long-term outcomes will not be achievable in the current timeframes.

Funding was provided for filling some knowledge gaps in relation to research and monitoring of climate change impacts on marine estate assets, allowing some progress against the short-term outcome. Some of the findings have been presented to marine estate managers, contributing towards knowledge-sharing.

This section provides a summary of findings against outcomes, identifies any unexpected or unintended outcomes (where relevant), provides commentary on ongoing appropriateness of outcomes and indicators, and notes any insights for future success.

## Short-term outcomes

Indicator results and other findings for the short-term outcome (0-2 years) for Initiative 3 are summarised below (Table 5). Initiative staff have requested refinements to the indicator to reflect data that is more readily available. Refinements to indicators and measures will be agreed following this evaluation, and are expected to improve data availability in the future. Findings from other data sources have been integrated and are also included below.

Table 5 Findings against the short-term outcome for Initiative 3

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	Results	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
3E: Ongoing and likely effects of climate change on the marine estate are monitored	*Knowledge gaps adequately addressed. Knowledge gaps relate to threats, stressors, risks, condition, value and management approaches (LI 3)	*Number of knowledge gaps with status changing from 'inferred' to 'adequate'	Not available – to be assessed during 2022 review of the TARA. Alternative measure(s) requested by MEMS staff.	<ul style="list-style-type: none"> <li>Research has been undertaken by DPIE staff through Initiative 3 to support improved monitoring. This research is not reflected in the results against Leading Indicator 3 as the TARA assessment has not been revisited, but could be reflected in future measures for this indicator. New monitoring relating to threats, stressors, risks, condition and value in relation to coastal and marine habitat has been published in the following journal papers: <ul style="list-style-type: none"> <li>Davis et al. 2019 (including M. A. Coleman): Costs and benefits of towed videos and remotely operated vehicles for sampling shallow reef habitats and fish.</li> <li>Davis et al. 2020 (including M. A. Coleman): Environmental drivers and indicators of change in habitat and fish assemblages within a climate change hotspot.</li> <li>Davis et al. 2021 (including M. A. Coleman): Climate refugia for kelp within an ocean warming hotspot revealed by stacked species distribution modelling.</li> </ul> </li> <li>Baseline subtidal monitoring of rocky reefs has been completed throughout NSW to help understand climate change effects on these reefs.</li> <li>Initiative 3 staff from DPIE also contributed information for the Marine Integrated Monitoring Program (MIMP) and provided grants to the Australian Research Council to undertake research relevant to the initiative.</li> <li>Initiative 3 staff suggest adding a measure that reflects the extent of asset monitoring across the marine estate.</li> <li>Actions to be led by EES were not funded during Stage 1 and could not contribute towards this outcome.</li> </ul>	3.2 3.5	<p>Communities - Improved climate resilience</p> <p>Aboriginal People - Research and monitoring to inform adaptive management</p> <p>Landowners: Rural and Urban - Better climate change support tools and guidance</p> <p>Landowners: Rural and Urban - Research and monitoring to inform adaptive management</p> <p>Fisheries and aquaculturalists - Research and monitoring to inform adaptive management</p> <p>Tourists and tour operators - Research and monitoring to inform adaptive management</p> <p>Boat users - Research and monitoring to inform adaptive management</p>

## Intermediate outcomes

Intermediate outcomes have expected timeframes of 2-5 years. Therefore, intermediate outcomes were not expected to be achieved at the time of this evaluation. However, there is early progress against one intermediate outcome for Initiative 3. This early progress is shown below (Table 6), including indicator results where available and findings from other sources. Outcomes 3B and 3C are not included below as there has been no early progress towards these.

Staff have reported that there are significant risks to achieving intermediate and long-term outcomes for Initiative 3 due to lack of funding in Stage 1 and Stage 2a. The lack of funding meant that some Stage 1 actions that were required to support intermediate and long-term outcomes have not yet commenced. Therefore, these outcomes are unlikely to be achievable within the original timeframes. Outcomes and indicators will be reviewed and updated to reflect expected timeframes through a separate process following this evaluation.

Table 6 Findings against intermediate outcomes for Initiative 3

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	Results	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
3D: Coastal and marine managers, and communities have improved access to and knowledge of the impacts of climate change on environmental, social, cultural and economic values of the marine estate	*Knowledge gaps adequately addressed. Knowledge gaps relate to threats, stressors, risks, condition, value and management approaches (LI 3)	See Outcome 3E	See Outcome 3E	<ul style="list-style-type: none"> <li>Initiative 3 has undertaken some knowledge-sharing to support Outcome 3D. This includes sharing findings from research referred to under Outcome 3E to assist coastal and marine managers in better understanding the impacts of climate change:</li> <li>Findings from Marine and Freshwater Research (Davis et al.) were presented to the NSW Coastal Conference in November 2019. This contributed to increasing awareness and knowledge about climate change to marine estate decision-makers.</li> </ul>	3.2 3.4	Communities - Improved climate resilience Landowners: Rural and Urban - Better climate change support tools and guidance
	*Community members and targeted stakeholders demonstrate awareness of benefits of, and threats to, the marine estate (LI 10)	*Proportion of survey respondents demonstrating awareness	Not available. Baseline survey being conducted at the time of this evaluation.			

## Unintended or unexpected outcomes produced by the initiative

Unintended or unexpected outcomes (both positive and negative) that apply across the MEMS initiatives are provided throughout the main report. Some of these were observed by Initiative 3 staff.

In addition, the lack of funding for Initiative 3 actions during Stage 1 is a significant risk for achieving intermediate and long-term outcomes within the intended timeframes

## Appropriateness of outcomes and indicators

Overall, the ability to make progress towards outcomes in initiative 3 has been constrained by receiving a level of funding that was not sufficient to fill knowledge gaps or implement management actions. While outcomes remain appropriate, the timeframes for achieving these are not. Timeframes should be adjusted for short-term and intermediate outcomes to reflect the delayed start to the initiative. The current long-term outcome depends on progress towards earlier outcomes, and consideration must be given to whether this can still be realistically achieved within the MEMS 10-year timeframe. There are also suggestions for refinements to measures, which have been noted above where relevant in the sections on progress against outcomes.

## Insights to inform future planning and implementation

Insights for ensuring success across the MEMS are provided throughout the main report. These are generally applicable across all the initiatives. A summary of insights specific to Initiative 3 for ensuring success is maintained and further outcomes achieved in the future is provided below.

- Review the assessment of climate change in the TARA, reflecting new understanding of the scale and timing of threats and risks. This will enable the MEMS to prioritise climate change and to better integrate climate change considerations across the MEMS.
- Adequate funding and resourcing are needed to undertake longer-term planning and implement actions. Adequate funding and resourcing will also allow Initiative 3 staff to work collaboratively across the MEMS to assist other initiatives to integrate climate change considerations.

## Findings from the process evaluation

### Highlights of management actions to date

Several highlights from implementation of management actions to date have been noted in the section on outcomes. Other highlights include:

- Completing macrophyte maps for Lake Illawarra, Lake Conjola and Burrill Lake.
- Sampling of saltmarsh distribution in Tilba Lake.
- Developing predictive modelling of the distribution of estuarine wetlands under sea level rise in Manning, Wallis Lake, Hawkesbury and Tilba Tilba.
- Identifying important biological indicators for climate-driven changes to the marine environment.
- Monitoring benthic habitats (kelp, barrens etc) for 3 years across the entire marine estate.

- Laying groundwork for Stage 2 research, including completing operating procedures for monitoring rocky reefs, collecting and synthesising baseline data, and monitoring of NSW habitat distributions of 2020

### Implementation successes and enablers

The following success factors were considered important for supporting implementation.

- Initiative 3 is working with Initiative 4 to provide advice on climate change impacts and protecting Aboriginal heritage in the face of these impacts. This has included establishing new relationships and set of processes.

### Implementation challenges and/or areas for improvement

There are challenges, constraints and areas for improvement that are shared across the initiatives and are collated in the main report. The following issues created challenges or constraints for implementation, or have been identified as areas of improvement in the future specific to Initiative 3:

- Implementation was constrained significantly by funding. Although Initiative 3 was intended to be delivered through a close partnership between DPI and the then Office of Environment and Heritage (now EES), only the DPI received funding. Therefore, projects led by EES could not be undertaken during Stage 1 as originally intended and, as a result, there are significant risks to achieving intermediate and long-term outcomes.
- Short funding cycles and funding constraints required rescoping of projects for Stage 1. This limited investment in climate change research and monitoring.
- Rescoping of projects and delays to project commencement due to lack of funding in Stage 1 is a significant risk to future delivery

### Delivery status at the end of Stage 1

Projects identified for Initiative 3 to be completed during Stage 1 were limited, as the amount of funding allocated to the initiative was significantly less than anticipated when the MEMS was developed. The following projects were identified for Initiative 3 during Stage 1:

- Monitoring reefs at risk from climate change (Statewide)
- Model intertidal wetlands at threat from future sea level rise (Illawarra South Coast and Statewide)
- Monitoring priority environmental assets at risk from climate change (Statewide)

At the end of Stage 1, Initiative 3 had achieved all deliverables on schedule for its revised scope despite COVID-19 and extreme events.

# Initiative 4: Protecting the Aboriginal cultural values of the marine estate

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## Context and basis for the initiative

Initiative 4 was developed in recognition that Aboriginal people and their cultural values were not appropriately represented in or engaged through management of the marine estate. It also recognised that there were significant knowledge gaps relating to cultural values for the marine estate. Cultural heritage values were considered likely to be affected by high-risk threats identified in the TARA.

These issues remain relevant. In particular, the low baseline for Aboriginal peoples' participation and representation in marine estate management was highlighted through this evaluation. Although there has been notable progress to participation and representation, it remains a focus area.

Initiative 4 has been delivered in the context of a complex, and at times inconsistent, legislative framework. This includes criminalisation of cultural take (for example, for abalone or pipis), which conflicts with native title rights, and confusion regarding the Aboriginal Land Rights Act 1983 (NSW) and the Native Title Act 1993 (Commonwealth) and how these interact. These issues can also cause misunderstanding and communication challenges between agency staff and Aboriginal communities.

## Findings from the outcomes evaluation

### Summary

Initiative 4 has provided more opportunities for Aboriginal people to participate in Sea Country management through direct employment and community engagement processes. It has also supported greater capacity and skills for Aboriginal people to take up employment or other opportunities. There is evidence that effort to provide more opportunities and build capacity is supporting increased Aboriginal participation in Sea Country management, planning and monitoring. This includes through direct employment in MEMA and partner agencies, representation in advisory groups, and through community engagement. There are also reports that actions through Initiative 4 have enabled a small number of training participants to derive economic benefit from the marine estate through private enterprise.

This section provides a summary of findings against outcomes, identifies any unexpected or unintended outcomes (where relevant), provides commentary on ongoing appropriateness of outcomes and indicators, and notes any insights for future success.

## Short-term outcomes

Indicator results and other findings for short-term outcomes (0-2 years) for Initiative 4 are summarised below (Table 7). Results for some indicators, including outcome indicators that reflect changes in stakeholder understanding, awareness, clarity, values and behaviour, are intended to be drawn from surveys. Baseline surveys were being conducted at the time of this evaluation and could not be included in the results below. Initiative staff have requested refinements to some indicators, including identifying indicators or measures to replace or complement those that draw on survey data. Refinements to indicators and measures will be agreed following this evaluation, and are expected to improve data availability in the future. Findings from other data sources have been integrated and are also included for each outcome below.

Table 7 Findings against short-term outcomes for Initiative 4

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	Pre-2018 result	2020 result	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
4H: Increased opportunities and capacity for Aboriginal participation in Sea Country management, planning and monitoring	*Area of Sea Country under formal management agreements (LI 14)	Area covered by Indigenous Land Use Agreements	130 km <sup>2</sup>	973 km <sup>2</sup>	<ul style="list-style-type: none"> <li>Initiative 4 has delivered capacity-building programs to contribute towards this outcome and lay foundations for intermediate and long-term outcomes. Improved capacity is not measured in the current indicators for this outcome. Capacity-building programs and results include: <ul style="list-style-type: none"> <li>A range of training and education opportunities, including Sea Ranger training, Certificate II in Maritime Operations, school education programs, community engagement activities (e.g., canoe making) and support to obtain boat licences. Participants have been from diverse age groups and backgrounds, ranging from young people to elders.</li> <li>Training and educational completion rates have been high (98% to 99%) among participants in the pilot communities on the South Coast, with an important factor in the high success rates being the grassroots approach where mentors and elders are recommended participants.</li> <li>150 Aboriginal people have been trained and qualified for a general boat licence.</li> <li>Seventeen people completed the initial Certificate II in maritime operations and expect to have opportunities to apply their training, e.g., starting commercial cultural tours. The training program also provided mentorship and development opportunities for people of different ages, including older, middle-aged people, and disengaged school leavers. The program is continuing in 2021.</li> <li>Five Aboriginal community members from the Jervis Bay area successfully completed the coxswain certification course; with an additional 22 candidates engaged in completing their sea time. Participants are actively working in local Sea Country ranger teams and in the Narooma Aboriginal cultural tourism pilot project.</li> </ul> </li> </ul>	4.1 4.3	<p>Aboriginal People - More participation in events effecting culturally significant species</p> <p>Aboriginal People - Co-management of Sea Country</p> <p>Aboriginal People - Training and job opportunities</p>
	*Number of programs or agreements initiated by Aboriginal groups or individuals for managing Sea Country (LI 16)	Number of MOUs		1 currently under investigation			
		Number of ILUAs	5	9			
		Native Title Determinations	39	54			

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	Pre-2018 result	2020 result	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
					<ul style="list-style-type: none"> <li>Videos posted on Facebook demonstrating the programs and training opportunities for other Aboriginal community members have resonated better with Aboriginal communities than conventional government reports and written promotional material. It has been an effective way to share success stories and to reach other potential participants within the Aboriginal community.</li> <li>Reflecting the success of the early programs, staff report being approached directly by members of the community wishing to find out about training opportunities, including opportunities to build on existing training or training in new skills.</li> <li>Staff have identified the need for more culturally appropriate indicators and measures for Initiative 4 outcomes, including this outcome.</li> </ul>		

### Intermediate outcomes

Intermediate outcomes have expected timeframes of 2-5 years. Therefore, intermediate outcomes were not expected to be achieved at the time of this evaluation. However, there is early progress against some intermediate outcomes for Initiative 4. Those intermediate outcomes where there is early progress are shown below (Table 8). This includes indicator results where available and findings from other sources.

