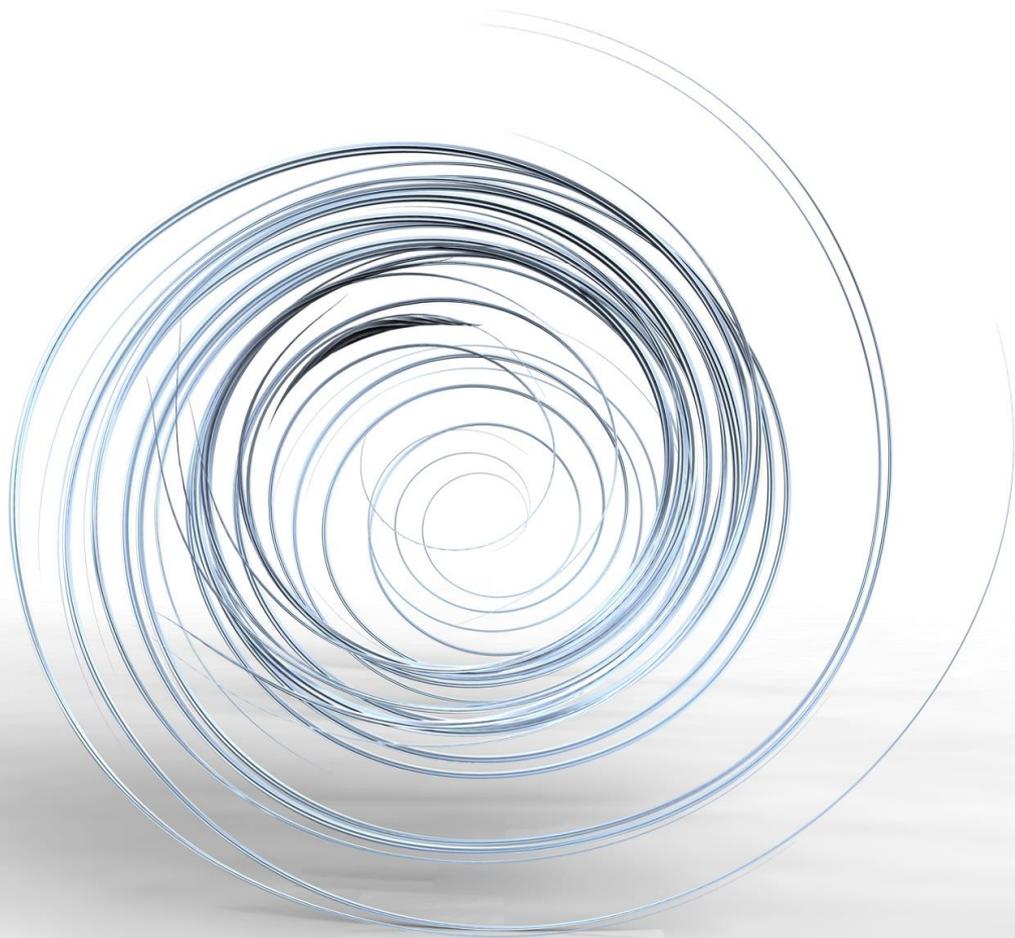




# MARINE ESTATE MANAGEMENT STRATEGY Implementation Plan 2020-2021

Stage 2

MARINE ESTATE MANAGEMENT AUTHORITY



Published by the NSW Marine Estate Management Authority

### **Marine Estate Management Strategy – Implementation Plan - 2020-2021**

First published March 2021

#### **More information**

Marine Estate Management Authority [www.marine.nsw.gov.au](http://www.marine.nsw.gov.au)

#### **Acknowledgments**

The Authority acknowledges Ministers, government agencies, organisations and individuals whose support, collaboration and input has made our work possible. Key contributors include officers from the following agencies in preparing this report:

- NSW Department of Primary Industries
- NSW Department of Planning, Industry & Environment – Environment, Energy & Science
- NSW Department of Planning, Industry & Environment – Planning & Assessment
- Transport for NSW

#### **Cover image**

iStock.com/traffic\_analyzer

MEMS Implementation Plan – Stage 1 INT17/175031  
MEMS Implementation Plan – 2020-2021 INT19/143013

---

© State of New South Wales through Department of Industry, March 2021. You may copy, distribute, display, download and otherwise freely deal with this publication for any purpose, provided you attribute the Marine Estate Management Authority as the owner.

Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing. However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up-to-date and to check currency of the information with the author or the user's independent advisor.

## Foreword



The [Marine Estate Management Strategy 2018–2028](#) (Strategy) coordinates and streamlines the management of the New South Wales (NSW) marine estate, one of the State's most significant natural assets. It includes almost a million hectares of tidal rivers and estuaries and their shorelines, submerged lands, offshore islands as well as the ocean along the NSW coast. The marine estate is important for the overall wellbeing of the NSW community, providing a place for simple enjoyment, recreational, cultural and commercial activities.

The Strategy is a requirement of the [Marine Estate Management Act 2014](#). It addresses statewide priority threats to the environment as well as threats to community benefits we all derive from the marine estate. It sets out nine initiatives and the actions needed to deliver improved, evidence-based management of our marine estate. Developed with input from key stakeholders and the community, the Strategy outlines how we will deliver our vision for the marine estate over the next 10 years.

---

a healthy coast and sea,  
managed for the greatest wellbeing of the community,  
now and into the future

---

Stage 1 of the Strategy (2018–2020) was successfully completed with positive outcomes across the marine estate. It was an ambitious program of works that has laid the foundation for further implementation and involved collaboration amongst many government agencies, industry partners and key stakeholder groups. I acknowledge the challenges the Marine Estate Management Authority (Authority) agencies faced, including delays in Stage 1 commencement, followed by drought, bushfire and floods which have all affected project delivery. Now the COVID-19 pandemic has created new challenges that we must overcome as we deliver Stage 2. My sincere thanks to agency staff and delivery partners for their commitment and adaptability which has enabled our momentum to continue to build on outcomes as we move into Stage 2.

Our partners are critical participants in its delivery and to achieving the Strategy's outcomes. We will continue to enhance our engagement with the community and our key stakeholders to implement the projects described in this Plan and to reduce the threats facing our marine estate. The investment of \$28.3 million by the NSW Government in 2020-2021 will enable the good work to continue, as outlined in this Implementation Plan 2020-2021 (Plan).

We will report periodically on our progress towards meeting the intended outcomes. A [Marine Integrated Monitoring Program](#) will monitor, evaluate and report on progress to facilitate this process. We will communicate our progress and achievements regularly, on the [marine estate web site](#), as well as in the Authority's annual report on Strategy implementation.

**Russell Reichelt AO FTSE**  
Chair, Marine Estate Management Authority

Aboriginal people are the Traditional Owners  
of the NSW marine estate and have a  
continuing connection to their  
Land and Sea Country



Photo: 1 Arrawarra Headland, aerial view of Aboriginal ancient stone fish traps. Photo Nicola Johnstone, DPI Fisheries.

# Contents

Introduction.....	1
Management initiatives .....	5
<b>Initiative 1</b> Improving water quality and reducing litter.....	6
<b>Initiative 2</b> Delivering healthy coastal habitats with sustainable use and development .....	18
<b>Initiative 3</b> Planning for climate change .....	27
<b>Initiative 4</b> Protecting the Aboriginal cultural values of the marine estate .....	32
<b>Initiative 5</b> Reducing impacts on threatened and protected species .....	40
<b>Initiative 6</b> Ensuring sustainable fishing and aquaculture.....	49
<b>Initiative 7</b> Enabling safe and sustainable boating .....	58
<b>Initiative 8</b> Enhancing social, cultural and economic benefits.....	66
<b>Initiative 9</b> Delivering effective governance .....	73
Program management, monitoring, reporting, evaluation and engagement.....	80
Appendix 1 Strategy agencies and partners .....	85

# Introduction

## Purpose of the Implementation Plan

---

This Plan outlines how we will deliver the Strategy in 2020-2021

---

The NSW Government is committed to supporting the community during the current challenging times with COVID-19, following the summer bushfires and drought of 2019/20, and is investing \$28.3 million in funding to continue to deliver the Strategy's nine initiatives from 1 July 2020 to 30 June 2021. This funding is critical to maintain the momentum of projects that commenced in Stage 1, as well as providing regional jobs, helping with the recovery of bushfire effected regions and delivers on a range of Government commitments.

This Plan identifies:

- the range of projects that will be implemented under the nine initiatives and 53 actions in the Strategy
- who the lead agencies and partners are that will work together to deliver the projects
- when these projects will be delivered and where.

The Plan showcases the breadth of projects underway, their benefits and the extent that they are delivered across the marine estate. Case studies in this Plan provide highlights of key Strategy deliverables from Stage 1 and innovative new projects commencing in Stage 2.

## Measuring and communicating our success

The [Marine Integrated Monitoring Program](#) (Monitoring Program) will measure, evaluate and report on progress towards achieving outcomes for each of the nine initiatives so we can measure their success after 10 years (the life of the Strategy). The Monitoring Program has three key purposes:

1. to monitor the condition and trend of environmental assets and community benefits against components of the vision
2. to evaluate the effectiveness of the management initiatives and actions that aim to reduce priority threats and risks
3. fill knowledge gaps that were identified as part of the statewide [Threat and Risk Assessment](#) (TARA) process in 2017.

We also will share our progress regularly using a variety of media including:

- NSW marine estate newsletter
- quarterly snapshot reports on Strategy implementation
- Marine Estate Management Strategy implementation annual reports
- regular updates on the marine estate website, including the above documents
- Marine estate social media such as NSW Marine Estate Instagram.

Implementation of the Strategy is adaptive and has been designed to address changing and emerging issues through regular review. The statewide threat and risk assessment (TARA) completed in 2017 will be reviewed after five years. Planning for this will commence in 2021 and be undertaken in 2022, to consider new information and other data to ascertain if the statewide priority threats identified in 2017 have changed, and if new threats have emerged.

We will also undertake a comprehensive, five-year health check of the Strategy in 2023. This health check will review how initiatives are performing against key performance indicators and is informed by the review of the statewide TARA. The five-year health check will also respond to research and monitoring outputs, new evidence and emerging threats. Management responses can then be applied as required.

## Partnerships

The Strategy requires strong collaboration and partnerships with stakeholders involved in marine estate management, including:

- local government
- Aboriginal people
- NSW Government agencies
- the general community
- peak industry groups and community-based organisations
- research providers.