Table 8 Findings against intermediate outcomes for Initiative 4

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	Pre-2018 result	2020 result	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
4D: Improved incorporation of Aboriginal cultural values in decision-making processes for the marine estate	Aboriginal group or individual participation in Sea Country management, planning and monitoring (LI 13)	Number of Aboriginal representatives on marine estate advisory committees	0	0 (1 intended to be recruited for MEEKP in 2021)	<ul style="list-style-type: none"> <li>Initiative 4 is establishing processes and building awareness and capability for improving the incorporation of cultural values in decision-making for the marine estate. Examples include: <ul style="list-style-type: none"> <li>The pending appointment an Aboriginal member onto the Marine Estate Expert Knowledge Panel. It is hoped that this will influence policy and decision-making to better consider Aboriginal values and interests.</li> <li>Increased Aboriginal employment and participation in marine estate management (see outcomes 4E and 4G) and improved understanding of Aboriginal cultural values (see outcome 4F) are also expected to contribute toward this outcome.</li> </ul> </li> </ul>	4.2 4.4 4.5	Aboriginal People - Co-management of Sea Country Aboriginal People - Enhanced opportunities to share cultural knowledge Aboriginal People - Coordinated and inclusive approach to management
		Number of Aboriginal Advisory Groups related to the marine estate	0	1 - Aboriginal Advisory Council			
	*Area of Sea Country under formal management agreements (LI 14)	Refer to Outcome 4H	Refer to Outcome 4H	Refer to Outcome 4H			

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	Pre-2018 result	2020 result	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
4E: Increased opportunities for Aboriginal people to derive economic benefit from the NSW marine estate	Aboriginal employment in industries relating to the marine estate (KPI 7)	Number of Aboriginal people employed in industries related to the marine estate	Not available	Not available	<ul style="list-style-type: none"> <li>There have been new opportunities for Aboriginal people to gain economic benefit through direct employment in marine estate management. In 2020, there were 123 Aboriginal people employed in government agencies involved in management of the NSW marine estate management. (DPI-F: 6, Marine Park Advisory Committee: 5, Local Land Services: 1, Environment, Energy and Science: 105, Road and Maritime Services: 6)</li> <li>There has been an increase in Aboriginal employment in a key delivery team within Initiative 4, with the number of Aboriginal people employed increasing from zero to seven, with another to be recruited in 2021. However, it is important to acknowledge that these are contract positions, and this presents risks for staff retention and attraction, and therefore maintaining and further improving this result.</li> <li>Individuals who have participated in capacity-building programs (see outcome 4H) have reported their intentions to apply their new qualifications and skills to derive employment or pursue business opportunities. Three out of the seven people in the first group to complete the Certificate II in coastal marine operations are reportedly starting to apply their current training commercial cultural tour operations and continuing to build their capacity in this area.</li> </ul>	4.1 4.4	Aboriginal People - Training and job opportunities
		Number of Aboriginal people employed in government roles management of the marine estate	Not available	123			
4F: Improved understanding of Aboriginal cultural values of Sea Country and the marine estate among government agencies and the community	Responsible agencies recognise and demonstrate understanding of Aboriginal cultural values, roles and responsibilities in managing Sea Country (LI 17)	Proportion of survey respondents demonstrating clarity	Not available. Baseline survey being conducted at the time of this evaluation.	Not available. Baseline survey not yet conducted.	<ul style="list-style-type: none"> <li>Community engagement has helped build relationships and understanding between Government staff and Aboriginal communities. Working closely with the Aboriginal community has enabled both community members and agency staff to gain a stronger appreciation of each other's priorities, concerns and ways of working, and a better understanding how they can work together to utilise current opportunities to integrate Aboriginal values into the management of the NSW marine estate.</li> <li>Initiative 4 staff continue to work closely with members of the community to support them to contribute knowledge through capacity building activities, for example through the canoe making project, to foster understanding of cultural values and practices within the Aboriginal community and increase knowledge of Sea Country management.</li> </ul>	4.2 4.5	Communities - Improved communication and education Aboriginal People - Greater support for Aboriginal cultural fishing practices Aboriginal People - Research and monitoring to inform adaptive management
	Community members report awareness and appreciation of the significance of Sea Country value (KPI 13)	Proportion of survey respondents demonstrating clarity					

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	Pre-2018 result	2020 result	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
					<ul style="list-style-type: none"> <li>Training facilitated by Road and Maritime Services and DPIE-F compliance officers provided an opportunity for cultural immersion and enabled both trainers and trainees to learn more about each other and build mutual respect. This has been important for improving understanding and respect between young Aboriginal people and the authority figures in government.</li> </ul>		
4G: Improved Aboriginal participation in Sea Country management, planning and monitoring.	Aboriginal group or individual participation in Sea Country management, planning and monitoring (LI 13)	Refer to Outcome 4E	Refer to Outcome 4E	Refer to Outcome 4E	<ul style="list-style-type: none"> <li>Baseline rates for participation in Sea Country management were low, and improvements against this outcome were not difficult to achieve. This is the first concerted effort to improve Aboriginal participation in management and decision-making for Sea Country.</li> <li>The Initiative 4 team successfully advocated for an Aboriginal person for the Marine Estate Expert Knowledge Panel (MEEKP), and this has been reflected in the current appointment process. Appointing an Aboriginal member to the MEEKP indicates a cultural shift in marine estate management.</li> <li>Some contract positions have been created in the MEMA agencies.</li> <li>10 testimonial videos covering themes within Initiative 4 has showcased the positive effect and enjoyment for participants in training programs supported by the MEMS. This reflects the effectiveness of the training programs for the participants and provides inspiration for others to participant in the future.</li> </ul>	4.1 4.3	<p>Aboriginal People - More participation in events effecting culturally significant species</p> <p>Aboriginal People - Co-management of Sea Country</p> <p>Aboriginal People - Enhanced opportunities to share cultural knowledge</p> <p>Aboriginal People - Coordinated and inclusive approach to management</p>
	*Area of Sea Country under formal management agreements (LI 14)	Refer to Outcome 4E	Refer to Outcome 4E	Refer to Outcome 4H			
	Aboriginal participants satisfaction with events, activities or programs for involvement in Sea Country management, planning and monitoring (LI 15)	*Average satisfaction rating based on Likert scale	Not available. Baseline survey being conducted at the time of this evaluation.				
	*Number of programs or agreements initiated by Aboriginal groups or individuals for managing Sea Country (LI 16)	Refer to Outcome 4H	Refer to Outcome 4H	Refer to Outcome 4H			

## Unintended or unexpected outcomes produced by the initiative

The following unintended or unexpected outcomes were identified for the Initiative 4.

- There are anecdotal reports that some work through Initiative 4 has contributed towards improved wellbeing at a local scale or for individual participants. This is an indication of what could be achieved on a broader scale in the future.
- Awareness and interest in the training programs has grown organically in the Aboriginal community, beyond the initial target groups. This is a testament to the effort so far, but also creates a challenge for catering to the growing interest and demand.
- Opportunities and word of mouth has created an expectation among the Aboriginal community that work through Initiative 4 will continue and that programs will be offered more widely. If there is insufficient future funding or if these expectations are not managed appropriately, this may have a negative effect on cultural wellbeing, relationships and trust.

## Appropriateness of outcomes and indicators

Overall, there is a need to develop indicators that are more culturally appropriate. More traditionally aligned indicators provide a more positive measure to track achievement of outcomes. The use of narrative and videos to capture experiences and outcomes (see outcome 4H) are examples of qualitative measures that may be more powerful for communicating progress to both the Aboriginal and non-Aboriginal community. In addition:

- Initiative 4 staff would like to see more ambitious outcomes but are also cognisant of the resourcing constraints for achieving these.
- The indicator for Outcome 4H does not capture opportunities for training and capacity building, which has been an important part of Initiative 4 projects.

## Insights to inform future planning and implementation

Insights for ensuring success across the MEMS are provided throughout the main report. These are generally applicable across all the initiatives. A summary of insights specific to Initiative 4 for ensuring success is maintained and further outcomes achieved in the future is provided below.

- Aboriginal wellbeing, values, employment and other participation need to be embedded beyond Initiative 4 of the MEMS to ensure ongoing, wider and meaningful impact. The on-ground actions have been a great achievement, but these need to be supported by policy.
- There is need to continue to create secure employment opportunities in the MEMA agencies and to continue actively increasing rates of employment of Aboriginal people in the MEMA agencies, particularly in senior roles to enable the above.
- Improved certainty of long-term funding will enable resourcing efficiencies, create longer term opportunities for the Aboriginal community to benefit from the work of the MEMA agencies, and increase confidence and engagement.
- Most positions are casual or contract based, and some can be quite short (for example, a month long). This can lead to misleading results with respect to employment rates. It is also a risk for maintaining outcomes relating to participation and employment, and for delivering management actions to achieve other outcomes.

- There is high potential for reduced funding to negatively affect the function and effectiveness of Initiative 4, more so than other MEMS initiatives and programs. The initiative's success is heavily dependent on community relationships, trust and engagement, which all take time to build and effort to maintain, and can be very difficult to rebuild if lost or compromised. Continuity and certainty are important to enable the grassroots nature of engagement and participation that is unique to and underpins Initiative 4.

## Findings from the process evaluation

### Highlights from management actions to date

Highlights from implementation of management actions to date have been noted in the section on outcomes. Other highlights include:

- Identifying skillsets for Sea Country Rangers and developing and implementing training program for participants to develop these.
- The bush regeneration and marine debris removal program in partnership with Aboriginal Land Councils. Initiative 4 continues to work in partnership with Aboriginal Land Councils to engage community members in managing Sea Country, for example, through bush regeneration and marine debris removal programs.
- Developing an online curriculum for Sea Country School education project. This will enable primary school students (located in the Shoalhaven and Eurobodalla areas) remote access to the program and an opportunity to learn about Aboriginal culture and values of the marine estate.
- Additional funding secured through the Aboriginal Fishing Trust Fund with proposed projects extending across coastal NSW. 12 cultural fishing permits were issued.
- Progressing the draft Hastings Cultural Fishing Local Management Plan.
- A local men's group at Wallaga Lake re-introduced a boat building practice that had been dormant for almost 30 years. Participants built their own boat to fish in their traditional waters, following the cultural practice of their grandfathers. The group received a grant to make their own fishing net from the Aboriginal Fishing Trust Fund, and a fishing permit to supply local Elders with fresh fish.

### Implementation successes and enablers

The following success factors were considered important for supporting implementation:

- Initiative 4 has worked well with MIMP Cultural Technical Working Group and other initiatives, including working closely with Initiative 8 to organise aspects of Initiative 4. It has also established strong collaboration through cross agency partnerships, including strengthening existing relationships with Local Land Services and establishing new relationships with Transport for NSW.
- Flexibility in implementation allowed Initiative 4 to take a community-led approach to designing training programs and put in steppingstones to reach goals. This helped shape both the process and the outcomes, supporting the effectiveness of the initiative's work program.
- The program has been designed with a focus on engagement preferences from the Aboriginal community. Grants are discussed and issued through meetings rather than formal application forms, with grant management relying on trust. This overcomes potential barriers to participation associated with navigating complex application and government processes, and better reflects

traditional approaches. It has provided a more effective model for change in Aboriginal communities and has applications across other programs and agencies.

## Implementation challenges, constraints and areas for improvement

There are challenges, constraints and areas for improvement that are shared across the initiatives and are collated in the main report. The following issues created challenges or constraints for implementation, or have been identified as areas of improvement in the future specific to Initiative 4:

- Some delays due to MoG changes, and delays in budget announcements and recruitment approvals limited the ability to do engagement work in the central region.
- Some engagement activities could not be undertaken as initially planned due to COVID-19 restrictions; however, work schedules and stakeholder expectations were managed through alternative procedures (i.e., online engagements/training) and with only slight delays overall.

## Delivery status at the end of Stage 1

The following projects were identified to be progressed during Stage 1 to contribute towards delivery of management actions for Initiative 4 over the MEMS's 10-year delivery period:

- Collaborated with South Coast Aboriginal people in the future management of Batemans and Jervis Bay Marine Park (Batemans Bay and Jervis Bay)
- Wagonga Local Aboriginal Land Council rangers Tilba catchment management project (Tilba)
- Aboriginal Vessel training courses (Central and Northern regions)
- Marine debris and coastal weeds projects (Southern and Northern regions)
- Traditional bark canoe making project (Ulladulla, Batemans Bay and Nowra)
- Shorebird nest monitoring and protection projects, cultural site protection works and old oyster lease rehabilitation
- Cultural tourism pilot with the South Coast Aboriginal Fishing Rights and Merrimans Local Aboriginal Land Council Aboriginal (Southern region)
- Sea Country Education Program (Southern region)
- Online curriculum for Sea Country School education project (Shoalhaven and Eurobodalla)
- Aboriginal Fishing Trust Fund funding secured (Statewide)
- Issuing of cultural permits (Statewide)
- draft Hastings Cultural Fishing Local Management Plan (Statewide)
- Local men's group boat building and fishing (Wallaga Lake)
- Documenting the Runnyford Wall cultural fish trap site (Batemans Bay and Mogo)
- Coxswain certification for local Sea Country rangers and the Narooma Aboriginal cultural tourism pilot project participants (South Coast)

At the end of Stage 1, Initiative 4 had achieved most deliverables, however some planned engagements could not be achieved due to COVID-19 restrictions. Where this occurred work schedules and stakeholder expectations were managed and appropriate alternative procedures (i.e., online engagements/training) were explored.

# Initiative 5: Reducing impacts on threatened and protected species

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## Context and basis for the initiative

Initiative 5 was developed in recognition that climate change and human activities on land and water are having a cumulative impact on threatened and protected species of the marine estate. It also recognised that there is a need to improve industry and public participation in mitigating impacts on these species in the NSW marine estate. These issues are still relevant, particularly as climate change and the potential threats to threatened and endangered species continue to grow.

Initiative 5 has been delivered in alignment with the objectives of the Saving our Species (SOS) program. Funding for the SOS program has been in place for the past 5 years and is set to finish 2021. As Initiative 5 and the SOS program were complementary and operating in alignment, the conclusion of the SOS program may be a risk to the initiative's ongoing ability to deliver outcomes. The conclusion of Saving our Species will also influence the Marine Integrated Monitoring Program (MIMP) as species report cards are expected to discontinue. This presents a key gap to identifying potential threats and ongoing priorities for initiative 5.

## Findings from the outcomes evaluation

### Summary

Initiative 5 staff reported improvements to interagency coordination, knowledge-sharing and management of threatened and protected species, and has undertaken a range of activities to improve external awareness and capacity for protecting wildlife and responding to wildlife incidents. Cultural protocols are followed at all wildlife events, and there is continued effort to increase Aboriginal participation in these events through these protocols and training. Initiative 5 continues to review and improve the Elements database, which is critical for collaborative, coordinated and efficient management of threatened and protected species, as well as data collection and knowledge sharing among agencies.

This section provides a summary of findings against outcomes, identifies any unexpected or unintended outcomes (where relevant), provides commentary on ongoing appropriateness of outcomes and indicators, and notes any insights for future success.

## Short-term outcomes

Indicator results and other findings for short-term outcomes (0-2 years) for Initiative 5 are summarised below (Table 9). Results for some indicators, including outcome indicators that reflect changes in stakeholder understanding, awareness, clarity, values and behaviour, are intended to be drawn from surveys. Baseline surveys were being conducted at the time of this evaluation and could not be included in the results below. Initiative staff have requested refinements to some indicators, including identifying indicators or measures to replace or complement those that draw on survey data. Refinements to indicators and measures will be agreed following this evaluation, and are expected to improve data availability in the future. Findings from other data sources have been integrated and are also included for each outcome below.

Table 9 Findings against short-term outcomes for Initiative 5

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	2020 result	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
5F: Improved public and industry participant awareness of threats to biodiversity and their statutory and social responsibilities relating to threatened and protected species	*Responsible agencies demonstrate clarity of roles, responsibilities and accountabilities for managing the marine estate (LI 5)	Proportion of survey respondents demonstrating clarity	Not available. Baseline survey not yet conducted	<ul style="list-style-type: none"> <li>Public and industry awareness of threats to biodiversity and their respective obligations has been promoted through a range of events and education material, however a change in awareness as a result of these activities has not been measured.</li> <li>More than 400 people have been reached through collaborative workshops and attending conferences. This has included staff from external groups Organisation for the Rescue and Research of Cetaceans in Australia (ORRCA), Dolphin Marine Conservation Park (DMCP) and Sea Life. This level of engagement had not been possible without MEMS funding.</li> <li>Initiative 5 has undertaken a range of other tasks that are expected to contribute towards this outcome. These include: <ul style="list-style-type: none"> <li>refining the Marine Wildlife Management Manual and the intranet reporting portal.</li> <li>Updating the Elements database.</li> <li>delivering the wildlife observer program.</li> <li>engaging with the fishing industry to reduce wildlife entanglements</li> <li>Preparing fact sheets, case studies and pocket guides for various audiences</li> <li>Preparing seal awareness guidelines and seal safety signs. The guidelines have been adopted in the Marine Wildlife Management Manual, and safety signs continue to be rolled out.</li> </ul> </li> </ul>	5.3 5.5 5.6	<p>Communities - Improved outcomes for threatened and protected species</p> <p>Communities - Improved communication and education</p> <p>Fisheries and aquaculturalists - Reduced by-catch and interactions with threatened and protected species</p> <p>Boat users - Improved outcomes for threatened and protected species</p>
	*Community members and targeted stakeholders demonstrate awareness of benefits of, and threats to, the marine estate (LI 10)	Proportion of survey respondents demonstrating awareness	Not available. Baseline survey being conducted at the time of this evaluation.			

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	2020 result	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
				<ul style="list-style-type: none"> <li>MEMS staff propose reviewing the use of the coastal resident and visitor survey as a data source for indicators for this outcome, as the survey has not been able to capture the nuances of the outcome. There may be need to review the measure or identify an alternative to LI 10 to better monitor this outcome.</li> </ul>		
5G: Improved interagency coordination and management of threatened and protected species	*Responsible agencies demonstrate clarity of roles, responsibilities and accountabilities for managing the marine estate (LI 5)	Refer to Outcome 5F	Refer to Outcome 5F	<ul style="list-style-type: none"> <li>Initiative 5 staff continue to review and improve the Elements database, a comprehensive system for reporting incidents, responses, results and other management activities in relation to threatened and protected species among responsible agencies and partners. Elements is critical for collaborative, coordinated and efficient management of these species, as well as knowledge sharing among agencies and reporting changes over time. It will also collect data against indicators for this outcome.</li> <li>Over 300 agency staff and 80 new veterinary staff have been trained in Elements Marine Wildlife Module.</li> <li>Three external organisations already access to Elements. Including non-government groups is expected to help reduce response times, is making it easier for different groups to share information, provides a central place for all information, improve coordination between groups, and make it easier to follow the progress of rescues.</li> <li>While training and access for Elements has improved, there is need for further work on reporting on timeliness.</li> <li>There are still some challenges with coordination of roles and responsibilities for managing threatened and protected species across marine park boundaries, and establishing greater clarity on working with local councils.</li> <li>Initiative 5 staff have reported undertaking other processes that will contribute towards this outcome, including establishing memorandums of understanding (MoUs), developing training standards and the Marine Wildlife Management Manual.</li> </ul>	5.1 5.2 (a) 5.2 (b) 5.2 (c)	<p>Communities - Improved outcomes for threatened and protected species</p> <p>Communities - Improved communication and education</p> <p>Fisheries and aquaculturalists - Reduced by-catch and interactions with threatened and protected species</p> <p>Boat users - Improved outcomes for threatened and protected species</p>
5H: Improved survivorship and management of threatened and protected species	*Rate and timeliness of response to reported animal strandings or entanglements (LI 25)	*Rate of response to reported animal strandings or entanglements	Not available – data will be available in future through the Elements database.	<ul style="list-style-type: none"> <li>Increased use of the Elements database (see Outcome 5G) among external organisations is expected to support survivorship and management of threatened and protected species. The database will also provide information on survivorship and response times in the future.</li> </ul>	5.2 (a) 5.2 (b) 5.2 (c) 5.5	Communities - Improved outcomes for threatened and protected species

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	2020 result	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
				<ul style="list-style-type: none"> <li>Research is being undertaken through Initiative 5 better understand impacts of commercial fishing on threatened and protected species, including testing new technology that may help reduce whale entanglements.</li> <li>Staff continue to work with industry to reduce impacts on threatened and protected species. This includes working with commercial fish trawl operators to adopt new fishing practices that are seabird-friendly and ensure threatened seabird species are not injured or killed by these operators.</li> </ul>		Boat users - Improved outcomes for threatened and protected species

### Intermediate outcomes

Intermediate outcomes have expected timeframes of 2-5 years. Therefore, intermediate outcomes were not expected to be achieved at the time of this evaluation. However, there is early progress against some intermediate outcomes for Initiative 5. Those intermediate outcomes where there is early progress are shown below (Table 10). This includes indicator results where available and findings from other sources.

Table 10 Findings against intermediate outcomes for Initiative 5

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	2020 result	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
5B: Improved understanding and sharing of information across stakeholders of threats to threatened and protected species	Improved understanding and sharing of information across stakeholders of threats to threatened and protected species (LI 8)	Number of new or improved processes, networks or events	5	<ul style="list-style-type: none"> <li>The following five new or improved processes, networks or events are expected to contribute to Outcome 5B: <ul style="list-style-type: none"> <li>SOS report cards available online.</li> <li>New Marine Wildlife Management Manual</li> <li>Media interviews</li> <li>New signage and procedures</li> <li>Large whale disentanglement Code of Practice - Lobster and Ocean Trap &amp; Line Fishery</li> </ul> </li> <li>Reviewing the Elements database for information sharing is expected to contribute to improving understanding and sharing of information across stakeholders of threats to threatened and protected species. See outcomes 5H and 5F.</li> <li>Surveys and observer programs are being conducted to improve understanding of threats threatened and protected species from commercial fishing operations. This includes improving understanding of threats associated with harvest, bycatch and other interactions.</li> </ul>	5.4 5.7	Communities - Improved communication and education

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	2020 result	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
5C: Improved integration of information related to threatened and protected species to inform decision making	Agency staff report using information relating to social, cultural, economic and environmental values in their strategies, plans, programs and decision-making processes (LI 7)	Rate of agency staff reporting use of information relating to social, cultural, economic and environmental values	Not available. Baseline survey not yet conducted.	<ul style="list-style-type: none"> <li>The uptake of the Elements database across external organisations has meant improved integration of information related to threatened and protected species to inform decision making.</li> <li>Achievement against Outcome 5F is also expected to contribute to this outcome.</li> </ul>	5.4 5.5 5.7	<p>Landowners: Rural and Urban - Clearer guidelines and better land use management</p> <p>Landowners: Rural and Urban - Clearer guidelines on appropriate location for development and access infrastructure</p>
5D: Improved compliance with regulations to protect threatened and protected species	Non-compliance among the community and targeted stakeholders with rules, regulations, guidelines and their responsibilities for undertaking activities related to the marine estate (LI 12)	Proportion of non-compliant stakeholders per capita (audit of commercial whale and dolphin Watching operators)	90% non-compliant (2019 result)	<ul style="list-style-type: none"> <li>21 operators were audited for covert compliance audit of the commercial whale and dolphin watching industry in NSW during the latter half of 2019. Only two were compliant.</li> </ul>	5.3	Fisheries and aquaculturalists - Reduced by-catch and interactions with threatened and protected species
5E: Greater landowner, community, industry and Aboriginal participation in managing threatened and protected coastal and marine species	Aboriginal group or individual participation in Sea Country management, planning and monitoring (LI 13)	*Extent of coastline with cultural protocols developed and in effect for marine strandings	Not available. baseline survey to be conducted 2021 in conjunction with cultural surveys	<ul style="list-style-type: none"> <li>Initiative 5 now enquires about cultural protocols at all strandings and carcass events, and have had cultural engagement or ceremony at more than 10 carcasses in the last three years. These practices did not exist prior to the MEMS.</li> <li>Formalising cultural protocols will be guided by insights into culturally significant and totemic species, to be gathered through the cultural community survey.</li> <li>Initiative 5 has also supported two courses run at the Dolphin Marine Conservation Park by Dolphin Marine Rescue (DMR) to train indigenous rangers in marine wildlife rescue. These rangers are members of DMR and are invited to respond to events on country.</li> <li>Initiative 5 reports actively engaging with community and stakeholders every day and use every stranding or events as an opportunity to educate, and to establish relationships and partnerships.</li> <li>Other engagement events that are expected to contribute towards this outcome include: <ul style="list-style-type: none"> <li>Providing training to 80 local domestic animal vets along the NSW coastline.</li> </ul> </li> </ul>	5.2 (d) 5.6	Fisheries and aquaculturalists - Reduced by-catch and interactions with threatened and protected species
		Number of marine mammal strandings responses that include Aboriginal representatives	10 responses during Stage 1			
	*Community and stakeholder participation in decision-making and management of the marine estate (LI 22)	Number of community and stakeholder participants in decision-making processes	Not available, see findings and discussion			
		Number of community and stakeholder participants in marine estate management activities or events	Not available, see findings and discussion			

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	2020 result	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
	*Community and stakeholder satisfaction with experience participating in decision-making and management of the marine estate (LI 26)	Average satisfaction rating based on Likert scale	Not available. Baseline survey being conducted at the time of this evaluation.  Staff suggest removing this indicator from Initiative 5.	<ul style="list-style-type: none"> <li>- Holding more than 10 preparedness days from Byron Bay to Narooma, engaging with local partners including: Marine Rescue, Water Police, DPI -Fisheries, ORRCA, Taronga Zoo, Sydney Sealife, Dolphin Marine Rescue, Gamay Rangers, Living Ocean, TfNSW, and Australian Seabird Rescue.</li> <li>- Facilitating 15 partnership and stakeholder engagement workshops to identify priority research and partnership opportunities.</li> <li>- Publicly releasing deceased whale protocols as a resource for land managers online.</li> <li>- Working in partnership with Saving our Species and Australian Seabird Rescue, to protect the loggerhead and green sea turtles.</li> </ul>		

## Unintended or unexpected outcomes produced by the initiative

The following unintended or unexpected outcomes have been reported for the Initiative 5.

- COVID-19 restrictions provided an opportunity to explore more online and digital engagement and likely led to increased productivity. Digital engagement allowed Initiative 5 to change from a small number of large workshops to a larger number of small workshops, which reportedly allowed better engagement and quality of insights, with greater opportunity for participants to share their perspectives, concerns and ideas. Initiative 5 found these to be more productive, insightful and more satisfying for participants than could have been achieved through the traditional workshop approach, where there can be the risk of some individuals dominating discussion and other voices excluded.
- The shift to virtual working also provided an opportunity to explore and develop more online and digital content such as online learning modules for the community and key stakeholders/ marine wildlife emergency responders.

## Appropriateness of outcomes and indicators

Outcomes generally remain appropriate for Initiative 5, although timeframes may need to be reviewed for some. Initiative 5 staff suggest removing Leading Indicator 22, as the measures relevant to the initiative are covered elsewhere. There are opportunities to refine measures for LI 13, KPI 5. There is also need to consider whether additional indicators or measures are required to capture work undertaken to reduce impacts on threatened and protected species from commercial fishing in short-term and intermediate timeframes.

## Insights to inform future planning and implementation

Insights for ensuring success across the MEMS are provided throughout the main report. These are generally applicable across all the initiatives. A summary of insights specific to Initiative 5 for ensuring success is maintained and further outcomes achieved in the future is provided below:

- Initiative 5 would benefit from ongoing and further engagement with operational staff, such as, marine parks staff, rangers and boating safety officers, to embed new processes more widely and better support the protection and management of threatened and protected species.
- There are unrealised opportunities to collaborate with universities and other research institutions through programs such as masters programs and PhD positions to fill knowledge gaps and conduct research in relation to threatened and protected species.
- There is ongoing need to clarify roles and responsibilities for the management of threatened and protected species and emergency response, particularly given the division of broader management responsibilities between NSW National Parks and Wildlife Service, and Environment, Energy and Science

## Findings from the process evaluation

### Highlights of management actions to date

Many highlights from implementation of management actions to date have been noted in the section on outcomes. Other highlights include:

- Conducting research and monitoring programs, including:
  - the monitoring of turtle nests and hatching events with community citizen science program under Saving Our Species
  - vessel-based observer monitoring programs in high-risk fisheries, despite challenges with travel and social restrictions.
- Preparedness for marine wildlife emergencies was developed in Greater Sydney and North Coast NSW, with the commencement of the whale migration and increasing numbers of seals. Additional seal signage, dolphin rescue slings and carriers were all produced and delivered to priority coastal locations.
- Fabrication of additional marine wildlife rescue gear including dolphin slings, turtle mats and satellite tracking buoys for entangled whales.

### Implementation successes and enablers

The following success factors were considered important for supporting implementation.

- Improved interagency collaboration and transparency has been important for delivering the initiative. Strong collaborations with DPIE-EES and industry have enabled progress on investigations and implementation of management responses to mitigate interactions with threatened and protected species, including gear trials using negatively buoyant rope in trap fishing and bird deterrent measures implemented on ocean trawl vessels.
- The MEMS has created opportunities to bring different agencies together, particularly those with whom there was limited engagement in the past, such as Transport for NSW. The MEMS has helped establish these relationships and build awareness between these agencies of the relevant work undertaken in each, and who to contact on matters relevant to the initiative.
- Interagency collaboration and the use of Elements to bring together multiple organisations has been important for sharing knowledge and information among partner agencies.