Increased Aboriginal involvement in the management of Sea Country, and enhanced stewardship of the marine estate by the broader NSW community, are both critical to the success of the Strategy.

The independent [Marine Estate Expert Knowledge Panel](#) (the Panel) will continue to provide their ecological, social, cultural and economic expertise in the ongoing implementation of the Strategy.

### Links between the Strategy and Coastal Management Programs

Local government's [Coastal Management Programs](#) (CMPs) are strongly aligned with improving outcomes for the marine estate. CMPs are required to support the objectives of the *Marine Estate Management Act 2014*. The development and implementation of the Strategy and CMPs are bound by legislation and both rely on a risk-based approach. As councils develop their CMPs through their five stages, they should consider:

- the statewide TARA - which is a key resource for considering priority threats to estuaries and coastal and marine areas during preparation of CMP Scoping Studies
- aligning CMP actions with the initiatives and actions in the Strategy
- outcomes and key learnings from projects piloted in Stage 1 to help inform the design and implementation of local management actions.

We will continue to partner with local government to deliver projects with common objectives. In Stage 1 we listened to feedback from local government about the need to share information about project progress through better communication. We have now committed to quarterly report snapshots and more frequent updates of Strategy projects on the marine estate web site. This will support our ongoing day to day interactions with local government staff at a project level.

## Timeframe for delivery

This Plan refers to projects that are being delivered in Stage 2 from 1 July 2020 to 30 June 2021. They build on the projects that commenced in Stage 1, many of which intend to continue in subsequent stages of the Strategy, given improvements in environmental condition or community benefits may take many years to realise.

Projects that are on hold, or are yet to commence due to funding constraints, are included in the Plan. This includes:

- marine estate activity mapping (Initiative 8) that commenced in Stage 1 but has been postponed to future years
- projects which will commence in future years (funding pending) include marina pollution monitoring (Initiative 1), climate change modelling (Initiative 3), species and habitat monitoring and research (Initiative 5), blue growth economy (Initiative 8) and understanding government and non-government stakeholder and coordinating compliance (Initiative 9).

Several new projects will commence as priority projects in 2020-2021 and include:

- two marine pollution and litter projects (Initiative 1)
- ICOLL management and research related to impacts on seagrass and fish assemblages in estuaries (Initiative 2) and offshore vessel anchoring (Initiative 7)
- several new Aboriginal projects (Initiative 4)
- commercial and recreational fishing projects (Initiative 6)
- marine estate valuation model and maritime heritage (Initiative 8)
- improved management for marine parks and reserves and governance coordination (Initiative 9).

To help identify the status of projects in each Stage we have colour coded them as shown in Table 1; this colour-coding is used throughout this document.

Table 1. Inclusion of projects in each implementation stage.

			
<b>Timeframe funding</b>	Stage 1 funded (2018–2020)	Stage 2 funded (2020–2021)	subject to future funding (future years)

## Governance framework

The range of spatial scales, cost, complexity and risk in the Strategy results in the need for collaboration between government agencies and partners under a strong governance structure.

The Strategy’s Governance and Program Management Framework (framework) facilitates those relationships and tracks the Strategy’s progress. Under the framework the Authority continues to have program oversight.

The framework consists of three tiers. These closely reflect the structure of the Strategy.

- Tier 1—the Strategy
- Tier 2—each of the nine initiatives
- Tier 3—management actions and their projects.

Interagency working groups in each tier regularly meet to enhance cross-linkages and ensure good communication across initiatives. Membership of these groups is determined by the initiative or project lead to ensure membership is relevant and appropriate. There are also linkages with other related government reforms that have an influence on the delivery of the Strategy. Effective coordination with these related reforms is important. The full governance structure is outlined in Figure 1.

## MARINE ESTATE MANAGEMENT STRATEGY GOVERNANCE FRAMEWORK

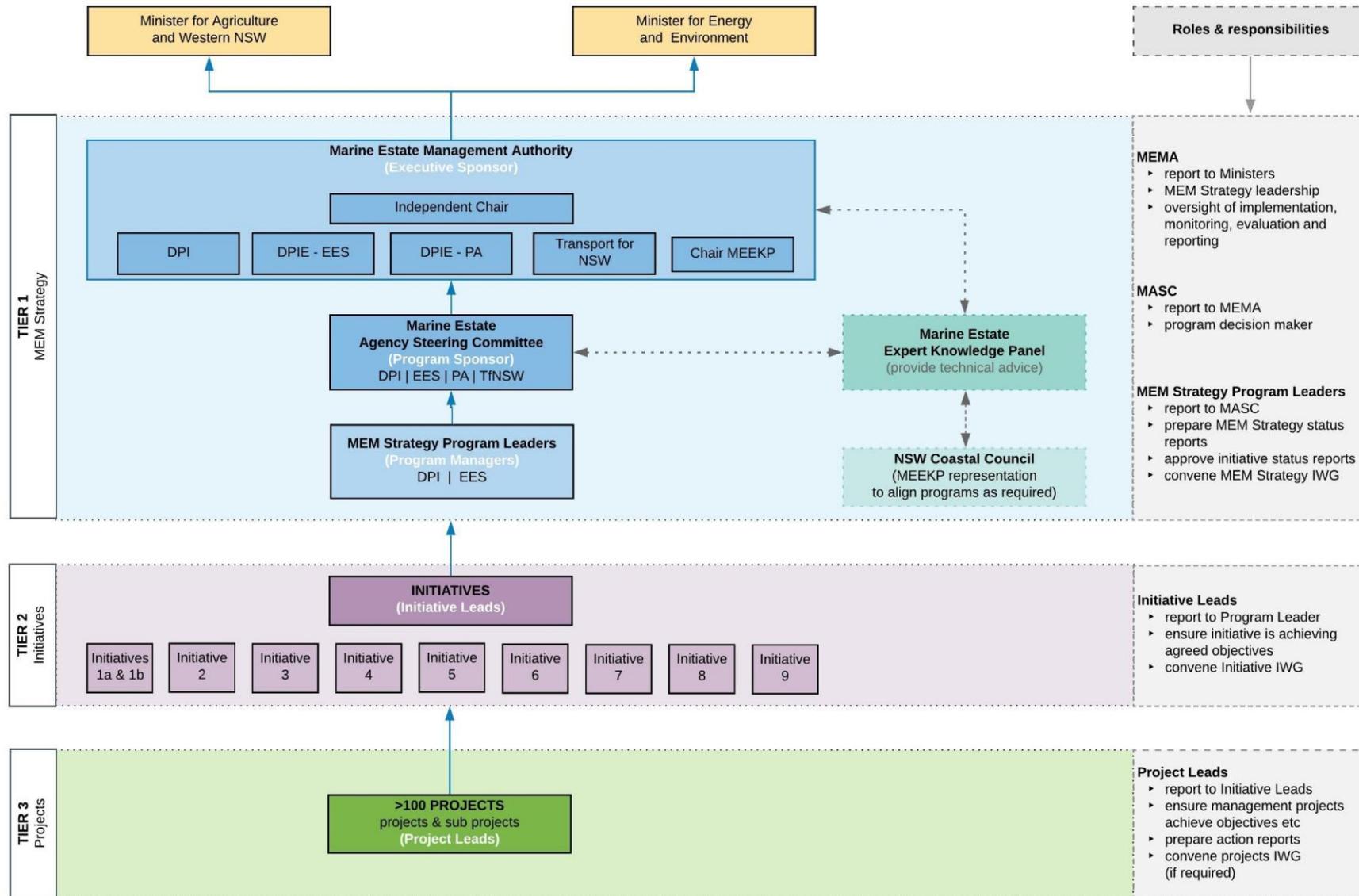


Figure 1. Marine Estate Management Strategy governance framework

## Management initiatives

This section describes the projects under each of the 53 management actions and nine initiatives in the Strategy, who is responsible for implementing them, and where they are occurring. Collaboration is key: agencies, organisations, research institutions and key stakeholders involved in delivering actions are listed in Appendix 1.



Photo: 2 Fishing Marom Creek, Northern NSW. Photo: DPI

# Initiative 1

## Improving water quality and reducing litter



Photo: 3. Ballina NSW, flood waters at the entrance of the Richmond River. Photo: Colin Cooksey ©

### The problem/opportunity

Water pollution and litter are together a significant contributor to poor water quality in the marine estate. Water quality affects the health of habitats and wildlife as well as the vast social, cultural and economic benefits provided by the marine estate.

### Steps to achieving our long-term outcomes

Initiative 1 aims to improve water quality and reduce the amount of litter in our waterways. This can take some time as complex natural systems like rivers, estuaries and coastal waters respond slowly to active management; it can take more than 10 years for water quality and ecological health to improve. Action is continuing to ensure the foundational work can begin to realise benefits.

Funding for on-ground works—such as road sealing, stock fencing, riverbank, wetland or oyster reef restoration—is allocated to priority sites that have been identified in collaboration between Local Land Services, local government and marine estate agencies.

A targeted campaign will seek to change the behaviour of those responsible for marine litter and raise awareness in the broader community of the impact of litter in the marine estate. We will work with local councils to identify the sources of pollutants to their waterways and best practice responses. We will work with agricultural landholders, urban planners and developers to improve awareness of best practice to reduce the impacts of their activities on water quality.

In time, we expect to see more 'best practice' in water quality and litter management as key industries and the community improve their compliance with regulations. We are also expecting more consistency and better coordination between the government agencies that can influence water quality.

## Initiative objective

To improve water quality and reduce marine litter for the benefit of marine habitats, wildlife and the community.

## Initiative long-term outcomes

- Improved water quality and waterway health in the marine estate in alignment with community values.
- Reduction in input of litter to the marine estate in alignment with community values.
- Maintained or improved biodiversity and marine habitats.