### Implementation challenges, constraints and areas for improvement

There are challenges, constraints and areas for improvement that are shared across the initiatives and are collated in the main report. The following issues created challenges or constraints for implementation, or have been identified as areas of improvement in the future specific to Initiative 5:

- Initiative 5 received half of the funding that was applied for in Stage 1. Reduced short-term funding and longer-term funding uncertainty has restricted the ability to undertake strategic and longer-term planning, and is a risk for embedding work undertaken through the initiative into business-as-usual processes.
- Action 5.5 was originally in Initiative 6, and required some rescoping to align with Initiative 5 outcomes.
- Budget constraints and recruitment delays had implications for the following management actions:
  - Delays to amendments to Marine Wildlife Management Manual, large whale entanglement MOU's and training.
  - Reduced field sampling for Observer-based survey of NSW Ocean Trap and Line Fishery (OTL) and Observer-based survey of NSW Estuary General Fishery (EG).

## Delivery status at the end of Stage 1

The following projects were identified to be progressed during Stage 1 to contribute towards delivery of management actions for Initiative 5 over the MEMS's 10-year delivery period:

- Seal interaction plan
- Protect and conserve marine wildlife - partnerships, awareness and planning (Statewide)
- Improve reporting of interactions with marine wildlife - data and reporting (Statewide)
- Commercial fisher and observer program - ocean trap and line, estuary general and reducing threats (Statewide)

At the end of Stage 1, Initiative 5a had progressed well with only slight delays to delivery of some projects due to bushfires and COVID-19 restrictions. Delays to projects will be addressed in Stage 2. The project plan for Initiative 5b for Stage 1 was realised in full.

# Initiative 6: Ensuring sustainable fishing and aquaculture

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## Context and basis for the initiative

Initiative 6 was developed in recognition that fishing and aquaculture provides important social and economic benefits for NSW, and needs to be provided for while managing these activities in a manner that reduces major threats associated with these activities to the environmental assets of the marine estate. Actions in Initiative 6 are underpinned by findings of the TARA. It is expected that there have been some changes to risks that are relevant to Initiative 6 since the TARA assessment was completed in 2017, particularly in relation to changes to the environmental footprint of fishing and aquaculture and other industry changes since then. The TARA is due for a five-year review in 2022.

There have been some legacy issues in the broader fisheries context that have created challenges for Initiative 6, particularly when engaging with external stakeholders. Announcements of proposed restrictions on fishing in the Hawkesbury Shelf Marine Bioregion Marine Park proposal coincided with the release of the MEMS, led to confusion and criticism from recreational and commercial fishers towards the MEMS. In addition, the commercial fishing industry has been wary of any proposed reforms that may further restrict commercial fisheries following previous major industry reforms, including restructure and licence buy-backs. Initiative 6 staff report some improvements in relationships with external stakeholders in Stage 1, however concerns over stakeholder perceptions continue to influence how actions are delivered, and how external engagement and communication is approached.

## Findings from the outcomes evaluation

### Summary

Initiative 6 Stage 1 projects have focussed on establishing foundations for achieving outcomes in the future, including developing harvest strategies, undertaking environmental assessments, fisheries enhancement programs, support for aquaculture ventures, promoting ethical angling, research examining innovative ways to reduce the impact of aquaculture infrastructure on seagrass and supporting industry training programs. There has been good progress in delivering these actions, with extensive outputs delivered across the initiative. Over time, the results are expected to translate to meeting community and stakeholder outcomes, which were the focus of short-term outcomes and some intermediate outcomes.

This section provides a summary of findings against outcomes, identifies any unexpected or unintended outcomes (where relevant), provides commentary on ongoing appropriateness of outcomes and indicators, and notes any insights for future success.

## Short-term outcomes

Indicator results and other findings for short-term outcomes (0-2 years) for Initiative 6 are summarised below (Table 11). Results for some indicators, including outcome indicators that reflect changes in stakeholder understanding, awareness, clarity, values and behaviour, are intended to be drawn from surveys. Baseline surveys were being conducted at the time of this evaluation and could not be included in the results below. Initiative staff have requested refinements to some indicators, including identifying indicators or measures to replace or complement those that draw on survey data. Refinements to indicators and measures will be agreed following this evaluation, and are expected to improve data availability in the future. Findings from other data sources have been integrated and are also included for each outcome below.

Table 11 Findings against short-term outcomes for Initiative 6

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	2020 result	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
6F: Improved awareness, understanding, experience and engagement among commercial and recreational fishers of best practice guidelines, rules and regulations for ecologically sustainable fishing and aquaculture practices.	Community and targeted stakeholders report awareness and clarity of rules, regulations, guidelines, best practice and their responsibilities for undertaking activities related to the marine estate (LI 21)	*Proportion of survey respondents reporting enhanced opportunities and experiences	Not available. Baseline survey being conducted at the time of this evaluation.	<ul style="list-style-type: none"> <li>• There have been various projects undertaken that are expected to help improve awareness, understanding, experience and engagement among fishers in relation to best practice ecologically sustainable fishing and aquaculture. However, improved awareness, understanding, experience and engagement as a result of these activities has not been measured.</li> <li>• Examples of projects that have helped raise awareness include collaborating with OceanWatch in promoting and delivering the Master Fisherman Program to train fishers to practice environmentally sustainable and responsible fishing practices, and updating modules through this program to align with most recent NSW Ocean Trap and Line Fishery Code of Practice for Reducing Whale Entanglements to inform best practice in the field to reduce whale interactions.</li> <li>• Less direct capacity-building was undertaken through installing signs at popular boat ramps and fish cleaning tables at multiple sites on the South Coast to encourage sustainable fishing.</li> <li>• In addition, the harvest strategies are expected to make a significant contribution towards this outcome. Engagement so far has been targeted through working groups and advisory committees, and public exhibition of drafts.</li> <li>• Communications and stakeholder relationships remains a high priority for Initiative 6, and several project profile pages were uploaded to the marine estate website to assist this effort. This content is educational and contributes to improved awareness and understanding among fishers of best practices rules and regulations. MEMA agencies have also received letters of support for MEMS actions and projects from multiple business and industry groups, including a seafood and aquaculture business, the NSW Seafood Industry Council, Ocean Watch, and the Recreational Fishing Alliance of NSW.</li> </ul>	6.1 6.2 6.7	<p>Communities - Increased consumer confidence in NSW seafood</p> <p>Communities - Improved communication and education</p> <p>Fisheries and aquaculturalists - Reduced risk of marine pests and disease</p> <p>Fisheries and aquaculturalists - Clearer rules and improved opportunities for self-compliance</p> <p>Tourists and tour operators - Enhanced visitor education and awareness</p>

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	2020 result	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome						
6G: Enhanced opportunities and experiences for recreational fishers while balancing other social, cultural, economic and environmental values.	*Community and targeted stakeholders report awareness and clarity of rules, regulations, guidelines, best practice and their responsibilities for undertaking activities related to the marine estate (LI 21)	Proportion of survey respondents reporting enhanced opportunities and experiences	Not available. Baseline survey being conducted at the time of this evaluation. Alternative measure(s) requested by MEMS staff.	<ul style="list-style-type: none"> <li>Fisheries enhancement programs are expected to support enhanced opportunities and experiences for fishers in the marine estate. This includes stocking juvenile yellowtail kingfish in Lake Macquarie (2,600) and Botany Bay (6,500). Information on fish stocking at these and other sites across the marine estate is available on the DPI website.</li> <li>New recreational fishing infrastructure is also supporting this outcome, including fishing platforms, as well as artificial reefs installed offshore near Newcastle, Wollongong and Tweed.</li> <li>Recreational fishers, through bodies such as the Recreational Fishing Alliance of NSW and Wallamba Sportfishing, recognise that projects undertaken through the MEMS for improving water quality and fish habitat are important for the health of the marine environments to support fisheries.</li> <li>There is ongoing engagement with recreational fishers through the development of the draft harvest strategy policy and guidelines.</li> </ul>	6.1 6.6 6.7	<p>Communities - Improved commercial and recreational opportunities</p> <p>Fisheries and aquaculturalists - Improved water quality, healthier habitats and better fishing</p> <p>Fisheries and aquaculturalists - Improved fishing opportunities through fisheries enhancements</p> <p>Tourists and tour operators - Improved fishing opportunities</p> <p>Tourists and tour operators - More tourist interest in marine estate</p> <p>Tourists and tour operators - Enhanced marine eco-tourism opportunities</p>						
	Community and targeted stakeholders report enhanced opportunities and experiences for activities relating to marine estate (LI 23)	*Proportion of survey respondents reporting enhanced opportunities and experiences	Not available. Baseline survey being conducted at the time of this evaluation.				6H: Enhanced opportunities for commercial fishers and marine aquaculture while balancing other social, cultural, economic and environmental values	*Community and targeted stakeholders report awareness and clarity of rules, regulations, guidelines, best practice and their responsibilities for undertaking activities related to the marine estate (LI 21)	Refer to outcome 6G	Refer to outcome 6G	<ul style="list-style-type: none"> <li>Initiative 6 projects have investigated potential sites for prospective aquaculture to enhance opportunities for aquaculture. This includes developing aquaculture leases in Jervis Bay, which also led to the development of the NSW Marine Waters Sustainable Aquaculture Strategy, a regulatory and industry best practice legislative framework. This is being used to attract and guide future aquaculture investment in NSW.</li> <li>Initiative 6 actions have also supported other opportunities for industry to contribute towards balancing fishing with other values. This includes working with the 2020 Tide to Tip campaign, a series of Australian oyster industry led clean-up events. Through these events, participants removed over 500kg waste from estuaries across NSW.</li> <li>There is ongoing engagement with the commercial fishing and aquaculture industry through the development of the draft harvest strategy policy and guidelines.</li> </ul>	6.1 6.3 6.4 6.7 6.8
6H: Enhanced opportunities for commercial fishers and marine aquaculture while balancing other social, cultural, economic and environmental values	*Community and targeted stakeholders report awareness and clarity of rules, regulations, guidelines, best practice and their responsibilities for undertaking activities related to the marine estate (LI 21)	Refer to outcome 6G	Refer to outcome 6G	<ul style="list-style-type: none"> <li>Initiative 6 projects have investigated potential sites for prospective aquaculture to enhance opportunities for aquaculture. This includes developing aquaculture leases in Jervis Bay, which also led to the development of the NSW Marine Waters Sustainable Aquaculture Strategy, a regulatory and industry best practice legislative framework. This is being used to attract and guide future aquaculture investment in NSW.</li> <li>Initiative 6 actions have also supported other opportunities for industry to contribute towards balancing fishing with other values. This includes working with the 2020 Tide to Tip campaign, a series of Australian oyster industry led clean-up events. Through these events, participants removed over 500kg waste from estuaries across NSW.</li> <li>There is ongoing engagement with the commercial fishing and aquaculture industry through the development of the draft harvest strategy policy and guidelines.</li> </ul>	6.1 6.3 6.4 6.7 6.8	<p>Communities - Improved commercial and recreational opportunities</p> <p>Fisheries and aquaculturalists - Reduced conflict with other users</p> <p>Fisheries and aquaculturalists - New aquaculture opportunities and business growth</p> <p>Fisheries and aquaculturalists - Improved fishing opportunities through fisheries enhancements</p> <p>Tourists and tour operators - Improved fishing opportunities</p>						
	Community and targeted stakeholders report enhanced opportunities and experiences for activities relating to marine estate (LI 23)	*Refer to outcome 6G	Refer to outcome 6G									

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	2020 result	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
6I: Enhanced opportunities and experiences for Aboriginal cultural fishing practices.	Community and targeted stakeholders report enhanced opportunities and experiences for activities relating to marine estate (LI 23)	*Refer to outcome 6G	Refer to outcome 6G	<ul style="list-style-type: none"> <li>MEMS staff continue to work with the Aboriginal Fishing Trust Fund through funding secured for proposed projects extending across coastal NSW.</li> <li>Further cultural permits have been issued (12 in 2019-20), allowing greater participation in cultural fishing practices.</li> <li>MEMS staff have also worked at local scales to enhance opportunities and experiences for cultural fishing practices. This includes supporting a men's group from the Wallaga Lake Aboriginal community to regain cultural knowledge about boat building and net-making to preserve cultural fishing practices, and progressing cultural fishing local management plans.</li> <li>The harvest strategies and guidelines are also expected to support enhanced opportunities and experiences for cultural fishing in the future. Development of the draft strategies and guidelines included engagement with the Aboriginal Fisheries Advisory Committee. The Committee provided positive feedback on the drafts.</li> </ul>	6.1 6.7	<p>Aboriginal People - Greater support for Aboriginal cultural fishing practices</p> <p>Fisheries and aquaculturalists - Improved fishing opportunities through fisheries enhancements</p> <p>Tourists and tour operators - Improved fishing opportunities</p>

### Intermediate outcomes

Intermediate outcomes have expected timeframes of 2-5 years. Therefore, intermediate outcomes were not expected to be achieved at the time of this evaluation. However, there is early progress against some intermediate outcomes for Initiative 6. Those intermediate outcomes where there is early progress are shown below (Table 12). This includes indicator results where available and findings from other sources.

Table 12 Findings against intermediate outcomes for Initiative 6

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	Pre-2018 result	2020 result	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
6B: Improved compliance with and support for rules, regulations and guidelines for sustainable fishing and aquaculture practices	Compliance with conditions in aquaculture permits and consents, and commercial fishing licences (LI 18)	Rate of compliance per capita	Commercial fisheries: 78% Recreational fisheries: 89% <sup>6</sup>	Not available	Officers from the Greater Metropolitan Mobile Squad conducted at least 400 inspections of recreational fishers and shellfish collectors during Stage 1. As a result of these inspections, officers issued 95 written warnings and 62 penalty notices, initiated eight prosecution actions, and seized 3460 fish (including invertebrates) and 17 items of fishing gear. This helps to understand a baseline for compliance among recreational fishers.	6.7	<p>Fisheries and aquaculturalists - Reduced by-catch and interactions with threatened and protected species</p> <p>Fisheries and aquaculturalists - Reduced risk of marine pests and disease</p>

<sup>6</sup> NSW Government, *Recreational Boating in NSW 2019 Survey Results*, July 2019, <https://maritimemanagement.transport.nsw.gov.au/documents/recreational-boating-behaviour-report-final.pdf><sup>7</sup> NSW Government, *Recreational Boating in NSW 2019 Survey Results*, July 2019, <https://maritimemanagement.transport.nsw.gov.au/documents/recreational-boating-behaviour-report-final.pdf>

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	Pre-2018 result	2020 result	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
							<p>Fisheries and aquaculturalists - Reduced conflict with other users</p> <p>Fisheries and aquaculturalists - Clearer rules and improved opportunities for self-compliance</p>
6D: Improved understanding and appreciation among community and other stakeholder groups of the benefits of fishing and aquaculture.	Community members report awareness and appreciation of the benefits and significance of fishing and aquaculture (LI 27)	*Proportion of survey respondents demonstrating clarity	Not available.	Not available. Baseline survey being conducted at the time of this evaluation.	<p>The Supporting Seafood Futures Program was implemented in Stage 1 and is aligned with this outcome. The program sought to increase the value of NSW seafood, encourage consumption of underutilised species and build social licence for the NSW seafood industry. The grants program was considered successful, with high interest from industry and a range of educational and promotional events and material produced. Funding was delivered to 19 applicants across the first two rounds of the program.</p> <p>MEMS staff have commenced work towards this outcome by conducting a survey to get a better understanding of community knowledge of, and behaviour towards, marine biosecurity. Findings will inform a communication strategy, and provide a baseline for measuring change against this outcome in the future.</p>	6.8	<p>Communities - Increased consumer confidence in NSW seafood</p> <p>Communities - Improved communication and education</p> <p>Aboriginal People - Greater support for Aboriginal cultural fishing practices</p> <p>Fisheries and aquaculturalists - Greater social acceptance of fishing and industry</p>
6E: Improved understanding among responsible agencies and commercial and recreational fishers of the impacts of fishing and aquaculture on the marine estate	Community members and targeted stakeholders demonstrate awareness of benefits of, and threats to, the marine estate (LI 10)	*Proportion of survey respondents demonstrating awareness	Not available.	Not available. Baseline survey being conducted at the time of this evaluation.	<p>Understanding among responsible agencies and commercial and recreational fishers of the impacts of fishing and aquaculture has not been measured, however there are several important research and review projects in progress that are expected to support this outcome, including:</p> <ul style="list-style-type: none"> <li>Investigating the relationship between oyster aquaculture and Posidonia australis seagrass.</li> <li>Research led by University of NSW to examine the impacts of shading and bio-deposition processes from different oyster infrastructure on important seagrass habitat, and ways to minimise impacts.</li> <li>Review of the residual impact of commercial fishing and the commercial fisheries business adjustment program, in relation to the state-wide Threat and Risk Assessment.</li> </ul>	6.1 6.2 6.5 6.7	<p>Communities - Improved communication and education</p> <p>Fisheries and aquaculturalists - Reduced conflict with other users</p> <p>Fisheries and aquaculturalists - Research and monitoring to inform adaptive management</p> <p>Tourists and tour operators - Enhanced visitor education and awareness</p>

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	Pre-2018 result	2020 result	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
					<ul style="list-style-type: none"> <li>In addition, letters received by MEMA agencies from industry groups indicate that these groups recognise the potential impacts of fishing and aquaculture and are supportive of work undertaken through MEMS to reduce these impacts.</li> </ul>		

## Unintended or unexpected outcomes produced by the initiative

Initiative 6 staff highlighted collaboration and new partnerships with research institutes, and commercial and recreational fishers (see findings from the process evaluation) as an unexpected outcome. Otherwise, there were no unintended or unexpected outcomes specific to Initiative 6 identified through this evaluation.

## Appropriateness of outcomes and indicators

The outcomes identified initially in the MIMP framework for Initiative 6 reflect the complexity of the MEMS. Based on experience through two years of implementation and seeking to monitor these outcomes, Initiative 6 staff see merit in refining and simplifying the outcomes and indicators, reflecting:

- The scope of the initiative and ability to attribute outcomes to the initiative.
- Timeframes for achieving outcomes, especially considering the time it can take to realise community outcomes.
- Alternatives to the community and stakeholder surveys for measuring progress. These could include more digital means, such as social media and other online metrics, and be more targeted towards the refined outcomes.
- Indicator(s) for capturing change in ecological sustainability of recreational and commercial fishing, for example measuring bycatch.
- Through data collection, Initiative 6 noted that:
  - Leading Indicator 21 does not align well with outcomes 6H and 6G, as it is more about awareness of rules and best practice and less about enhanced opportunities.
  - Measures for KPI 8 should be refined due to lack of an index of species stock status for NSW.

## Insights to inform future planning and implementation

Insights for ensuring success across the MEMS are provided throughout the main report. These are generally applicable across all the initiatives. A summary of insights specific to Initiative 6 for ensuring success is maintained and further outcomes achieved in the future is provided below.

- The refinements to outcomes and indicators (discussed above) will assist in measuring and communicating progress in the future. This would be further supported by clarifying responsibilities for monitoring and identifying the most efficient resourcing arrangements for undertaking monitoring and analysis.
- The development of the Harvest Strategy Policy was time-consuming, reflecting the need to engage with and build consensus among internal and external stakeholders and allowing time for Ministerial endorsement. This should be considered when planning future actions that involve policy development.
- The original TARA provided a robust basis for identifying actions and justification for those actions. Initiative 6 staff expect that ratings for some of the risks that are relevant to the initiative will have changed since 2017, and that these changes will be reflected in the results of the TARA review in 2022. Therefore, the TARA review will be important to inform planning of future projects and actions.

## Findings from the process evaluation

### Highlights of management actions to date

Highlights from implementation of management actions to date have been noted in the section on outcomes. Other highlights include:

- Development of the Draft Harvest Strategy policy and guidelines including consultation with Ministerial advisory councils.
- Completion of an inventory of all recreational fishing data sources available to service harvest strategy development in NSW.
- Ongoing review DPI – Fisheries datasets to understand data strengths/weaknesses/gaps for servicing harvest strategies.
- Analysis to examine potential sites for prospective aquaculture ventures, and stock enhancement in popular fishing destinations.
- Research into seagrass-friendly aquaculture and collaborative work with partners to reduce pollution to support improved sustainable harvests
- Updating the Master Fisherman Program training modules and assessment materials to align with most recent NSW Ocean Trap and Line Fishery Code of Practice for Reducing Whale Entanglements and to guide best practice in the field to reduce whale interactions.
- Officers from the Greater Metropolitan Mobile Squad conducted at least 400 inspections of recreational fishers and shellfish collectors resulting in the issue of 95 written warnings, 62 penalty notices, initiated eight prosecution actions and seized 3460 fish including invertebrates and 17 items of fishing gear.
- DPI – Fisheries staff assisted in the 2020 Tide to Tip campaign, a series of Australian oyster industry led clean-up events. The event resulted in the removal of over 500kg waste from numerous estuaries in NSW.
- Ongoing progress to streamline government processes, including reducing redundancy on website pages for management actions including environmental assessments.

### Implementation successes and enablers

The following success factors were considered important for supporting implementation:

- Collaboration with research institutes and commercial and recreational fisheries groups. The MEMS has facilitated new relationships with these agencies and groups.
- Multi-agency collaboration underpinned by good will and effective engagement among delivery staff.
- The initiative builds on the momentum from business-as-usual activities. MEMS funding has enabled the responsible agencies to extend their existing work program.

### Implementation challenges, constraints and/or areas for improvement

There are challenges, constraints and areas for improvement that are shared across the initiatives and are collated in the main report. In addition, Initiative 6 staff noted the challenges associated with navigating damaged stakeholder relationships and loss of trust that have arisen from policies and

actions outside of the MEMS (refer to *Context and basis*). This has required careful and ongoing consideration in how actions are delivered, particularly communication and engagement components. Initiative 6 also had to adapt to reduced funding early in Stage 1, and to moving an action and staff from Initiative 6 to Initiative 5.

### Delivery status at the end of Stage 1

The following projects were identified to be progressed during Stage 1 to contribute towards delivery of management actions for Initiative 6 over the MEMS's 10-year delivery period:

- Fisheries enhancements (Newcastle and Wollongong, and Lake Macquarie and Botany Bay)
- Seafood industry training for commercial fishers (Statewide)
- Application of Marine Aquaculture Strategy (Statewide)
- Harvest strategies (fishing) (Statewide)
- Promoting the community benefits of fishing
- Oyster aquaculture: best practice (Statewide)
- Recreational fishing environmental assessment (Statewide and South Coast)
- Mobile Compliance Squad (Statewide)
- Reducing marine litter (Statewide)

At the end of Stage 1, most projects remain on track despite recent natural events, COVID-19 restrictions and continued funding uncertainty.

# Initiative 7: Enabling safe and sustainable boating

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## Context and basis for the initiative

Initiative 7 was developed in anticipation that boating activity in the marine estate would increase in the future and will need to be accommodated, while managing social, economic, and environmental benefits of the marine estate. The COVID-19 pandemic, and associated restrictions and changes in community attitudes, resulted in a marked increase in recreational boating activity. This further supports the need to continue to promote Initiative 7 safe and sustainable boating actions and outcomes, drawing on existing maritime plans and programs, which largely receive funding through separate, non-MEMS streams. While these are not reliant on the MEMS to continue, bringing these into the MEMS through Initiative 7 has been important for holistic and integrated management of the marine estate.

Initiative 7 is seeking to address some new and difficult problems that have not been addressed elsewhere. The pioneering nature of these programs is challenging, as there are limited examples, pilots, research or precedence to draw on. These challenges highlight the importance of work undertaken through Initiative 7, and need to be reflected in planning timeframes.

## Findings from the outcomes evaluation

### Summary

Initiative 7 continues to improve boating and infrastructure programs to reduce impacts of boating on the marine estate and provide better boating experiences for participants and other users of the marine estate. Positive progress has been made to-date, including the launch of Boating Now Programs that provide funding to enhance safe and sustainable boating access and infrastructure, the Maritime Infrastructure Plan, and the updated Boating Handbook. There are also a number of standards and guidelines currently in development that are expected to support Initiative 7 outcomes in the future. There are opportunities for outcome-based data collection to better understand the long-term effects of these programs.

This section provides a summary of findings against outcomes, identifies any unexpected or unintended outcomes (where relevant), provides commentary on ongoing appropriateness of outcomes and indicators, and notes any insights for future success.

## Short-term outcomes

Indicator results and other findings for short-term outcomes (0-2 years) for Initiative 7 are summarised below (Table 13). Results for some indicators, including outcome indicators that reflect changes in stakeholder understanding, awareness, clarity, values and behaviour, are intended to be drawn from surveys. Baseline surveys were being conducted at the time of this evaluation and could not be included in the results below. Initiative staff have requested refinements to some indicators, including identifying indicators or measures to replace or complement those that draw on survey data. Refinements to indicators and measures will be agreed following this evaluation, and are expected to improve data availability in the future. Findings from other data sources have been integrated and are also included for each outcome below.

Table 13 Findings against short-term outcomes for Initiative 7

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	2019 result	2020 result	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
7E: Greater community, government and industry awareness and understanding of guidelines and regulations for safe and sustainable boating:	Greater community, government and industry awareness and understanding of guidelines and regulations for safe and sustainable boating (LI 20)	Proportion of survey respondents reporting appropriate attitudes and behaviours. <b>Note:</b> This measure has been adapted from 'Proportion of survey respondents reporting inappropriate attitudes and behaviours'	82% of respondents see the attitudes or behaviours of other waterway users as a problem. <sup>7</sup>	Not available – boating participation survey data to be collected in 2021.	The following activities are expected to support this outcome: <ul style="list-style-type: none"> <li>Research to inform the development of an Environmentally Friendly Mooring (EFM) Standard in NSW. This will be a pioneering project, with no similar standards elsewhere to draw insights from. Adequate time will be required to navigate the technical complexities to develop the standard.</li> <li>Finalising the new boating handbook highlighting the risk of boat-based contamination.</li> <li>Investigating ways to better manage vessels that have reached their end of life while reducing potential environmental impact.</li> </ul>	7.1 7.3 7.4 7.5	Communities - Improved communication and education  Tourists and tour operators - Enhanced visitor education and awareness  Boat users - Improved boating behaviour  Boat users - Improved communication and education
7F: Improved boating and infrastructure programs for the benefit of coastal and marine habitats and species	*Number of new maritime infrastructure projects delivering new or upgraded infrastructure to support improved waterways access (LI 19)	Number and value of projects delivered per annum under the Boating Now Program	72 projects awarded funding through the Boating Now program in round 2 (2018-2019)	69 project awarded funding through the Boating Now program in round 3, with total value of \$28 million (2020)	<ul style="list-style-type: none"> <li>The ongoing NSW Boating Now Program focuses on maritime infrastructure and facilities to support safe, sustainable and enjoyable boating in NSW. The current round of the program (Round 3, 2020-2022) will provide up to \$28 million funding for new projects.</li> <li>A new type of mooring apparatus is being trialled to protect sensitive seagrass communities while keeping boaters safe. Preliminary results of the environmentally friendly mooring trial at Port Stephens-Great Lakes Marine Park are positive. After six months there is no movement of the four apparatus being trialled, noting some significant storms have occurred in this period.</li> <li>The current indicator focusses on counting outputs and does not capture the change sought through the outcome. Initiative 7 identified the need to capture more qualitative information to better understand performance against this outcome.</li> </ul>	7.2 7.4 7.7	Tourists and tour operators - Abundant and diverse marine life for current and future generations  Boat users - Better mooring management  Boat users - Better boating access and waterway infrastructure

<sup>7</sup> NSW Government, *Recreational Boating in NSW 2019 Survey Results*, July 2019, <https://maritimemanagement.transport.nsw.gov.au/documents/recreational-boating-behaviour-report-final.pdf>

## Intermediate outcomes

Intermediate outcomes have expected timeframes of 2-5 years. Therefore, intermediate outcomes were not expected to be achieved at the time of this evaluation. However, there is early progress against some intermediate outcomes for Initiative 7. Those intermediate outcomes where there is early progress are shown below (Table 14). This includes indicator results where available and findings from other sources.

Table 14 Findings against intermediate outcomes for Initiative 7

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	Pre-2018 result	2020 result	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
7B: Increased compliance with and support for guidelines and regulations for safe and sustainable boating	Non-compliance among the community and targeted stakeholders with rules, regulations, guidelines and their responsibilities for undertaking activities related to the marine estate (LI 12)	Boating Safety Compliance Rate (i.e.: inspection of licences/registrations/safety equipment etc.)	Not available	Compliance rate not provided, however, total recreational vessel inspections: 49,366.	<ul style="list-style-type: none"> <li>Transport for NSW continues to enforce environmental standards and regulations among domestic commercial vessels and recreational vessels. More than 1,400 inspections were completed in Financial Year 2019-20, which accounts for about 21% of all powered domestic commercial vessels operating in NSW.</li> <li>The department continues to implement actions through the Maritime Safety Plan, which are expected to support this outcome.</li> </ul>	7.1 7.3 7.5 7.6	Boat users - Improved outcomes for threatened and protected species  Boat users - Improved boating behaviour
7D: Increased opportunities, experiences and appreciation for commercial boating operations while balancing other social, cultural, economic and environmental values	Targeted stakeholders report attitudes and behaviours that align with safe and sustainable boating practices (LI 20)	Refer to Outcome 7E	Refer to Outcome 7E	Refer to Outcome 7E	<ul style="list-style-type: none"> <li>Ongoing implementation of the Maritime Safety Plan is intended to support these outcomes by improving sustainable boating, improved access and reducing user conflict.</li> <li>Initiative 7 continues to explore different ways to access the marine estate to enhance opportunities and experiences for boating, extending from the traditional forms of access through boat ramps to providing boat access to those with mobility difficulties.</li> </ul>	7.2 7.5 7.6 7.8	Communities - Improved commercial and recreational opportunities  Tourists and tour operators - Abundant and diverse marine life for current and future generations  Tourists and tour operators - Better water quality and less litter  Tourists and tour operators - Increased business activity and growth  Tourists and tour operators - More tourist interest in marine estate  Tourists and tour operators - Enhanced marine eco-tourism opportunities  Tourists and tour operators - Improved health and wellbeing from positive marine interactions
	Community and targeted stakeholders report enhanced opportunities and experiences for activities relating to marine estate (LI 23)	Refer to Outcome 7C	Refer to Outcome 7C	Refer to Outcome 7C			

## Unintended or unexpected outcomes produced by the initiative

There were no unintended or unexpected outcomes specific to Initiative 7 identified through this evaluation.