## Management actions and projects

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021
1.1		<p>Improve water quality in agricultural and urban catchments using a pilot-based implementation of the <a href="#">Risk-based Framework for Considering Waterway Health Outcomes in Strategic Land use Planning Decisions</a>.</p>				<p>At the end of 2020-2021, local councils in the pilot areas will have applied the <i>Risk-based Framework</i>:</p> <ul style="list-style-type: none"> <li>• in the South Creek catchment to assess options for new stormwater controls for protecting waterways and water dependent ecosystems</li> <li>• in the Richmond River catchment by establishing a catchment governance and waterway health and catchment support officer to progress work towards trialling a new governance framework in a multi-jurisdictional catchment. This will aim to increase stakeholder collaboration and coordination</li> </ul>
	<p><b>Risk-based framework for urban waterway health</b></p> <p>Apply the <i>Risk-based Framework</i> in South Creek as an urban diffuse source water pollution pilot (sub-action 1.1.1 Stage 1).</p>		DPIE - EES	LGOV DPI-F LLS	<b>Central region</b>  Sydney - South Creek	
	<p><b>Risk-based framework for regional waterway health</b></p> <p>Introduce a new catchment governance and waterway health officer to work towards trialling a preferred governance framework for the Richmond River catchment. This will provide a case study on managing agricultural run-off and to enhance</p>		DPIE - EES	LGOV DPI-F LLS	<b>Northern region</b> Richmond Valley Council, Ballina	

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021
		integration of waterway health initiatives into the development of CMPs (sub-actions 1.1.2 and 9.1.2 in Stage 1).			Shire Council, Lismore City Council, Kyogle Council, Rous County Council	for improved marine estate water quality outcomes including community engagement.
1.2		Improve the management of diffuse source water pollution by: <ul style="list-style-type: none"> <li>clarifying NSW Government and local government roles and responsibilities</li> <li>building capacity to implement the <i>Risk-based Framework</i></li> <li>using mechanisms within existing policy, planning and legislative frameworks to improve outcomes</li> <li>improve minimum requirements for industry standards and ensure compliance with regulations and best practice through social research, education campaigns and compliance programs.</li> </ul>				<ul style="list-style-type: none"> <li>guidance on applying the <i>Risk-based Framework</i>, based on pilot programs and developed by practitioners</li> <li>guidelines for deriving community environmental values and uses of the marine estate, developed in partnership with coastal councils, which can be used to inform the review of NSW Water Quality Objectives in coastal catchments</li> </ul>
	<b>Diffuse Source Water Pollution Strategy</b> Review and refine government arrangements for the management of diffuse source water pollution in NSW based on learnings from Stage 1 (sub-actions 1.2.1 and 1.2.2 in Stage 1).		DPIE-EES	DPI DPIE-PA EPA, SW OLG, GSC TfNSW WNSW LLS DPIE-W	Statewide	<ul style="list-style-type: none"> <li>online dissemination and provision of information on how to apply the <i>Risk-based Framework</i> for improving water quality and waterway health in the marine estate</li> </ul>
	<b>Building capacity on the Risk-based framework</b> Strengthen provisions in the NSW planning system to improve the management of water quality (sub-action 1.2.3 in Stage 1).		DPIE-EES	LGOV INSW EPA SW	Statewide	<ul style="list-style-type: none"> <li>commenced the process to improve the management of diffuse source water pollution in NSW</li> </ul>

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021
		Build capacity for stakeholders to implement the <i>Risk-based Framework</i> , through delivery of guidance materials, industry forums and an online portal (sub-action 1.2.4 in Stage 1).		GSC DPIE-PA		<ul style="list-style-type: none"> <li>council instream works audits and staff education programs will be delivered to all interested coastal local governments</li> <li>uniform, comprehensive coastal floodplain data is collected, collated and distributed for seven priority catchments in NSW, with priority locations and recommendations for water quality improvement identified. This information is used in management decision-making by state and local government, industry and individual landholders</li> <li>a finalised process for offsetting harm to fish habitats that adequately considers the habitat value, strategically plans for climate change adaptation and coordinates mechanisms under various statutes</li> <li>Series of fish friendly education videos for local councils.</li> </ul>
		<b>Review of the NSW Water Quality Objectives</b> Review NSW Water Quality Objectives for each catchment in coastal NSW to assess whether they reflect contemporary values and expectations, and update in selected pilot areas (sub-action 1.2.5 in Stage 1).	DPIE-EES	LGOV LALC LLS EPA WNSW DPIE-W DPI	Statewide	
		<b>Water Quality Working Group</b> Representatives from all agencies with responsibility for water quality management meet to discuss water quality actions in Initiative 1 and other water quality policy issues (sub-action 1.2.6 in Stage 1).	DPIE-EES	DPI DPIE-PA EPA, SW OLG, GSC TfNSW WNSW LLS DPIE-W	Statewide	
		<b>Coastal floodplain study</b> Audit existing floodplain infrastructure such as drains and flood gates and prioritise remediation opportunities (sub-action 1.2.8 in Stage 1).	DPI-F	LGOV. DPIE-EES DPIE-W Industry	<b>North and south regions</b> Tweed, Ballina, Lismore, Richmond Valley, Clarence, Port Mac Hastings, Kempsey, Midcoast, Shoalhaven	

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021
	<b>Aquatic biodiversity offsets</b> Develop and implement policy to protect high-value fish habitats through use of biodiversity offsets (sub-action 1.2.9 in Stage 1).		DPI-F	DPIE-EES DPIE-P LLS Private	Statewide	
	<b>Fish friendly workshops for councils</b> Provide training and education to local council staff on how to integrate fish friendly concepts and infrastructure into on-ground works and development (sub-action 1.2.10 in Stage 1).		DPI-F	LGOV Industry	Statewide	
	<b>Construction sediment management</b> Develop a set of approval conditions that improve the existing controls for erosion and sediment (ErSed) management at development sites during the construction phase (sub-action 1.2.13 in Stage 1).		DPIE-PA	DPI DPIE-EES LGOV Industry	Statewide	
<b>1.3</b>	  	Facilitate and deliver on-ground activities that reduce diffuse source water pollution through investigation and provision of cost-effective funding programs and financial incentives.				At the end of 2020-2021, we will deliver: <ul style="list-style-type: none"> <li>• 22 km of riparian revegetation or other improvements</li> <li>• 1.7 km of bank stabilisation works</li> <li>• 15 gravel roads improved to reduce erosion</li> <li>• the expansion of the Port Stephens oyster reef pilot location</li> <li>• Monitoring and analysis of the restoration site to demonstrate benefits</li> </ul>
	<b>Oyster reef restoration</b> Expand current natural oyster reefs in the Port Stephens area, conduct knowledge gathering and awareness raising and plan for expansion to other locations in 2020-2021, hold rescheduled Oyster Reef Restoration conference (sub-action 1.3.1 in Stage 1).		DPI-F	Industry UNI NGOs	Port Stephens	

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021
		<b>Oyster reef restoration research</b> Research new restoration techniques, species and benefits in collaboration with partner organisations. Monitor the Port Stephens pilot on-ground works. Contribute to new projects in NSW as required (sub-action 1.3.1 in Stage 1).	DPI-F	Uni NGOs LLS	Statewide	<ul style="list-style-type: none"> <li>new research into oyster reef restoration techniques, benefits and species</li> <li>Education products and increased community knowledge of oyster reefs and capacity to participate in projects, including planning for future restoration locations</li> </ul>
		<b>Riverbank vegetation improvements</b> Plant new vegetation, undertaken weeding, erect fencing and implement other improvements to enhance the health of waterways and their foreshores in the North Coast, Hunter and South East LLS regions. Continue to maintain revegetating work conducted in Stage 1 in these regions (sub-action 1.3.2 in Stage 1).	LLS	DPIE-EES LGOV DPI DPIE-W Private	North Coast, Hunter and South East LLS regions	<ul style="list-style-type: none"> <li>held the Oyster Reef Restoration conference</li> <li>a fully operational Blueberry Nutrition Research Facility conducting applied research to address knowledge gaps in Blueberry nutrition</li> </ul>
		<b>Clean coastal catchments on-ground</b> Undertake on-ground works to improve land use practices to reduce nutrient and sediment run-off in the blueberry, greenhouse vegetable and intensive livestock industries (sub-action 1.3.3 in Stage 1).	LLS	LLS UNI NSWFA Industry	North Coast, Hunter and South East LLS regions	<ul style="list-style-type: none"> <li>improved understanding of nutrient pathways by ongoing monitoring as preliminary data is analysed</li> <li>additionally, three demonstration farms highlighting improved fertiliser management and technology will be fully installed and commissioned.</li> </ul>
		<b>Clean coastal catchments research</b> Influence behavioural change in on-farm fertiliser management through a structured approach to social research targeting agricultural industries and engagement of, and knowledge sharing with, industry advisors (sub-actions 1.2.11 and 1.2.12 in Stage 1). Conduct applied research in nutrient and sediment management to reduce nutrient and sediment run-off in the blueberry, greenhouse vegetable and macadamia industries, and planning for effective interventions for expansion into the livestock sector in Stage 2.	DPI Ag	University Industry LLS	Blueberry, greenhouse vegetable dairy and other intensive livestock specific  Ballina, Coffs Harbour	<ul style="list-style-type: none"> <li>one monitoring site established to baseline on-farm water quality in livestock system on the South Coast</li> <li>a piloted behaviour change approach to address nutrient management for the Blueberry industry</li> </ul>

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021
	<b>Riverbank stabilisation</b>	Maintain existing structures constructed in Stage 1 and undertake new work, such as the construction of log, rock and vegetation bank protection that stabilise erosion hotspots, to reduce sediment entering waterways (sub-action 1.3.4 in Stage 1).	LLS	DPI LGOV DPIE-W TfNSW	North Coast, Hunter and South East LLS regions	<ul style="list-style-type: none"> <li>Fertcare accredited training course developed for the horticultural industry and completed by at least 10 agronomy advisors</li> <li>online self-learning education packages for Blueberry industry will be developed and promoted</li> <li>Develop and implement best practice nutrient management education tools for industry</li> <li>on-ground works to improve on-farm fertiliser and erosion management in the blueberry and greenhouse vegetable industries and intensive livestock industries</li> <li>preliminary erosion mitigation methods identified</li> <li>priority wetland on-ground works and interventions to reinstate natural hydrology to reduce diffuse pollution.</li> <li>Assessments in priority areas to inform on-ground works and/or priority purchases.</li> <li>Acquisition of priority lots within wetlands for wetland function and restoration in perpetuity.</li> </ul>
	<b>Coastal wetland rehabilitation</b>	Contribute to Clybucca wetland restoration on-ground works, undertake necessary assessments in the Manning, Kinchella and Crookhaven wetlands and plan for future rehabilitation activities in Tomago, Tuckean, Everlasting and other locations, (sub-action 1.3.5 in Stage 1).	DPI-F	DPIE-EES UNI, LLS NPWS LGOV Private	<b>Northern and Southern regions</b>  Kempsey, Tweed (planning work in Shoalhaven, Clarence, Midcoast and Port Stephens)	
	<b>Improving roads and tracks</b>	Seal 15 gravel roads and other works in the North Coast, Hunter and South East LLS regions to reduce erosion entering waterways (sub-action 1.3.6 in Stage 1).	LLS	LGOV  DPIE-EES NPWS Private	North Coast, Hunter and South East LLS regions	