## Appropriateness of outcomes and indicators

There is not always a clear link between the management actions, sub-actions and projects, and the outcomes identified in the MIMP MER Framework. Initiative 7 should consider whether these remain outcomes the right articulation of what the initiative is seeking to achieve.

Initiative 7 staff see merit in the inclusion of additional qualitative indicators and measures. These may be more appropriate for understanding progress against the initiative's outcomes. Initiative 7 staff recommend removing the measure for the number of complaints by type per year from KPI 9, as this data is not collected at frequency suitable for monitoring this outcome.

Staff also indicated that there is the opportunity to capture additional data in the future to measure against outcomes more appropriately.

## Insights to inform future planning and implementation

Insights for ensuring success across the MEMS are provided throughout the main report. These are generally applicable across all the initiatives. A summary of insights specific to Initiative 7 for ensuring success is maintained and further outcomes achieved in the future is provided below.

- Initiative 7 is working on particularly difficult problems, and, in some cases, are national or global pioneers in seeking to develop solutions to these problems. As a result, Initiative 7 has faced unexpected complexities and challenges, and future timeframes need adjusting to accommodate the need to navigate these.
- Initiative 7 sees an opportunity for MEMA to provide stronger advocacy at the Commonwealth level. This would help build national and interstate buy-in, and support enhanced outcomes that related to transboundary matters.

## Findings from the process evaluation

### Progress and highlights of management actions to date

Several highlights from implementation of management actions to date have been noted in the section on outcomes. Other highlights include:

- Over 200 maritime infrastructure projects delivered since the Boating Now program was launched.
- Transport for NSW has continued to enforce environmental standards and regulations among domestic commercial vessels and recreational vessels. More than 1,400 inspections were completed in Financial Year 2019-20 which accounts for about 21% of all powered domestic commercial vessels operating in NSW.
- The draft mooring standards and guidelines are being finalised and targeted industry consultation have occurred.
- NSW Maritime is trialling a new type of mooring apparatus to protect sensitive seagrass communities while keeping boaters safe. Four Hybrid Environmentally Friendly Moorings have

been installed at sites around Shoal Bay. Transport for NSW will continue to observe trial progress and enhance moorings management in NSW.

- Transport for NSW is also continuing to explore further research options to inform the development of an Environmentally Friendly Mooring (EFM) Standard in NSW.
- Mitigating boat-based contamination remained a high priority and the completion of a new boating handbook highlighting the risk of contamination is being finalised.

### Implementation successes and enablers

The following success factors were considered important for supporting implementation:

- Collaboration across the four MEMA agencies has been greatly beneficial for implementing Initiative 7 and the MEMS more broadly. This has included:
  - Providing deeper understanding of the context for policy development for different agencies.
  - Establishing relationships to enable sharing of resources, capability and ownership.
  - Sharing knowledge and information through the interagency committees.

### Implementation challenges, constraints and/or areas for improvement

There are challenges, constraints and areas for improvement that are shared across the initiatives and are collated in the main report. The following issues created challenges or constraints for implementation, or have been identified as areas of improvement in the future specific to Initiative 7:

- Challenges presented by the 2019 and 2020 bushfires and floods may affect timeframes of Boating Now projects delivered by local councils.
- Social distancing and travel restrictions due to COVID-19 has delayed some boating infrastructure projects.
- COVID-19 caused an unanticipated increase in participation in recreational boating. As a result, there were increases in the number of vessels in the marine estate, and increased demand for boating infrastructure. There were also implications for delivery of Initiative 7 during 2020, requiring a reallocation of resources to issue licences and monitor boating behaviour, particularly in regional waterways.

There are also technical complexities that have added to timelines and resourcing, including new or unforeseen technical challenges. For example, there were no international or national standards to draw on in developing a standard for new mooring technology.

### Delivery status at the end of Stage 1

The following projects were identified to be progressed during Stage 1 to contribute towards delivery of management actions for Initiative 7 over the MEMS's 10-year delivery period:

- Safe and sustainable boating (Statewide)
- Boat based contamination compliance and education (Statewide)
- Improved mooring management (Statewide)
- Enforcement of environmental standards and regulations (Statewide)

At the end of Stage 1, Initiative 7 was progressing well, with slight delays on some deliverables due to extreme natural events and the COVID-19 pandemic. This included boating infrastructure projects which were delayed because of travel and social distancing restrictions.

## Initiative 8: Enhancing social, cultural and economic benefits

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### Context and basis for the initiative

The MEMS is an integrated strategy, with each initiative intended to deliver environmental, social, cultural and economic outcomes. Initiative 8 was developed to support this through a focus on building understanding of the social, cultural and economic uses and benefits of the marine estate, to guide the triple bottom line approach to management and strengthen the evidence base for better decision-making. It also recognised that there is a need for greater awareness and understanding among the community of the benefits of the marine estate and how their actions may affect these. Initiative 8 remains critical for connecting communities with the marine estate, and supporting other initiatives in integrated management of the marine estate.

Integrating social, cultural and economic benefits was new to marine estate management. As such, Initiative 8 had an initial focus on laying foundations through agency capacity building, developing frameworks and strategies for community wellbeing and education, and establishing processes for community engagement, input and participation. Some of this foundational work continues alongside building knowledge within MEMA agencies and understanding among the community.

External engagement is an important focus of Initiative 8. Engagement has been constrained by challenges in the operating environment. For example, COVID-19 caused delays to engagement and implementation of surveys requiring new approaches due to travel restrictions and social distancing requirements. Heightened political sensitivities following the withdrawal from the proposed Hawkesbury Shelf marine bioregion, has also affected community engagement, by requiring more sensitive and detailed planning and approvals.

### Findings from the outcomes evaluation

#### Summary

Initiative 8 has made progress on foundational activities that are expected to contribute towards intermediate and long-term outcomes. This includes the development of a Community Wellbeing Framework, to address critical knowledge gaps relating to social, cultural and economic information and allow for a coordinated and robust approach to monitoring trends and impacts to human dimensions of the marine estate. The development of the Community Wellbeing Framework recognises the increasing need to monitor and track the human dimensions of the environment that goes beyond conventional approaches that predominantly use environmental indicators. The Community wellbeing Framework and the Marine Estate Education Strategy will strengthen the evidence base for management decisions and provide insights for informing future actions. Initiative 8 staff continue to support other initiatives to integrate social and economic considerations in delivering their actions, which contributes towards outcomes captured in other initiatives. Initiative 8 has limited data against outcome indicators due to unforeseen delays in conducting community surveys, which are the primary

data source for the initiative. Surveys were conducted in early 2021 that provided information to track progress in achieving relevant Key Performance Indicators and Leading Indicators to reach outcomes articulated in the MEMS.

This section provides a summary of findings against outcomes, identifies any unexpected or unintended outcomes (where relevant), provides commentary on ongoing appropriateness of outcomes and indicators, and notes any insights for future success.

## Short-term outcomes

Indicator results and other findings for short-term outcomes (0-2 years) for Initiative 8 are summarised below (Table 15). Results for some indicators, including outcome indicators that reflect changes in stakeholder understanding, awareness, clarity, values and behaviour, are intended to be drawn from surveys. Baseline surveys were being conducted at the time of this evaluation and could not be included in the results below. Initiative staff have requested refinements to some indicators, including identifying indicators or measures to replace or complement those that draw on survey data. Refinements to indicators and measures will be agreed following this evaluation, and are expected to improve data availability in the future. Findings from other data sources have been integrated and are also included for each outcome below.

Outcomes 8I and 8H are closely related. As such, they are discussed together.

Table 15 Findings against short-term outcomes for Initiative 8

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	2020 result	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
8H: Greater stakeholder and community awareness of their responsibilities and opportunities to participate in management of the marine estate.	Community and targeted stakeholders report awareness and clarity of rules, regulations, guidelines, best practice and their responsibilities for undertaking activities related to the marine estate (LI 21)	Proportion of survey respondents reporting awareness and clarity	Not available. Baseline survey being conducted at the time of this evaluation.	<p>Initiative 8 staff have been unable to collect data for measuring outcomes due to unforeseen delays in conducting community surveys, which are the primary data source for indicators for the initiative. The coastal residents and visitors' surveys and Sea Country (marine estate) survey were developed with extensive engagement during Stage 1. This is the first time a Sea Country (marine estate) survey will be done at this scale and will include a large number of coastal Aboriginal communities in NSW. The coastal residents and visitors surveys were approved during the evaluation period, but were being conducted in early 2021. As such, results could not be included in this evaluation.</p> <p>Outcome 8I and 8H are closely linked, and progress and effort towards one will inherently support the other.</p> <ul style="list-style-type: none"> <li>The Community Wellbeing Framework is intended to facilitate strategic monitoring of social, cultural and economic components of the MIMP. This will help to understand current stakeholder and community awareness to inform future activities and provide a baseline for measuring improvement. This type of framework is novel for the NSW marine estate and is rare in coastal management strategies applied in Australia or Internationally. It will be important for all outcomes for Initiative 8.</li> <li>The draft Marine Estate Education Strategy was completed and undergoing targeted consultation with key local government educators, Aboriginal organisations, and other relevant environmental educators. This strategy will help improve community and stakeholder understanding of the benefits of the marine estate and its management. It will be important for all outcomes for Initiative 8.</li> </ul>	8.1 (a) 8.1 (b)	Communities - Improved communication and education
	Community and stakeholder participation in decision-making and management of the marine estate (LI 22)	Number of community members responding to survey	Not available. Baseline survey being conducted at the time of this evaluation.			
		Number of surveys conducted	3 surveys prepared, to be conducted 2021.			
8I: Improve stakeholder and community awareness of benefits, threats, and management arrangements relevant to the marine estate	Community members and targeted stakeholders demonstrate awareness of benefits of, and threats to, the marine estate (LI 10)	Proportion of survey respondents demonstrating awareness	Not available. Baseline survey being conducted at the time of this evaluation.	<ul style="list-style-type: none"> <li>The draft Marine Estate Education Strategy was completed and undergoing targeted consultation with key local government educators, Aboriginal organisations, and other relevant environmental educators. This strategy will help improve community and stakeholder understanding of the benefits of the marine estate and its management. It will be important for all outcomes for Initiative 8.</li> </ul>	8.1 (a) 8.3 (a)	Communities - Improved communication and education Landowners: Rural and Urban - Improved communication and education
	Community members report awareness and clarity of agencies' respective roles and responsibilities in managing the marine estate (LI 24)	Proportion of survey respondents reporting awareness and clarity	Not available. Baseline survey being conducted at the time of this evaluation.			

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	2020 result	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
				<ul style="list-style-type: none"> <li>Coastal residents and visitors' surveys were developed during Stage 1 and will be conducted in early 2021. The survey will monitor the ways people benefit from the marine estate and impacts to these benefits. A Sea Country (marine estate) survey for Aboriginal people has been developed with survey design finalised with the project gaining final approval from the Australian Institute of Aboriginal and Torres Strait Islander Studies Ethics Committee. The survey was developed to understand the ways Aboriginal people values and culturally connect to Sea Country and impacts to these connections. These surveys will gather important baseline data and other insights for Initiative 8 and across the MEMS.</li> <li>Initiative 8 has collaborated with other initiatives to help deliver educational and monitoring projects, which indirectly contribute towards these outcomes, as well as some intermediate outcomes. This includes working with Initiative 4 and the Cultural Working Group to develop appropriate approaches to surveying Aboriginal people.</li> <li>Initiative 8 has also supported other initiatives to integrate social and economic considerations in delivering their actions, including facilitating fish friendly workshops and videos, the oyster reef restoration program and the marine litter campaign for water quality. This is important for delivery of the MEMS, particularly given the desire for integrated and holistic management that underpins the MEMS. However, the results of this effort are largely captured through other initiatives.</li> </ul>		

### Intermediate outcomes

Intermediate outcomes have expected timeframes of 2-5 years. Therefore, intermediate outcomes were not expected to be achieved at the time of this evaluation. However, there is early progress against some intermediate outcomes for Initiative 8. Those intermediate outcomes where there is early progress are shown below (Table 16). This includes indicator results where available and findings from other sources.