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021
<b>1.4</b>		Implement a targeted marine litter campaign and establish a Marine Litter Working Group.				<p>In 2020-2021 we will:</p> <ul style="list-style-type: none"> <li>• expand the roll out of the marine litter campaign and deliver campaign material statewide</li> <li>• continue to convene the Marine Debris Working Group</li> <li>• begin to address the key findings of the NSW Marine Debris TARA</li> <li>• monitor marine debris in coastal environments</li> <li>• evolve the integrated litter prevention program with a greater focus on marine based litter, including litter prevention grants funding for communities, councils and catchment management groups</li> <li>• develop a partnership strategy working with organisations and networks to support leadership and strategic planning of evidence-based solutions that integrate plastic litter prevention with current stormwater management regimes.</li> </ul>
	<p><b>Marine litter campaign</b></p> <p>Expand the marine component of the <a href="#">'Don't be a tosser' campaign</a> (sub-action 1.4.1 in Stage 1).</p>	EES	EPA	Statewide		
	<p><b>Marine Debris Working Group</b></p> <p>Convene the Marine Debris Working Group composed of agency representatives and academic experts to oversee a marine debris risk assessment and the research, monitoring, analysis and coordination of marine litter/ debris actions (sub-action 1.4.2 in Stage 1).</p>	DPIE-EES	EPA	Statewide		
	<p><b>NSW Litter Prevention Strategy</b></p> <p>The Litter Prevention Strategy is expanding towards a greater focus on reducing marine litter. This includes establishing new targets to reduce litter in the marine environment and incorporating additional stormwater and catchment management actions into the litter prevention program (new project).</p>	EPA	DPIE-EES	Statewide		

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021
1.5		Develop monitoring, reporting and performance indicators for water quality actions, and incorporate them and key knowledge gaps. This action is integrated into the Monitoring Program and key knowledge gaps.				<ul style="list-style-type: none"> <li>• data highlighting the condition of the NSW marine estate and its trend</li> <li>• standard monitoring guidelines to assess ecological condition of the NSW marine estate and relevant catchments</li> <li>• publicly accessible water quality database</li> <li>• report cards highlighting the ecological condition and the status of relevant community values of the NSW marine estate and relevant catchments</li> </ul>
	<p><b>Estuarine water quality monitoring</b></p> <p>Develop new indicators where relevant for integration into the Monitoring Program. Monitor and report on water quality and ecosystem health in estuaries and relevant catchments (sub-action 1.5.1 in Stage 1).</p>	DPIE-EES	DPI LGOV LLS	Statewide	<ul style="list-style-type: none"> <li>• provide data to measure the outcomes of other MEMS actions, including on-ground works</li> <li>• available data to inform CMP development and implementation, any update of the NSW Water Quality Objectives and updates of any coastal Water Sharing Plans</li> </ul>	
	<p><b>Mapping outflow events</b></p> <p>Mapping subtidal habitats and monitoring coastal outflow events to quantify impacts on coastal and marine waters (new project).</p>	DPIE-EES	DPIE-EES DPI LGOV	Statewide	<ul style="list-style-type: none"> <li>• establish water quality monitoring programs targeting diffuse source runoff from different high-pressure land use areas</li> </ul>	
	<p><b>Marina pollution monitoring</b></p> <p>A pilot program implementing and evaluating systems that trap runoff and pollution from slipways and marinas in NSW (project to commence in future years).</p>	DPIE-EES	DPIE-EES DPI LGOV Transport for NSW, Marina Industries Association of Australia	TBC		

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021
	<p><b>Land use pressures on the marine estate</b></p> <p>Monitoring the condition of gauged streams using water quality and biological indicators, stratified by different land use (sub-action 1.5.3 in Stage 1).</p>		DPIE-EES	DPI LGOV	Statewide	<ul style="list-style-type: none"> <li>• develop draft conceptual models of the role of outflows from major rivers to the coastal zone</li> <li>• data available for catchment and water quality model calibration and validation</li> <li>• prepare draft mapping layers characterising seabed geomorphology along the open coast of NSW</li> <li>• devise methodology for future in-situ outflow monitoring.</li> </ul>

## More information

More information on Initiative 1 projects are on the marine estate web site: [strategy-implementation/water-quality-and-litter](https://www.marineestate.nsw.gov.au/strategy-implementation/water-quality-and-litter).

## Case study

### TILBA TILBA LAKE AND ESTUARIES JOINT EES/COMMUNITY ACTION: BENEFITS OF PARTNERSHIPS

#### THE SITE

Tilba Tilba Lake is situated in the Southern Rivers region of NSW within Eurobodalla Shire Council local government area. This saline coastal lagoon has an intermittently closed entrance.

#### THE PROJECT

Historic assessments of water quality in Tilba Tilba Lake highlighted the condition of the system was deteriorating. The main issues contributing to the degradation of water quality in the lake include:

- unrestricted access of livestock and other animals to the waterways causing bank erosion
- loss of riparian vegetation to reduce the flow of nutrient rich water into the lake
- siltation due to the loss of riparian vegetation preventing soil being deposited into the lake.

DPIE-EES, Local Land Services (LLS), DPI-Fisheries, the local community and local landowners have collaborated on a large-scale project with the primary objective of improving water quality in Tilba Tilba Lake and its tributaries through better land management practices and rehabilitation of the natural environment. Actions taken to address the issues include:

- engaging local landholders and farmers as partners – 95% of the farmers supported the project
- identifying practical actions which are repeatable and sustainable
- installing fences to prevent livestock access to the waterways to minimise bank erosion and physical disturbance
- planting of native indigenous species
- ongoing education and engagement of all stakeholders to strengthen partnerships
- monitoring of water quality, aquatic ecological health, and riparian vegetation condition
- sharing monitoring results with the community to show how their actions have resulted in a changed natural environment.

Funding for materials needed for on-ground works and planting of native vegetation was provided by Local Land Services through DPI-Fisheries. Monitoring of the benefits of the improved land management practices was funded by DPIE-EES.

#### THE OUTCOMES

The key outcome is increased awareness of how poor land management practices are a threat to water quality, aquatic ecosystem health and riparian vegetation. Prior to this project, there was very limited data on how improvements to land management practices affect water quality and influence positive environmental benefits.

The local community now understands the importance of looking after their land and share the vision of improving the overall condition of the lake environment, its water and landscape. They are committed to work together to protect and nurture the area demonstrating pride in the outcomes. Maintenance of fences and riverbanks, water quality monitoring, evaluation and reporting need to continue into the future and will require continued funding to fully realise the benefits from Stage 1.

#### DELIVERED BY

DPIE-EES, LLS, DPI-F and local landholders

#### RELATED ACTIONS

Relates to management actions 1.3 and 1.5.



Photo: 4. Tilba lake – regeneration tree planting – photo Local Land Services.



Photo: 5. Tilba lake – new fencing to prevent livestock from grazing, prevent bank damage and soil erosion – photo Local Land Services.

## Initiative 2

# Delivering healthy coastal habitats with sustainable use and development

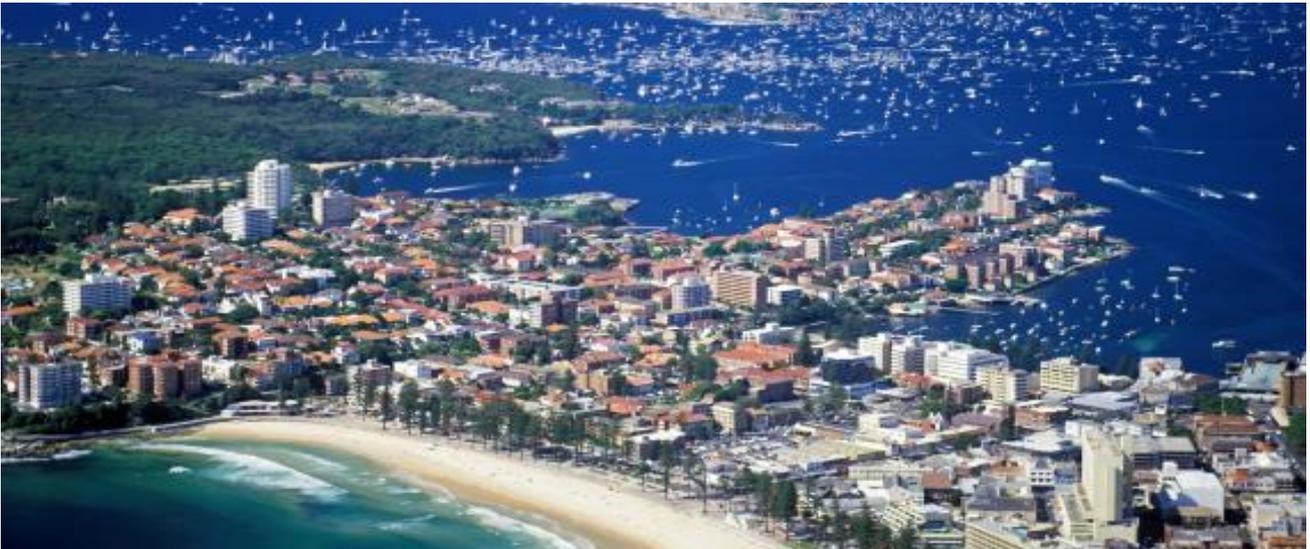


Photo: 6. Sydney aerial, coastal development. Photo: iStock.com/JohnCarnemolla ©

## The problem/opportunity

Foreshore development, land use and waterway infrastructure provide important social and economic benefits for NSW. If they are not managed and planned for appropriately, they can detract from these benefits and impact on marine estate habitats and species.

## Steps to achieving our long-term outcomes

Initiative 2 coordinates the management of coastal habitats. To achieve this, we will:

- coordinate investment in established and innovative on-ground environmental activities and infrastructure management
- improve coordination across agencies to effectively manage coastal habitats
- increase stakeholder capacity and knowledge
- increase the uptake of best practice.

In the short term, we will work with agencies, management authorities and the community to improve their understanding of the threats and risks to sustainable coastal management in estuaries. We will also aim for better coordinated management, policy and approval frameworks.

In the intermediate term, we aim to see an improved evidence base, consistency, coordination and integration among responsible agencies, so these factors are embedded in their routine policies and processes. The result should be faster assessment and processing times as well as more certainty for stakeholders seeking to undertake works in the coastal zone.

Ultimately, we are aiming for better coordination of management of coastal habitats and species in the marine estate, while incorporating community values. This includes better coordination of investment planning and infrastructure management.

## Initiative objective

To protect coastal and marine habitats and associated species, and enhance the health of the marine estate by improving the design, quality and ongoing management of foreshore development, use and waterway infrastructure.

## Initiative long-term outcomes

- Improved design and management of foreshore and coastal land use and development, balancing social and economic benefits of development with enhanced coastal and marine habitats.
- Maintained or improved biodiversity and marine habitats.

## Management actions and projects

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021
2.1	  	Assess and manage cumulative and legacy impacts for estuary entrance modification and dredging.				<ul style="list-style-type: none"> <li>• improved and consistent application of policy and approval conditions for commercial dredging in estuaries and open beaches, building on audit findings from Stage 1.</li> </ul>
	<b>Commercial dredging audit</b> Implement the outcomes of the audit commercial dredging in estuaries that identified and recommended actions to improve licencing conditions and related environmental outcomes (sub-action 2.1.3 in Stage 1).		DPIE-HP (CL)	DPI-F	Statewide	
	<b>ICOLL management</b> Develop a framework for consistent approvals and management of intermittently closed and open lakes and lagoons (ICOLLs) that can be included in CMPs (new project).		DPI-F	DPIE-EES DPIE-Crown Lands	Statewide	<ul style="list-style-type: none"> <li>• Progress an audit of ICOLL approvals/licences and management and summary of current research findings to inform the development of best</li> </ul>

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021
				DPIE- NPWS		practice guidance including principles to be considered in setting agency requirements for ICOLL entrance management. These will assist local government councils when updating local entrance management policies and CMPs.
<b>2.2</b>		Assess and manage cumulative and legacy impacts on foreshore development and land use change in the coastal zone.				<ul style="list-style-type: none"> <li>updated NSW Coastal Design Guidelines, robust local government and community consultation</li> <li>robust review of best planning mechanisms to inform a policy for the management of legacy infrastructure that is impacting water quality and habitat in coastal areas.</li> </ul>
	<b>Coastal design guidelines review</b> Implementation of the reviewed and updated <a href="#">coastal design guidelines</a> to promote best practice designs in coastal urban environments (sub-action 2.2.1 in Stage 1). The project includes reviewing policy settings to better assess and remediate ageing infrastructure that impacts freshwater flows or drains wetlands, with a view to upgrade when rezoning or land use change is considered (sub-action 2.2.2 in Stage 1)		DPIE-PA	DPIE- EES NRAR DPIE-W DPI-F	Statewide	<ul style="list-style-type: none"> <li>strategies developed that reduce red tape and inform the assessment of domestic waterfront structures for works spanning the intertidal foreshore (such as pontoons and boat ramps)</li> <li>marine vegetation management strategies that maximise resilience, accommodate sea level rise (see Initiative 3), address key threats (clearing</li> </ul>
<b>2.3</b>		Develop and implement a statewide policy for the management of coastal Crown lands (including submerged lands) in collaboration with local government Coastal Management Programs in priority areas.				<ul style="list-style-type: none"> <li>strategies developed that reduce red tape and inform the assessment of domestic waterfront structures for works spanning the intertidal foreshore (such as pontoons and boat ramps)</li> <li>marine vegetation management strategies that maximise resilience, accommodate sea level rise (see Initiative 3), address key threats (clearing</li> </ul>
	<b>Domestic waterfront structure strategies</b> Develop three estuary-wide strategies that reduce red tape and inform the assessment of domestic waterfront structures		DPI-F	DPIE-W DPIE-HP (CL) TfNSW LGOV	Statewide	<ul style="list-style-type: none"> <li>strategies developed that reduce red tape and inform the assessment of domestic waterfront structures for works spanning the intertidal foreshore (such as pontoons and boat ramps)</li> <li>marine vegetation management strategies that maximise resilience, accommodate sea level rise (see Initiative 3), address key threats (clearing</li> </ul>

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021
		spanning the intertidal foreshore (such as pontoons and boat ramps) (sub-action 2.3.1 in Stage 1).		DPIE-EES		and drainage, cattle grazing, four-wheel drives on saltmarsh), facilitate rehabilitation opportunities (see Initiative 1), and reduce red tape for low impact works
		<b>Marine vegetation strategies</b> Develop three marine vegetation management strategies that maximise resilience, accommodate sea level rise and address key threats such as clearing and drainage, cattle grazing and four-wheel drive access on saltmarsh). They also facilitate rehabilitation opportunities and reduce red tape for low impact works (e.g. mangrove trimming for safety traffic sight-lines) (sub-action 2.3.2 in Stage 1).	DPI-F	DPIE-EES DPIE-HP (CL)	Statewide	<ul style="list-style-type: none"> <li>estuary-wide bank protection options developed to inform the assessment of bank protection work proposals (including beach nourishment and grooming) and facilitate rehabilitation opportunities</li> </ul>
		<b>Estuary foreshore management strategies</b> Investigate estuary-wide bank protection options in three estuaries to inform the assessment of bank protection work proposals (including beach nourishment and grooming) and facilitate rehabilitation opportunities (sub-action 2.3.3 in Stage 1).	DPI-F	DPIE-W DPIE-HP (CL) DPIE-EES LLS LGOV	Statewide	<ul style="list-style-type: none"> <li>these strategies will be endorsed by partner agencies and provided to local government for their CMP process and to inform land use planning and development assessment processes in estuaries.</li> </ul>
<b>2.4</b>		Re-establish resilient coastal floodplains and connectivity within coastal catchments by: <ul style="list-style-type: none"> <li>better aligning existing government policy and resourcing of floodplain and drainage management</li> <li>providing fish passage at priority weir and road crossing barrier sites in coastal catchments.</li> </ul>				<ul style="list-style-type: none"> <li>improved coordination of agency approvals for coastal floodplain maintenance works and reduced costs to local government and stockholders delivering maintenance programs</li> </ul>
		<b>Coastal floodplain drainage management</b> Improve coastal floodplain infrastructure management by better aligning existing government policy and resourcing for improved water quality and drainage management outcomes	DPI-F DPIE-W	DPIE-PA DPIE-HP (CL) DPIE-EES	Statewide	<ul style="list-style-type: none"> <li>develop and implement regulatory mechanisms for coastal floodplain drainage management that deliver</li> </ul>

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021
		through regulatory mechanisms (sub-action 1.2.7 and 2.4.1 in Stage 1).		NRAR L GOV		improved water quality outcomes
	<b>Reconnecting fish habitats</b>	Provide fish passage at priority weir and road crossing barrier sites in coastal catchments. Works to be completed at Jerry's Plain Weir and commence Cooks weir removal in the Richmond River (sub-action 2.4.2 in Stage 1).	DPI-F	WNSW	Statewide	<ul style="list-style-type: none"> <li>deliver priority on-ground outcomes to improve floodplain infrastructure management</li> <li>delivery of fish passage outcomes at priority coastal barriers.</li> </ul>
2.5	  	Undertake research and monitoring to address key knowledge gaps and assess the effectiveness of the management actions within this initiative. This action will be integrated into the Monitoring Program.				<ul style="list-style-type: none"> <li>at least 30 estuaries re-mapped and areas of habitat loss / gain identified</li> <li>methods developed to remotely assess saltmarsh rehabilitation success</li> <li>methods developed to remotely assess recovery of mangroves from disturbance</li> <li>maps of disturbances to estuarine macrophytes, including artificial structures such as pontoons and jetties</li> <li>impacts of artificial structures on estuarine habitats better understood, which can inform policies to protect these habitats.</li> <li>baseline measurements obtained for distribution of key mangrove species in northern NSW against which future changes can be measured.</li> </ul>
	<b>Mapping seagrass, mangrove and saltmarsh</b>	Estuarine scale mapping of macrophytes and disturbances to update data sets and fill knowledge gaps. Data used by local government and informs climate change actions. Eight estuaries are proposed (sub-action 2.5.1 in Stage 1).	DPI-F		Statewide	
	<b>Innovative technology research</b>	Development of artificial intelligence methods for improving habitat mapping, assessing habitat condition and changes in species composition. Extension of work in 2.5.1. Includes monitoring of saltmarsh (sub-action 2.5.2 in Stage 1).	DPI-F		Statewide	
	<b>Threats to estuarine vegetation</b>	Research on anthropogenic impacts to seagrass, mangroves and saltmarsh to fill knowledge gaps. Data to be used in management and policy development, CMP planning and climate change work (sub-action 2.5.3 in Stage 1).	DPI-F		Statewide	

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021
	<b>Subtidal reef monitoring</b>	Research on the diversity, abundance and size of fishes and the distribution of kelp and sessile invertebrates across the Greater Sydney region's deep rocky reefs. Data to be used in the Marine Integrated Monitoring Program (new project).	DPI-F		<b>Central region</b> Newcastle to Wollongong	<ul style="list-style-type: none"> <li>develop species distribution models for fishes, kelp and sessile invertebrates across the region</li> <li>assess natural drivers and human pressures that influence size, abundance and diversity patterns for fish assemblages and habitat forming species</li> </ul>
	<b>Reviewing jetty designs</b>	Research on jetty design features that contribute to the loss of seagrasses and develop guidelines for estuaries in the Greater Sydney region to reduce seagrass loss (new project).	DPI-F		<b>Central region</b> Sydney - Port Hacking	<ul style="list-style-type: none"> <li>quantify the main design features of jetties that contribute to the loss of seagrasses</li> <li>provide guidelines for estuaries assessed and determine common factors across estuaries in the Greater Sydney region</li> <li>trial the effectiveness of this modelling approach in Port Hacking.</li> </ul>
	<b>Threats to estuarine fish assemblages</b>	Trial broad focused research (seascape approach) in the Greater Sydney region's estuaries to quantify the influence of boating infrastructure, stormwater drains and natural habitats on fish assemblages and better understand potential human impacts (new project).	DPI-F		<b>Central region</b> Sydney	<ul style="list-style-type: none"> <li>trial a seascape approach to assess a key knowledge gap about the influence of multiple and potentially cumulative human drivers and the condition of the natural habitats on fish assemblages within the Greater Sydney region's estuaries</li> <li>provide guidelines for estuaries and determine significant factors across estuaries in the Greater Sydney region</li> </ul>

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021
						<ul style="list-style-type: none"> <li>• trial the effectiveness of this modelling approach in Pittwater.</li> <li>• quantify the influence of boating infrastructure, stormwater drains and natural habitats on fish assemblages within the Greater Sydney region's estuaries.</li> </ul>

## More information

More information on Initiative 2 projects are on the marine estate web site: [strategy-implementation/delivering-healthy-coastal-habitats-with-sustainable-use-and-development](https://www.marineestate.nsw.gov.au/strategy-implementation/delivering-healthy-coastal-habitats-with-sustainable-use-and-development)

## Case study

### INTERTIDAL MARINE VEGETATION STRATEGIES

#### THE SITE

Intertidal marine vegetation systems (mangroves and saltmarshes) in the Tweed and Richmond estuaries.