Table 16 Findings against intermediate outcomes for Initiative 8

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	2020 result	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
8C: Greater adoption of principles for ecologically sustainable growth among marine industries.	Agency staff report using information relating to social, cultural, economic and environmental values in their strategies, plans, programs and decision-making processes (LI 7)	Rate of agency staff reporting use of information relating to social, cultural, economic and environmental values	Not available. Baseline survey not yet conducted.	This outcome is linked to Outcome 8E, and initial progress against Outcome 8E is expected to support this outcome. See Outcome 8E for initial progress that will support this outcome.	8.2 8.3 (a) 8.4 (a) 8.4 (c) 8.5	Fisheries and aquaculturalists - New aquaculture opportunities and business growth  Tourists and tour operators - Increased business activity and growth
8E: Social, cultural and economic values are better incorporated into planning and management of the marine estate.	Agency staff report using information relating to social, cultural, economic and environmental values in their strategies, plans, programs and decision-making processes (LI 7)	Rate of agency staff reporting use of information relating to social, cultural, economic and environmental values	Not available. Baseline survey not yet conducted.	Ongoing activities that are expected to contribute to this outcome include: <ul style="list-style-type: none"> <li>Establishment of the social, cultural and economic working groups within the MIMP.</li> <li>Gathering information and insights through implementing the Community Wellbeing Framework and sharing among agencies.</li> <li>Continuing to work with other initiatives to integrate social and economic considerations in delivering their actions</li> </ul>	8.2 8.3 (a) 8.4 (a) 8.4 (c) 8.5	Fisheries and aquaculturalists - New aquaculture opportunities and business growth  Tourists and tour operators - Increased business activity and growth
8F: Improved information base on human dimensions of the marine estate relevant to management.	Knowledge gaps adequately addressed. Knowledge gaps relate to threats, stressors, risks, condition, value and management approaches (LI 3)	Number of knowledge gaps with status changing from 'inferred' to 'adequate'.	Not available – to be assessed during 2022 review of the TARA.	Ongoing activities that are expected to contribute to this outcome include: <ul style="list-style-type: none"> <li>The Community Wellbeing Framework is expected to contribute to an improved information base and assist in filling critical knowledge gaps where there is inadequate social and economic data. The coastal residents and visitors surveys and Sea Country (marine estate) survey, a component of the framework, will be particularly important for this outcome.</li> <li>The Marine Estate Activity Mapping (MEAM) project and aerial surveys to better understand human activity in the marine estate.</li> </ul>	8.2 8.3 (a) 8.3 (b) 8.4 (a) 8.4 (b) 8.4 (c)	Communities - Improved health and wellbeing from positive marine interactions  Aboriginal People - Improved health and wellbeing from positive marine interactions  Aboriginal People - Research and monitoring to inform adaptive management  Landowners: Rural and Urban - Research and monitoring to inform adaptive management  Fisheries and aquaculturalists - Research and monitoring to inform adaptive management
	Community members and targeted stakeholders demonstrate awareness of benefits of, and threats to, the marine estate (LI 10)	Refer to Outcome 8I	Refer to Outcome 8I			

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	2020 result	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
						<p>Tourists and tour operators - Improved health and wellbeing from positive marine interactions</p> <p>Tourists and tour operators - Research and monitoring to inform adaptive management</p> <p>Boat users - Improved health and wellbeing from positive marine interactions</p> <p>Boat users - Research and monitoring to inform adaptive management</p>
8G: Increased stakeholder and community awareness of safe and sustainable use of the marine estate.	Knowledge gaps adequately addressed. Knowledge gaps relate to threats, stressors, risks, condition, value and management approaches (LI 3)	Refer to Outcome 8F	Refer to Outcome 8F	<p>Ongoing activities that are expected to contribute to this outcome include:</p> <ul style="list-style-type: none"> <li>• Implementation of the Marine Estate Education Strategy</li> <li>• Supporting other initiatives to deliver education activities specific their initiatives</li> </ul>	8.1 (a) 8.1 (b) 8.5	<p>Communities - Improved communication and education</p> <p>Landowners: Rural and Urban - Better support to implement best management practices</p> <p>Boat users - Reduced conflict with other users</p> <p>Boat users - Improved communication and education</p>
	Community members and targeted stakeholders demonstrate awareness of benefits of, and threats to, the marine estate (LI 10)	Refer to Outcome 8F	Refer to Outcome 8F			

## Unintended or unexpected outcomes produced by the initiative

Initiative 8 led development of the Marine Integrated Monitoring Program (MIMP) framework, although this was not an action within Initiative 8. The MIMP Framework was considered an early driver of interagency collaboration.

## Appropriateness of outcomes and indicators

Initiative 8 staff see merit in the following refinements to outcomes and indicators:

- Remove reference to “stakeholders” from its outcomes, reflecting Initiative 8’s focus on community.
- Remove LI 26 as it is not relevant to this initiative, and add Leading Indicator 21 to capture management arrangements.
- Remove outcome 8D, as Initiative 8’s focus is on raising awareness of opportunities, rather than creating opportunities.

## Insights to inform future planning and implementation

Insights for ensuring success across the MEMS are provided throughout the main report. These are generally applicable across all the initiatives. A summary of insights specific to Initiative 8 for ensuring success is maintained and further outcomes achieved in the future is provided below.

- Initiative 8 led the development of the MIMP and its framework, which was outside the scope of Initiative 8 and required a lot of resources. There is a need to resource the MIMP appropriately, to ensure the MIMP meets its purposes and other staff can focus on their initiative responsibilities.
- Achieving and maintaining outcomes for Initiative 8 will require more dedicated resources than are currently available for the initiative. Recruiting and retaining additional staff commensurate with the desired outcomes and required skills will be important for future success.
- Maintaining and improving communication within and between agencies will be important for sharing results from Initiative 8, so that others can make use of these, and for efficiency in delivering the MEMS.

## Findings from the process evaluation

### Progress and highlights of management actions to date

Highlights from implementation of management actions to date have been noted in the section on outcomes. Other highlights include:

- The ‘Integrated monitoring and evaluation framework for the MIMP’ and associated summary was finalised and published.
- Completion of the draft Marine Estate Education Strategy.
- Community Wellbeing Monitoring Program is in development, including surveys for the following target groups: coastal residents, visitors, MEMA agency staff and Aboriginal people. Surveys will be conducted in 2021.

- Marine Estate Activity Mapping (MEAM) meta database and data portal specifications were completed to capture data on human uses in the marine estate. Aerial survey data of human activity on the coastal fringe between Stockton and Crowdy Head (2017/18) is under way.
- Initiative 8 initiated research in collaboration with University of Wollongong to pilot a Blue Economy project, which will directly inform this initiative.

## Implementation successes and enablers

The following success factors were considered important for supporting implementation:

- Projects were designed using an end-user perspective, which Initiative 8 felt led to better results.
- Face to face workshops with agencies harnessed expertise and added value to the development of the Community Wellbeing Framework. There is an ongoing need to use the MEMA agency network to collaborate and leverage expertise.
- Developing the Community Wellbeing Framework has provided an effective way for Initiative 8 to engage with other initiatives and MEMA agencies, and build understanding of the work undertaken by Initiative 8. The novelty of it has also helped capture interest among the agencies.
- MEMA and the MEMS has created opportunities for inter-agency collaboration, with Initiative 8 collaborating across initiatives, including Initiative 4 and Initiative 2. This helped to build relationships.

## Implementation challenges, constraints and/or areas for improvement

There are challenges, constraints and areas for improvement that are shared across the initiatives and are collated in the main report. The following issues created challenges or constraints for implementation, or have been identified as areas of improvement in the future specific to Initiative 8:

- The Community Wellbeing Framework and Education Strategy were both more resource-intensive than anticipated, requiring additional effort from staff.
- The Aboriginal component of the Community Wellbeing Monitoring Program was delayed as it required face-to-face meetings, which were affected by COVID-19 restrictions.
- Initiative 8's work and its novelty for NSW marine estate management has reportedly led to wider input in review of outputs and decision-making. This required additional time that had not been anticipated when planning implementation.
- Initiative 8 has experienced resourcing challenges. Delays to funding announcements delayed recruitment initially, and Initiative 8 has struggled to find suitable applicants to fill specialist positions. Initiative 8 staff have also contributed to other projects, resulting in delays to some Initiative 8 projects.
- The community and stakeholder surveys have faced a series of delays, including delays to developing the specifications for indicators across the initiatives, and extensive internal consultation, review and approval processes.

## Delivery status at the end of Stage 1

The following projects were identified to be progressed during Stage 1 to contribute towards delivery of management actions for Initiative 8 over the MEMS's 10-year delivery period:

- Marine Education Strategy (Statewide)

- Marine Integrated Monitoring Program (MIMP) (Statewide)
- Resource use management and activity mapping - Marine Estate Activity Mapping (Statewide)
- Community wellbeing surveys (Statewide)

At the end of Stage 1, most projects were on track and progressing well, although in some cases schedules had been revised. The schedule had changed for the development of the Marine Estate Education Strategy and Community Wellbeing Monitoring Program to accommodate changes in scope. Delays in the Aboriginal component of the Community Wellbeing Monitoring Program due to COVID-19. These projects will continue in Stage 2.

# Initiative 9: Delivering effective governance

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## Context and basis for the initiative

Initiative 9 recognised that the complex governance arrangements for management of the NSW marine estate can lead to lack of clarity of roles and responsibilities, inconsistencies, duplication, and inappropriate regulation. Initiative 9's objective is to implement reviewed and widely understood governance arrangements to better support effective management of the marine estate and deliver social, cultural, economic, and environmental benefits.

Initiative 9 is unique from other initiatives within the MEMS. Its function serves to facilitate and streamline processes across the program and responsible agencies, rather than directly servicing on-ground outcomes within the marine estate. It was established as a separate initiative following the release of the draft MEMS. This required rapid adjustment, including disaggregating governance-related actions that were previously integrated into other initiatives.

While not explicit in Initiative 9's actions, project management became a focus for the initiative. In Stage 1, the initiative responded to need to develop a governance and project management framework to support effective implementation of the highly complex multiagency MEMS. Broader MEMS staff required support to adopt the framework, and the project management staff led a change management process to assist staff to adopt the new way of working. This focus on project management was driven by the need identified in Stage 1, as well as needing to adapt to a reduced initiative budget.

Initiative 9's initial focus on establishing strong foundations through systems and processes to support governance and project management across the responsible agencies has shifted to a phase of continuous improvement to ensure these remain appropriate. This will also include adapting governance and project management arrangements in response to changes in the broader political context. Meanwhile, some of Initiative 9's actions and projects may align more strongly with other initiatives. Given the shift in focus, there is need to confirm the ongoing purpose of Initiative 9 and ensure that future actions and outcomes align with that purpose.

## Findings from the outcomes evaluation

### Summary

During Stage 1, Initiative 9 focussed on establishing foundations for success through governance and project management frameworks and processes. These are already helping to improve project management and reporting practices, and internally focused outcomes for improving coordination, transparency, consistency and knowledge-sharing between the MEMA agencies. As this is the first time the MEMA agencies have worked together in this way, there will be ongoing refinements to these processes to support continuous improvement and to ensure they continue to support governance outcomes.

Initiative 9 has limited data against outcome indicators as agency surveys have not yet been conducted. However, staff across the nine MEMS initiatives and governance groups provided insights that indicate there have been improvements in governance, knowledge-sharing and communication for the MEMS and that there are opportunities to continue improving and adapting governance arrangements in the future.

This section provides a summary of findings against outcomes, identifies any unexpected or unintended outcomes (where relevant), provides commentary on ongoing appropriateness of outcomes and indicators, and notes any insights for future success.

## Short-term outcomes

Indicator results and other findings for short-term outcomes (0-2 years) for Initiative 9 are summarised below (Table 17). Results for some indicators, including outcome indicators that reflect changes in stakeholder understanding, awareness, clarity, values and behaviour, are intended to be drawn from surveys. Baseline surveys were being conducted at the time of this evaluation and could not be included in the results below. Initiative staff have requested refinements to some indicators, including identifying indicators or measures to replace or complement those that draw on survey data. Refinements to indicators and measures will be agreed following this evaluation, and are expected to improve data availability in the future. Findings from other data sources have been integrated and are also included for each outcome below.

Table 17 Findings against short-term outcomes for Initiative 9

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	Result	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
9H: Greater clarity of roles, responsibilities and accountabilities and improved capacity to fulfil roles among all responsible agencies	Responsible agencies demonstrate clarity of roles, responsibilities and accountabilities for managing the marine estate (LI 5)	Proportion of survey respondents demonstrating clarity	Not available. Baseline survey not yet conducted.	<p>Staff across the MEMS reported to the evaluators that there is generally improved clarity of roles, responsibilities and accountabilities and capacity to fulfill their roles.</p> <p>Staff also identified the need for further work to:</p> <ul style="list-style-type: none"> <li>Clarify and communicate roles and responsibilities in relation to monitoring through the MIMP, in particular the roles for initiatives in monitoring indicators.</li> <li>Review and clarify the role and responsibilities of initiative leads, particularly in the context of managing increasing workload for the leads.</li> <li>Clarify roles and processes for approvals and decision-making, and communicating outcomes from these processes.</li> </ul> <p>Initiative 9 has developed systems and processes and continues to engage staff across the responsible agencies to build clarity and capability to fulfil roles under the MEMS, particularly in relation to project management. This includes:</p> <ul style="list-style-type: none"> <li>Undertaking early and upfront discussions with initiative and MEMS teams on strategic direction and responsibilities to develop trust and understanding across each party.</li> <li>Establishing the Governance and Project Management Framework to provide a clear, consistent and rigorous approach to planning and implementing projects, transparent budget management, reporting and risk management for the MEMS has been a significant achievement for Initiative 9. This has formed a critical foundation for several outcomes for initiative 9 and delivery of the MEMS.</li> </ul>	9.1 (a) 9.1 (b)	<p>Landowners: Rural and Urban - Coordinated and inclusive approach to management</p> <p>Boat users - Coordinated and inclusive approach to management</p>
	Responsible agencies report confidence with capacity to fulfil governance roles and responsibilities (LI 11)	Proportion of survey respondents' confident	Not available. Baseline survey not yet conducted.			

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	Result	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
				<ul style="list-style-type: none"> <li>• Providing state-wide project management training workshops and online video training to accompany implementation of the framework. This has facilitated a better understanding of roles and responsibilities, and staff members' ability to fulfil duties. Additional meetings with individuals across the MEMS have helped increase uptake and ownership of the framework where necessary. This has also helped give senior staff greater confidence in delivery of the strategy.</li> <li>• The framework has supported notable upskilling in project management among responsible agencies, particularly financial management and reporting. This was new for some agencies.</li> </ul>		
9I: Improved processes for knowledge sharing and communication among responsible agencies	New or improved processes or events for sharing knowledge among responsible agencies, and between responsible agencies and targeted stakeholders and the community (LI 8)	Number of new or improved processes, networks, data sharing platforms or events	12	<p>Interagency knowledge sharing and communication process that have been reviewed or created include:</p> <ul style="list-style-type: none"> <li>• MEMA meetings</li> <li>• MASC meetings</li> <li>• Interagency Working Group meetings</li> <li>• Quarterly 'snapshot' report</li> <li>• MEMA confidential quarterly report</li> <li>• Marine Estate website, including Initiative profile pages</li> <li>• Presentations</li> <li>• Conferences (e.g., NSW Coastal Conference 2019)</li> <li>• Marine Estate newsletters</li> <li>• Program Plan</li> <li>• Implementation Plan</li> <li>• Health Check and Stage 2 Requirements</li> </ul> <p>Overall, staff across the MEMS broadly felt that knowledge-sharing and communication has improved, and there are opportunities to further improve communication between the various governance, advisory and working groups.</p>	9.1 (d) 9.4 (b)	Fisheries and aquaculturalists - Transparent reporting and data sharing

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	Result	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
				<ul style="list-style-type: none"> <li>The MEMS and MIMP governance structures, with interagency groups at different levels within the structure, are intended to facilitate knowledge-sharing and communication between agencies. Some of these groups, for example technical working groups (TWGs) in the MIMP, have only formed recently and are still establishing their role in interagency knowledge sharing and communication. The TWGs provide an opportunity for further achievement this outcome. Other groups, such as the MASC and IWG, have supported interagency knowledge sharing and communication among staff at their respective levels in the governance and organisational structure.</li> <li>These groups are also used to identify opportunities for continuous improvement. For example, the monthly IWG meetings provide a process for sharing information and updates at the initiative level, and provides insights for improvements to project management arrangements.</li> <li>Extended approval times for program planning and reporting documents delays knowledge sharing and communication between agencies, and is an area of improvement for ensuring timely and transparent communication.</li> <li>In addition, examples of improved knowledge sharing and communication among agencies have been noted for other initiatives, as well as opportunities for further improvement. These reflect initiative-led processes, such as the Elements database through Initiative 5, and interagency relationships, such as Initiative 4's strengthened relationship with Local Land Services and new relationship with TfNSW.</li> </ul>		
9J: Greater community awareness of governance arrangements and opportunities to participate in management of the marine estate	Community members report awareness and clarity of agencies' respective roles and responsibilities in managing the marine estate (LI 24)	Proportion of survey respondents reporting awareness and clarity	Not available. Baseline survey being conducted at the time of this evaluation.	<p>Overall, Initiative 9 has focused on creating robust foundations for project management and governance to underpin delivery of the MEMS, rather than building community awareness (Outcome 9J). However, some public-facing documents noted against Outcome 9I may contribute towards Outcome 9J. These include:</p> <ul style="list-style-type: none"> <li>Quarterly 'snapshot' report</li> <li>Marine Estate website, including Initiative profile pages</li> <li>Conferences (e.g., NSW Coastal Conference 2019)</li> <li>Marine Estate newsletters</li> <li>Implementation Plan</li> </ul>	9.1 (a) 9.1 (b) 9.1 (d) 9.2 9.3 (c)	Communities - Improved communication and education

## Intermediate outcomes

Intermediate outcomes have expected timeframes of 2-5 years. Therefore, intermediate outcomes were not expected to be achieved at the time of this evaluation. However, there is early progress against some intermediate outcomes for Initiative 9. Those intermediate outcomes where there is early progress are shown below (Table 18). This includes indicator results where available and findings from other sources.