#### THE PROJECT

Direct impacts on intertidal marine vegetation systems are generally managed via existing state regulations. However, intertidal vegetation systems continue to be at risk from:

- impacts that can take some time to become evident
- impacts from activities away from the affected area
- cumulative impacts generally.

DPI-Fisheries is developing intertidal marine vegetation strategies for estuaries that bring into perspective these threats and risks, while reducing red tape for low-risk works. The strategies foster agreed, ecologically significant, relevant and cost-effective rehabilitation works to improve system resilience.

Intertidal marine vegetation strategies will be developed for two estuaries: the Richmond River and the Tweed River. Site descriptors, values, threats and interests will be captured for marine vegetation units within each estuary. Multiple criteria will be used to categorise values for, and threats to, intertidal marine vegetation systems.

Some activities have impacts proportional to, or lower than, their benefits to the community. Examples include safety zones for existing airports and power lines, or minor works trimming mangroves adjacent to existing pathways.

Activities that threaten or diminish values, yet have few beneficiaries, will require appropriate evaluation. This is especially relevant when the impacts accrue to other stakeholders. To evaluate trade-offs, best available evidence will be used, and the collated information will support transparent decision making.

While the intertidal marine vegetation strategies can operate as stand-alone decision support tools, they will also contribute to council Coastal Management Programs and planning systems.

#### THE OUTCOMES

Intertidal marine vegetation strategies are a key step towards a more holistic management of our intertidal vegetation systems. They focus on increasing the resilience of these systems to maximise and maintain the values these systems provide to the community, regional economies and the health and wellbeing of the marine estate.

#### DELIVERED BY

DPI-Fisheries with support from relevant local councils.

#### RELATED ACTIONS

Relates to management actions 2.3 and 3.1.



Photo: 7. Multiple stresses to this intertidal system limit recruitment of juvenile mangroves while insect attack has resulted in dieback. This system is also vulnerable to 'coastal squeeze' with further sea level rise. Photo: Patrick Dwyer.



Photo: 8. Mosaic of healthy saltmarsh with mangroves and Casuarina in the distance. Some saltmarsh systems provide fisheries values up to \$25,000 / ha / year (Taylor et al. 2018<sup>1</sup>). Photo: Patrick Dwyer

<sup>1</sup> Taylor, M.D. Gaston, T.F., Raoult, V. 2018. The economic value of fisheries harvest supported by saltmarsh and mangrove productivity in two Australian estuaries. *Ecological Indicators* 84: 701–709

## Initiative 3

# Planning for climate change



Photo: 9. Coffs Harbour marina breakwall. Photo: iStock.com/Sunnypics-oz ©

## The problem/opportunity

The effects of climate change are expected to increase over time. What is not always known is the likelihood and consequence of these effects. As a result, the effects of climate change are often not well planned for.

## Steps to achieving our long-term outcomes

Initiative 3 aims to incorporate climate change impacts into adaptation planning, strategies and decision making.

In the short term, we will monitor and report on the ongoing and likely effects of climate change in the NSW marine estate. The aim is to fill knowledge gaps in climate change impacts.

In the intermediate term, we aim to improve our knowledge of climate change impacts as well as increase the capacity of coastal and marine managers and communities to anticipate climatic impacts and provide improved access to new knowledge.

In the long-term, our actions are designed to help us understand, adapt and increase resilience to help mitigate the impacts of climate change in the NSW marine estate.

## Initiative objective

Understand, adapt and increase resilience, to help mitigate the impacts of climate change on the NSW marine estate.

## Initiative long-term outcomes

Adaptation planning, strategies and decision making across the marine estate incorporates the likely future impacts of climate change.

## Management actions and projects

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver 2020-2021
3.1		Enhance mapping of estuarine communities (such as saltmarsh and mangroves) to identify those communities most at threat from sea level rise expected under climate change scenarios and use this information to model areas of land suitable for retreat and those that should be prioritised for protection. Apply this information in decision making.				<ul style="list-style-type: none"> <li>map the distribution of and structure of mangroves and saltmarsh and adjacent foreshores structures in areas vulnerable to sea level rise</li> </ul>
	<b>Climate change threats to seagrass, mangrove and saltmarsh</b> Develop a first-pass model of wetland distributions under future sea level rise scenarios to help identify those most at risk and to prioritise land suitable for wetland protection and retreat (see Action 2.3). Use models to identify where future macrophyte mapping is most needed (see Action 2.5) (sub-action 3.1.1 in Stage 1).		DPIE-EES	DPI	Statewide	<ul style="list-style-type: none"> <li>Statewide first-pass assessment of wetland vulnerability to sea level rise for estuaries with significant areas of mapped wetland.</li> </ul>
3.2		Provide support to coastal and marine managers to facilitate consistent application of the NSW and ACT Regional Climate Modelling (NARClIM) projections in marine management.				Project to commence in future years (pending funding).

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver 2020-2021
	<b>Consistent regional climate modelling</b> Provide support to coastal and marine managers to facilitate consistent application of the NSW and Australian Capital Territory (ACT) Regional Climate Modelling (NARClIM) projections in marine management (project to commence in future years).	DPI-F	DPIE-EES	Statewide		
3.3		Build the knowledge and capacity of coastal and marine managers and the communities to increase resilience to climate change in the marine estate by facilitating strategic adaptation planning and management.				Facilitate strategic climate change adaptation planning and management.
	<b>Climate change adaptation</b> This project is the key action for climate change adaptation. Using adaptation assessments, it would build the knowledge and capacity of coastal and marine managers and communities to increase resilience and identify adaptation solutions to climate change in the marine estate.	DPIE-EES	DPI	Statewide		
3.4		Investigate the impacts of climate change on Aboriginal cultural heritage values in the marine estate and implement strategies to reduce or adapt to this risk.				Project delivered in Initiative 4.
3.5		Research and monitor the effects of climate change on the marine estate to fill knowledge gaps and inform future management actions, focusing on marine biodiversity and coastal communities. This action will be integrated into the Marine Integrated Monitoring Program.				<ul style="list-style-type: none"> <li>enhanced ability to properly assess risk to key environmental assets from climate change</li> <li>enhanced capability to detect early warning signs of change and identify new opportunities to adapt to species redistributions</li> <li>data and report cards highlighting current conditions and trends for rocky reef</li> </ul>
	<b>Climate change research</b> Targeted experimental research to fill priority knowledge gaps about probable climate change impacts on environmental assets in the marine estate (sub-action 3.5.1 in Stage 1).	DPI-F	DPIE-EES	Statewide		

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver 2020-2021
		<b>Climate change monitoring</b> Monitoring the condition and resilience of priority environmental assets at most risk from climate change on offshore rocky reefs focussing primarily on canopy forming macroalgae (sub-action 3.5.2 in Stage 1).	DPI-F		Statewide	habitats in the NSW marine estate <ul style="list-style-type: none"> <li>conceptual models of future climate change impacts on key assets</li> </ul>
		<b>Climate change citizen science</b> Mapping marine species redistributions due to climate change using community data (sub-action 3.5.3 in Stage 1).	DPI-F	UTas	Statewide	<ul style="list-style-type: none"> <li>Use citizen science website REDMAP to identify climate-driven species redistributions in NSW.</li> </ul>

## More information

More information on Initiative 3 projects are on the marine estate web site: [strategy-implementation/planning-for-climate-change](https://www.marineestate.nsw.gov.au/strategy-implementation/planning-for-climate-change)

## Case study

### STATEWIDE MONITORING OF SUBTIDAL MARINE HABITATS IN THE NSW MARINE ESTATE

#### THE PROJECT

Climate change is a priority threat to many ecological, economic, social and cultural values of the NSW marine estate. Rocky reef habitats have already experienced climate-related declines in key habitats, and this is threatening biodiversity and other ecosystem goods and services. There is considerable uncertainty in the rate and scale of future impacts: this project aims to monitor the resilience and condition of rocky reefs in the NSW marine estate to better inform management and conservation strategies. Baseline data on rocky reef biota will be collected over 1000km of coastline annually to detect change.

#### THE OUTCOMES

In Stage 1 scientists collected baseline data on rocky reef biota over 1000km of coastline and over 2 years. Sensitive indicators of climate driven change were identified. Ongoing monitoring of the resilience and condition of rocky reefs in the NSW marine estate will continue in 2020-2021 and beyond. Monitoring and reporting in 2020-2021 will be used to detect, and document impacts of climate change and inform management and conservation strategies. Monitoring will be combined with experimentation to determine drivers of change and modelling to predict future change. The project allows marine estate management agencies to understand and predict climate mediated shifts in subtidal communities along the NSW coast and will fill knowledge gaps surrounding the risks to these habitats.

#### DELIVERED BY

DPI-Fisheries Research Branch

#### RELATED ACTIONS

Relates to management action 3.5.



Photo: 10. Biodiverse Rocky Reef. Photo: Andrew Green.

## Initiative 4

# Protecting the Aboriginal cultural values of the marine estate



Photo: 11. Five Islands. Photo: John Spencer, NSW Department of Planning, Industry & Environment – Environment, Energy & Science ©

## The problem/opportunity

There are high-risk threats that cumulatively affect Aboriginal cultural heritage associated with Sea Country. There are also significant knowledge gaps relating to cultural values. Aboriginal people and their cultural values are not yet appropriately represented or engaged in management of the marine estate.

## Steps to achieving our long-term outcomes

Initiative 4 aims to increase the broader community's understanding of Aboriginal Sea Country values. It also aims to increase the economic opportunities and employment for Aboriginal people, as well as increase their ownership and active involvement in managing the marine estate.

The Aboriginal community is becoming more involved in marine estate natural resource management, tourism and the aquaculture and fishing sectors. Eight Aboriginal staff are employed in DPI-Fisheries under the Strategy, which will expedite many of the actions in Initiative 4, particularly in relation to research and monitoring programs and documentation of cultural values.

Through this initiative, we will see increased opportunities for Local Aboriginal Land Councils and other Aboriginal organisations in securing contracts and employment in the marine sector.

## Initiative objective

Work with Aboriginal communities in the management of Sea Country to reduce threats and risks to Aboriginal cultural heritage.

## Initiative long-term outcomes

- Improved Aboriginal satisfaction with Sea Country management.
- Aboriginal people derive greater economic benefit from the marine estate.
- The broader NSW community has a greater appreciation of the significance of Sea Country for Aboriginal people.

## Management actions and projects

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021:
4.1		Work with Aboriginal communities to evaluate current arrangements for Aboriginal involvement in Sea Country management and decision making and establish and implement a framework to ensure the involvement of Aboriginal people is effective and appropriate.				<ul style="list-style-type: none"> <li>• retain Aboriginal roles and employment</li> <li>• an Aboriginal engagement framework developed with Aboriginal people.</li> </ul>
	<b>Sea Country management</b> Enhance opportunities for Aboriginal employment in NSW Government to manage Sea Country (sub-actions 4.1.1 and 4.1.3 in Stage 1).		DPI-F		<b>Southern region</b>	
	<b>Aboriginal engagement</b> Evaluate current arrangements of Aboriginal peoples' participation in Sea Country management and establish an effective Aboriginal engagement framework (sub-action 4.1.2 in Stage 1).		DPI-F	DPI-EES	Statewide	

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021:
4.2		Work with Aboriginal communities to identify the cultural values of Sea Country to improve the incorporation of values into decision making for the marine estate.				<ul style="list-style-type: none"> <li>• Sea Country Plans developed with Aboriginal nations (and or clan groups)</li> <li>• Cultural Resource Use Agreement developed between the Worimi People and Port Stephens-Great Lakes Marine Park</li> <li>• marine parks have elder mentors</li> <li>• increase in cultural interpretations in Byron, Clarence Valley and Port Stephens.</li> </ul>
	<p><b>Sea Country plans</b></p> <p>Develop Sea Country Plans with Aboriginal communities. Sea Country Plans are an important way for Aboriginal people to determine their custodian roles, responsibilities and priorities to care for Sea Country and protect their cultures. It also provides important cultural information such as cultural management practices, subsistence fishing and continuity of cultural traditions to be handed down for future generations (new project).</p>	DPI-F	DPIE-EES Local Aboriginal communities Local ALCs	Statewide		
	<p><b>Cultural Resource Use Agreements</b></p> <p>Develop Cultural Resource Use Agreements between Aboriginal communities and marine parks (new project).</p>	DPI-F	DPIE-EES Local Aboriginal communities Local ALCs	<b>Northern region</b> Port Stephens		
	<p><b>Elders as mentors</b></p> <p>Deliver 'Elders as Mentor' project in each marine park. Elders are important knowledge holders in Aboriginal communities. This new project provides a special opportunity to respect and honour Aboriginal Elders as experts to spend time alongside marine estate staff and impart knowledge so that a greater respect and appreciation of Sea Country and Aboriginal cultural values can be obtained (new project).</p>	DPI-F	DPIE-EES Local Aboriginal communities Local ALCs	Statewide		

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021:
	<b>Cultural interpretations</b>	Work with Aboriginal communities to increase cultural interpretation in marine parks. This will include signage and artwork depicting the stories and cultures of Aboriginal peoples' connections to Sea Country and will be developed with Aboriginal communities to increase public awareness of Aboriginal cultural values (new project).	DPI-F	DPIE-EES Local Aboriginal communities Local ALCs	<b>Northern region</b> Clarence Valley, Byron and Port Stephens	
<b>4.3</b>	  	Increase Aboriginal participation in marine estate management, planning and monitoring through employment and training of Aboriginal people at a regional and local level.				<ul style="list-style-type: none"> <li>development of a Sea Country ranger model</li> <li>increase the Sea Country ranger model across the marine estate.</li> </ul>
	<b>Sea Country rangers</b>	Work with Aboriginal communities to design and deliver a caring for Sea Country ranger model and activities across the marine estate (sub-action 4.3.1 and 4.3.2 in Stage 1).	DPI-F	DPIE-EES TfNSW Local Aboriginal communities Local ALCs	Statewide	
	<b>Reviving culture</b>	Work with Aboriginal communities to maintain or revive cultural knowledge's and practices of Sea Country (new project).	DPI-F	DPIE-EES TfNSW Local Aboriginal communities Local ALCs	<b>Northern and Southern regions</b> Clarence Valley, Nambucca, Shoalhaven and Eurobodalla	

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021:
<b>4.4</b>		Explore and assist Aboriginal people implement opportunities for economic development in the NSW marine estate and improved representation of Aboriginal cultural values in NSW marine parks.				<ul style="list-style-type: none"> <li>consolidate and finalise cultural tourism pilot at Narooma</li> <li>increase the number of people engaged in central and northern regions to establish, retain or grow Aboriginal businesses in the marine estate</li> <li>Aboriginal people receive targeted grants to undertake activities in the seafood industry.</li> </ul>
	<b>Cultural tourism</b> Consolidate the southern region Aboriginal cultural tourism business pilot to support its viability (sub-action 4.4.1 in Stage 1).	DPI-F	DPIE-EES	<b>Southern region</b> Eurobodalla Shire		
	<b>Cultural economic development</b> Identify and expand opportunities for economic development across the marine estate (new project).	DPI-F	DPIE-EES	<b>Northern region</b> Central and North Coast		
	<b>Cultural fishing funds</b> Delivering targeted funds to increase economic opportunities for Aboriginal people in the fishing and seafood industry (new project).	DPI-F		Statewide		
<b>4.5</b>		Integrate research and monitoring into the Monitoring Program to address key knowledge gaps and assess management effectiveness in reducing threats and risks to Aboriginal cultural heritage.				<ul style="list-style-type: none"> <li>development of an Aboriginal monitoring and evaluation framework</li> <li>increase in recorded history and significance of fish traps and management plans as relevant to each location</li> <li>implementation of option/s to enable Aboriginal people to</li> </ul>
	<b>Cultural research and monitoring</b> Develop a research, monitoring and evaluation approach that is integrated with the Aboriginal engagement framework (Aboriginal engagement project) and aligns with overall Monitoring Program (sub-action 4.5.1 in Stage 1).	DPI-F	DPIE-EES	Statewide		

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021:
	<b>Cultural fish traps</b>	Undertake local cultural research activities with local Elders and communities, starting with Buckenbowra fish trap (sub-action 4.5.2 in Stage 1).	DPI-F	DPIE-EES	<b>Southern region</b> Eurobodalla and Bega Valley	<p>commence and continue to harvest and consume shellfish</p> <ul style="list-style-type: none"> <li>establish a report on the effects and impacts of climate change on Aboriginal communities.</li> </ul>
	<b>Pipi harvest</b>	Implement Stage 2 of Safe and Sustainable Sea Country Harvest of Shellfish project enabling Aboriginal people to harvest pipis and consume them safely for cultural purposes (new project).	DPI-F		Statewide Tweed Heads, Byron Bay, Ballina, Clarence Valley, Port Macquarie, Port Stephens and Jervis Bay	
	<b>Climate change on culture</b>	Investigate the impacts of climate change on Aboriginal communities and culture in the marine estate and develop strategies to reduce or adapt to this risk (new project).	DPI-F	DPIE-EES	<b>Southern region</b>	

## More information

More information on Initiative 4 projects are on the marine estate web site: [strategy-implementation/protecting-the-aboriginal-cultural-values-of-the-marine-estate](https://www.marineestate.nsw.gov.au/strategy-implementation/protecting-the-aboriginal-cultural-values-of-the-marine-estate)

## Case study

### SEA COUNTRY RANGER ACTIVITIES

#### THE SITE

Sea Country Ranger activities have been delivered across the Bega, Eurobodalla, Shoalhaven, Port Stephens, Coffs Harbour and Ballina areas.

#### THE PROJECT

This project incorporates environmental, cultural and economic values.

Aboriginal people hold a custodianship relationship with Sea Country and have cared for it for thousands of years. This project has provided the opportunity for Aboriginal people to continue or reconnect to care for Sea Country through undertaking weed and pest management, regeneration of native plants and removal of marine debris.

The project provides Aboriginal people and communities with local training, employment and partnerships to undertake management activities at marine parks and Sea Country locations of cultural significance.

The project focus on a clean and healthy Sea Country has also factored in engagement with other parties, such as wildlife organisations, to ensure activities are carried out to ensure marine wildlife and their habitats are protected.

#### THE OUTCOMES

Ten Aboriginal organisations have led the project with local partnerships to deliver the training and project activities. This has created local employment opportunities for 20 Aboriginal people.

Aboriginal people locally employed have reported satisfaction with their contribution to care for Sea Country and to maintain their cultures and custodianship obligation.

Dowadee Island at Port Stephens resulted in the clean-up of plastic, wood, general waste and almost 8,000kgs of metal including a rusted-out truck. It helped restore the island's environmental beauty, improve its commercial value to the oyster industry and protect its cultural significance to the local Worimi Aboriginal people. The effort of this project provides one of the best examples of the Marine Estate Management Strategy's triple bottom line philosophy in action.

#### DELIVERED BY

Local Aboriginal Land Councils, local environmental groups and DPI.

#### RELATED ACTIONS

Relates to management actions 4.1 and 4.3.



Photo: 12. Sea Ranger of Wagonga Local Aboriginal Land Council.



Photo: 13. Worimi Elders coming ashore at Dowadee Island, Port Stephens to provide a Welcome to Country for partners to undertake the clean-up of the island.

## Initiative 5

# Reducing impacts on threatened and protected species



Photo: 14. Green turtle. Photo: David Harasti, Department of Primary Industries ©

## The problem/opportunity

Climate change and human activities on land and water are a cumulative threat to threatened and protected species of the marine estate.

## Steps to achieving our long-term outcomes

In Initiative 5, we will reduce the cumulative threats to threatened and protected species. This will allow the continued social, cultural and economic benefits the community derives from the biodiversity of the marine estate.