Table 18 Findings against intermediate outcomes for Initiative 9

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	2020 result	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
9C: Improved consistency, coordination and integration among responsible agencies	Responsible agencies report improved processing times for regulatory processes and approvals (LI 6)	Reported change in processing times	Not available	<p>This outcome is closely linked to outcomes 9H, 9I and 9D, and progress against these outcomes supports Outcome 9C as well as the two long-term outcomes.</p> <p>The Governance and Project Management Framework is expected to be an important contributor towards this outcome, along with the governance groups and structure for the MEMS and the MIMP (see outcomes 9H and 9D). Staff report there is already improved consistency in areas such as project management, and strengthening interagency relationships to enable coordination and integration. Improved reporting and knowledge sharing (outcomes 9I and 9D) has provided greater transparency, also supporting improved trust, coordination and integration.</p> <p>At a project level and with scope for further application, the pilot Richmond River Governance and Funding Framework aligns with this outcome, and with long-term outcomes 9A and 9B. The recommended framework seeks to support responsible agencies at state and local level to improve coordination, reduce duplication and deliver improved outcomes for the Richmond River. The framework was completed late 2019, and its application are expected to support this outcome.</p>	9.1 (a) 9.1 (b) 9.1 (c) 9.1 (d) 9.3 (a) 9.4 (b)	<p>Communities - Coordinated and inclusive approach to management</p> <p>Landowners: Rural and Urban - Coordinated and inclusive approach to management</p> <p>Boat users - Coordinated and inclusive approach to management</p>
9D: Improved knowledge sharing and communication among responsible agencies	New or improved processes or events for sharing knowledge among responsible agencies, and between responsible agencies and targeted stakeholders and the community (LI 8)	Number of new or improved processes, networks, data sharing platforms or events	12	Staff across the MEMS reported that has been improved knowledge sharing and communication, but also indicated they would support further improvements. Refer to Outcome 9I.	9.1 (d) 9.4 (b)	<p>Aboriginal People - Research and monitoring to inform adaptive management</p> <p>Landowners: Rural and Urban - Research and monitoring to inform adaptive management</p> <p>Fisheries and aquaculturalists - Transparent reporting and data sharing</p> <p>Fisheries and aquaculturalists - Research and monitoring to inform adaptive management</p>

Outcome	Indicator (*denotes those to be reviewed)	Measure (*denotes those to be reviewed)	2020 result	Other findings and discussion	Actions that support outcome	Business case benefits linked to outcome
						Tourists and tour operators - Research and monitoring to inform adaptive management  Boat users - Research and monitoring to inform adaptive management

## Unintended or unexpected outcomes produced by the initiative

Developing and implementing project management arrangements was not intended as focus for Initiative 9. The focus on project management arrangements has helped initiatives implement their actions more effectively and increased project management capabilities across the responsible agencies.

## Appropriateness of outcomes and indicators

There is need to revisit the purpose and future focus of Initiative 9, considering the need or opportunity that it is seeking to address and the achievements of the initiative so far. This should be reflected in refined outcomes, actions or both. This may also require refinements to indicators for Initiative 9 to ensure these remain aligned.

## Insights to inform future planning and implementation

Insights for ensuring and maintaining success in relation to governance have been captured in the main report as they apply across the whole MEMS. In addition, Initiative 9 works across the whole MEMS, which brings complexities and challenges for coordination, collating input and managing timelines when there are many staff and agencies involved. Future planning needs to consider the time and resources required to navigate these complexities. Initiative 9 has had an important role in supporting staff across the MEMS agencies to adapt to new ways of working collaboratively and in coordination, including at all levels of the governance and delivery structure for the MEMS. This support role will continue to be important, especially if and as governance and project management arrangements need to adapt to changes in the operating or political context.

## Findings from the process evaluation

### Highlights of management actions to date

Highlights from implementation of management actions to date have been noted in the section on outcomes. Other highlights include:

- Facilitated Strategy Stage 2 program development across Marine Estate Management Authority agencies
- Strategy program reviewed by an independent review panel via a Facilitated Recurrent Expenditure Assessment Framework (REAF) health check in February 2020. This resulted in an overall rating of HIGH based on the review panels level of confidence that the Strategy is being effectively developed and delivered in accordance with NSW Government objectives.

### Implementation successes and enablers

By having an overarching role to facilitate other initiatives, Initiative 9 reported various means of collaboration and interagency communication as a key tool which enabled implementation success. This included:

- Sharing knowledge, holding meetings and conducting training have been critical for building capacity and relationships across the program.

- Early and upfront discussions with initiative and MEMS teams on strategic direction and responsibilities helped to develop trust and understanding across each party.
- Monthly IWG meetings provided a positive forum for information sharing among initiative leads and provide insights to support continuous improvement to governance and project management.
- The addition of the dedicated project management team to establish and oversee project management.

### Implementation challenges, constraints and/or areas for improvement

There are challenges, constraints and areas for improvement that are shared across the initiatives and are collated in the main report. In addition, Initiative 9 staff noted the lack of long-term budget certainty created associated pressures on Initiative 9 and the project management team. This included administrative work to review budgets, management plans and risk management plans to adapt timelines and scope, including accommodating actions added to the initiative during Stage 1. In addition, some projects that arose through the Healthcheck process have been added to Initiative 9 in the Stage 2 Implementation Plan. These have not received the level of funding that is expected to be required, and will place additional pressure on Initiative 9 resources.

### Delivery status at the end of Stage 1

The following projects were identified to be progressed during Stage 1 to contribute towards delivery of management actions for Initiative 9 over the MEMS's 10-year delivery period:

- Governance framework pilot (Richmond River catchment and Statewide)
- The Strategy Governance and project management framework (Statewide)

At the end of Stage 1, implementation was on schedule. Risks due to extreme events affected the ability to complete some workstreams, however project management is now firmly embedded in Strategy projects and agencies, with a high degree of adoption of practices ready for Stage 2.

## Early data against long-term outcomes

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Long-term outcomes (5-10 years) were not considered in this first evaluation. However, baseline data was provided for a small number of long-term outcomes and indicators. This data is provided below (Table 19 to Table 23). These tables include data against indicators and measures in the current MIMP Framework. Staff have reported having data available that could be used to inform alternative or refined indicators or measures. As such refinements have not yet been discussed and agreed, alternative data has been excluded from the tables.

Table 19 Early data against indicators for long term outcomes for Initiative 1

Outcome	Indicator	Measure	Results
1B: Reduction in input litter to the marine estate in alignment with community values	*National Litter Index results for NSW (to be replaced with Key Littered Items Study (KLIS))	*Litter items per 1000 square metres (NSW) (terrestrial)	<p>National Litter Index (NLI):</p> <ul style="list-style-type: none"> <li>• 2018-19: 44 items/1000m<sup>2</sup></li> <li>• 2019-20: 46 items/1000m<sup>2</sup></li> </ul> <p><b>Key Littered Items Study (KLIS):</b></p> <ul style="list-style-type: none"> <li>• Baseline 2018-19 – 190 items per 1000m<sup>2</sup>**</li> <li>• 2019-20 – 158.66 items per 1000m<sup>2</sup></li> </ul> <p>**The 2018-19 baseline year comprises data from all eight litter counts across both 2018 and 2019. The baseline item density and ongoing monitoring values refer to a sub-set of program target items. These indicator values exclude certain items such as fragments and larger categories such as commercial fishing, which are captured in the broader KLIS but are outside the current NSW litter prevention scope.</p>
1A: Improved water quality and waterway health in the marine estate in alignment with community values	Water quality supports community values and uses (KPI 1)	Protection of Aquatic Ecosystems: Proportion of sites with Estuary Health Grade A or B.)	<p>North region</p> <ul style="list-style-type: none"> <li>• 2015/16: 64%</li> <li>• 2018/19: 76%</li> </ul> <p>Central region:</p> <ul style="list-style-type: none"> <li>• 2016/17: 36%</li> <li>• 2019/20: 44%</li> </ul> <p>South region:</p> <ul style="list-style-type: none"> <li>• 2017/18: 84%</li> </ul> <p>2020/21: 83%</p>

Outcome	Indicator	Measure	Results
		Protection of Aquatic Ecosystems: Proportion of sites with Estuary Health Grade D or E	North region <ul style="list-style-type: none"> <li>• 2015/16: 8%</li> <li>• 2018/19: 7%</li> </ul> Central region: <ul style="list-style-type: none"> <li>• 2016/17:32%</li> <li>• 2019/20: 20%</li> </ul> South region: <ul style="list-style-type: none"> <li>• 2017/18: 0%</li> <li>• 2020/21: 6%</li> </ul>
		Overall beach performance (% of Beachwatch sites graded good (B) or very good (A))	2018-19: 86% 2019-20: 89%

Table 20 Early data against indicators for long term outcomes for Initiative 5

Outcome	Indicator	Measure	2018* result	2020* result
Outcome 5A: Improved or maintained conservation status and health of targeted threatened and protected species in the wild	Key stressors to threatened coastal and marine species in NSW (KPI 5)	Example: Rate of reported large whale entanglements in commercial fishing gear	43 large whale entanglements	16 large whale entanglements

Note \*Data years to be confirmed

Table 21 Early data against indicators for long term outcomes for Initiative 6

Outcome	Indicator	Measure	Pre-2018 result	2020 result
		(2) Gross Value of Fisheries Production:		
		Commercial (wild catch)	2017/18: \$99,501,000	Not available

Outcome	Indicator	Measure	Pre-2018 result	2020 result
6A: Improved ecological sustainability, economic viability and community wellbeing relating to fishing and aquaculture in the marine estate	Trend in ecological sustainability, economic viability and community wellbeing measures for fishing and aquaculture (KPI 8)	Aquaculture	2017/18: \$70,728,000	Not available

Table 22 Early data against indicators for long term outcomes for Initiative 7

Outcome	Indicator	Measure	2019 result	2020 result
7A: Boating provides increased social and economic benefits for NSW communities while supporting sustainable social, economic, cultural and environmental benefits of the marine estate	Boating provides increased social and economic benefits for NSW communities while supporting sustainable social, economic, cultural and environmental benefits of the marine estate (KPI 9)	Frequency of fatal and serious injury boating incidents	Fatal incidents: 10 Serious injury incidents: 49	Fatal incidents: 20 Serious injury incidents: 31
		Number and type of trips	Trip types: <ul style="list-style-type: none"> <li>• 61% powered boat</li> <li>• 21% paddle craft</li> <li>• 18% other</li> </ul> 90% of boating trips are single day trips. Fishing identified as main purpose of trips (55%) followed by cruising or sightseeing (22%)	NA

Table 23 Early data against indicators for long term outcomes for Initiative 8

Outcome	Indicator	Measure	Baseline result (years vary)
8A: Improved social, cultural and economic benefits of the marine estate that contribute to the wellbeing of the NSW stakeholders and community	Economics benefits indicator (KPI 11)	<b>Nature based visitors expenditure (\$ value)<sup>8</sup></b>	
		Nature based visitors expenditure (\$ billion) International overnight travel	\$9.8 billion (2018) \$10.3 billion (2019)
		Nature based visitors expenditure (\$ billion) domestic overnight travel	\$10.1 billion (2018) \$11.9 billion (2019)
		Nature based visitors expenditure (\$ billion) domestic daytrip travel	\$1.5 billion (2018) \$1.9 billion (2019)
		Commercial fishery GVP (\$ value): <sup>9</sup>	Commercial (wild catch): \$99,501,000 (2017-18) Aquaculture: \$70,728,000 (2017-18)
		Recreational fishing licences	471,046 licences
		Tourism industry employment <sup>10</sup>	Sydney: 127,463 (2016-17) Central Coast: 8,434 (2016-17) Hunter: 20,583 (2016-17) North Coast: 30,018 (2016-17) South Coast: 20,450 (2016-17)
		Registered recreational vessels	223,486 (2017-18)

<sup>8</sup> NSW Government, Nature Based Tourism in NSW, Year ended December 2018 and 2019, <https://www.destinationnsw.com.au/wp-content/uploads/2019/07/nature-based-tourism-to-nsw-snapshot-ye-dec-2018.pdf>, <https://www.destinationnsw.com.au/wp-content/uploads/2020/09/nature-based-tourism-to-nsw-snapshot-ye-dec-2019.pdf>

<sup>9</sup> Steven, AH, Mobsby, D and Curtotti, R 2020, Australian fisheries and aquaculture statistics 2018, Fisheries Research and Development Corporation project 2019-093. ABARES, Canberra, April 2020. CC BY 4.0 <https://doi.org/10.25814/5de0959d55bab>

<sup>10</sup> Regional Tourism Satellite Account 2016-17, Tourism Research Australia, <https://www.tra.gov.au/Economic-analysis/Economic-Value/Regional-Tourism-Satellite-Account/regional-tourism-satellite-account>

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