This is a complex issue that will take time to understand. In 2020-2021, we will work with our staff and other stakeholders to better organise our responses to marine wildlife incidents. This includes expanding the NPWS *Elements* database so it can capture information about marine wildlife incidents from outside NPWS in real time.

We will also develop targeted education and compliance campaigns. The aim is to improve awareness of threatened and protected species and compliance with regulations.

Finally, this initiative will explore new and emerging technologies to better understand threats from bycatch and interactions with threatened and protected species. It also seeks to modify gear use to ameliorate those threats.

## Initiative objective

To understand and mitigate threats to threatened and protected species in NSW.

## Initiative long-term outcomes

Improved or maintained conservation status and health of targeted threatened and protected species in the wild.

## Management actions and projects

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021
5.1		Improve strategic planning and coordination for threatened and protected species programs across NSW to address priority threats.				<ul style="list-style-type: none"> <li>activation of the revised Marine Wildlife Management Manual which will operationalise coordinated responses to wildlife emergencies and events (strandings, entanglements, haul outs and turtle nesting)</li> </ul>
	<p><b>Planning to protect marine wildlife</b></p> <p>Improve strategic planning and coordination for threatened and protected species programs across NSW, including implementation of the Marine Wildlife manual, to address priority threats (sub-action 5.1.1 in Stage 1).</p>		DPIE-EES NPWS	DPI-F TfNSW Rescue and rehabilitation organisations Specialist veterinarians EPA LGOV	Statewide	<ul style="list-style-type: none"> <li>administration and engagement of the Marine Wildlife Working Group will provide strong governance and strategic input to coordinate operational aspects of marine wildlife management with stakeholders.</li> <li>consolidation of data for the Monitoring Program and coordination of data and input for five-year TARA and Strategy health checks will be a valuable result of Stage 2 which will</li> </ul>

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021
						support evidence-based decision-making.
5.2		Strengthen partnerships for marine threatened and protected species conservation response to ensure effective wildlife management.				<ul style="list-style-type: none"> <li>implementation of procedural documents, tools and training among government and stakeholders such as local councils, wildlife rehabilitation sector, marine rescue, Water Police and DPI-Fisheries staff</li> </ul>
	<b>Partnerships to protect marine wildlife</b> Strengthen partnerships for marine threatened and protected species conservation response, to ensure effective wildlife management, incident response and rehabilitation (sub-actions 5.2.1 – 5.2.6 in Stage 1).		DPIE-EES NPWS	DPI-F TfNSW	Statewide	<ul style="list-style-type: none"> <li>development of interagency capability and partnerships for whale disentanglement including strategic rescue and tracking gear</li> <li>delivery of an expanded necropsy program to assess and understand trends in threats to marine wildlife in NSW</li> <li>formalised cultural protocols for management of whale carcasses</li> <li>integrated outcomes from Sea Country Plans developed under Initiative 4 into NPWS Operational Response Plans.</li> </ul>

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021
5.3	  	<p>Improve awareness of threats to threatened and protected species and compliance with regulations to reduce impacts through education campaigns, social research (see Initiative 8) and increased compliance.</p>				<ul style="list-style-type: none"> <li>education campaign focused on seals and shorebirds including standard signage</li> <li>tool kits for land managers for managing marine wildlife</li> <li>printing of educational resources for marine mammals</li> </ul>
	<p><b>Education to protect and conserve marine wildlife</b></p> <p>Improve awareness of threats to threatened and protected species and community compliance with regulations, to reduce impacts through education campaigns, social research and effective compliance (sub-action 5.3.1 and 5.3.2, action 7.5 in Stage 1).</p>	DPIE-EES NPWS	DPI-F	Statewide	<ul style="list-style-type: none"> <li>improved practices within the whale and dolphin watching industry</li> <li>covert compliance activities and associated education opportunities</li> <li>compliance training with strategic partners</li> <li>community engagement materials for both <i>Biodiversity Conservation Act</i> and <i>Fisheries Management Act</i> threatened and protected species, including the expansion of activities at relevant symposiums, boat shows, field days and training.</li> </ul>	
5.4	  	<p>Improve reporting and data sharing on marine threatened and protected species to support evidence-based decision making, including linking and enhancing existing databases, raising awareness of reporting pathways, actively analysing and communicating data more regularly, and integrating research and data into the Monitoring Program.</p>				<ul style="list-style-type: none"> <li>commenced new cooperative arrangements with key external users in the Elements database to allow for real time intelligence and share operational responses to</li> </ul>

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021
		<p><b>Improve reporting of interactions with marine wildlife</b></p> <p>Improve reporting and data sharing on marine threatened and protected species to support evidence-based decision making, including linking and enhancing existing databases, raising awareness of reporting pathways, actively analysing and communicating data more regularly, and integrating research and data into the Monitoring Program (sub-action 5.4.1 and 5.4.2 in Stage 1).</p>	DPIE-EES-NPWS	DPI-F veterinarians Rescue and rehabilitation organisations	Statewide	<p>improve outcomes for marine wildlife</p> <ul style="list-style-type: none"> <li>continued support for the onboarding and training of all external partners as they develop skills and experience in Elements. We expect to have further historical marine wildlife emergency data included to support trend analysis and the Monitoring Program and continue to have consistent and open reporting on marine wildlife in NSW to the community and stakeholders.</li> </ul>
5.5	  	Expand existing observer programs, including the use of new technologies, into the commercial fishing moderate and high-risk fisheries to better understand the threats associated with bycatch and interactions with threatened and protected species.				<ul style="list-style-type: none"> <li>updated Multi-Criteria Decision Analysis to inform future fisheries selected for observer monitoring</li> <li>observer-based survey of Ocean Trap and Line (line fishing) in the northern and central bioregions implemented to: describe bycatch, interactions with threatened and protected species, collect biological samples, describe gear used, validate logbook entries and assess the magnitude of lost fishing gear</li> <li>detailed analyses of levels of bycatch to assess the likely</li> </ul>
		<p><b>Observer survey prioritisation</b></p> <p>Review observer results from Stage 1 and update observer prioritisation schedule to address threats identified (sub-action 5.5.1 in Stage 1).</p>	DPI-F	Industry DPIE-EES	Statewide	
		<p><b>Ocean Trap and Line Fishery observer survey</b></p> <p>Extend observer-based survey of the Ocean Trap and Line Fishery from Stage 1, to include a second year of intensive sampling (sub-action 5.5.2 in Stage 1).</p>	DPI-F	Industry DPIE-EES	Statewide	

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021
		<b>Estuary General Fishery observer survey</b> Analyses of bycatch data collected from the observer-based survey of the Estuary General trap fisheries in Stage 1 will be completed to address threats to fish assemblages (harvest and bycatch) in the Central and Northern Bioregions (sub-action 5.5.3 in stage 1).	DPI-F	Industry DPIE-EES	Statewide	<ul style="list-style-type: none"> <li>impacts of the Estuary General trap fishery on non-target (i.e. bycatch) species</li> <li>data collected during observer-based survey of the NSW Ocean Trawl Fishery will be analysed to characterise drivers, species richness and diversity by strata (zone and categorical depth)</li> </ul>
		<b>Ocean Trawl Fishery observer survey</b> Analyses of bycatch data collected from the NSW Ocean Trawl Fishery observer program to address threats to fish assemblages (harvest and bycatch stressors) in the Central and Northern Bioregions (new project).	DPI-F	Industry DPIE-EES	Statewide	<ul style="list-style-type: none"> <li>trials held and assessed of techniques/gear designed to reduce risk of whale entanglements in set fishing gear</li> </ul>
		<b>Strategies for mitigating species interactions</b> Develop and implement management responses, including fishing gear modifications or other technologies to reduce interactions between commercial fishing gear and whales and seabirds (links with 6.2; sub-action 5.5.4 in Stage 1).	DPI-F	Industry DPIE-EES UNSW	Statewide	<ul style="list-style-type: none"> <li>train industry and implement new measures to reduce risk of seabird interactions with fishing vessels and fishing gear</li> <li>trials held to assess the effectiveness of electronic monitoring in lieu of observer presence on fishing vessels, including small-scale trial of electronic monitoring onboard commercial Ocean Trap and Line vessels</li> </ul>
		<b>Fishing industry sustainability</b> Work with industry to develop measures to reduce interactions with threatened and protected species, online reporting of interactions (linking with Initiatives 5 and 8).	DPI-F	Industry DPIE-EES	Statewide	<ul style="list-style-type: none"> <li>communicate the importance and implement new and novel recreational and commercial fishing methods that will reduce interactions with threatened and protected species</li> </ul>

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021
						<ul style="list-style-type: none"> <li>Collaborative research study to understand the probability of whale entanglement in NSW set-fishing gear relative to the position and characteristics of the Eastern Australian Current.</li> </ul>
5.6		Understand and reduce impacts of threatened and protected species habitat modification through mapping of key habitat areas, embedding rehabilitation and conservation actions in planning processes, and collaborating with land owners and the community to protect species and habitats.				Postponed to future years (pending funding).
	<b>Species habitat research</b> Understand and reduce impacts of habitat modification on threatened and protected species (project to commence in future years).		DPIE-EES	DPI-F	Statewide	
5.7		Undertake a research program to address key knowledge gaps associated with cumulative threats to threatened and protected species and the effectiveness of management interventions. This action is integrated into the Monitoring Program.				Postponed to future years (pending funding).
	<b>Species monitoring</b> Through the Monitoring Program we will undertake a research program to help fill key knowledge gaps identified in the statewide TARA. This includes cumulative threats to marine wildlife, trends in threats and the health and condition of their habitats (project to commence in future years).		DPIE-EES	DPI-F	Statewide	

## More information

More information on Initiative 5 projects are on the marine estate web site: [strategy-implementation/reducing-impacts-on-threatened-and-protected-species](https://www.marineestate.nsw.gov.au/strategy-implementation/reducing-impacts-on-threatened-and-protected-species)

## Case study

### INCREASING THE SKILLS OF LOCAL VETS TO RESPOND TO STRANDED MARINE LIFE

#### THE SITE

Specialist training was developed and delivered along the NSW coast to local veterinarians including in; Ballina, Coffs Harbour, Port Macquarie, Newcastle, Illawarra, Shoalhaven and Moruya.

#### THE PROJECT

To improve responses to stranded marine wildlife including whales, dolphins, seals, turtles and sea snakes along the NSW coast, local veterinarians received training to assess and provide appropriate care to marine wildlife. This training was delivered through workshops, presented by expert marine veterinarians from Sea World on the Gold Coast and Coffs Harbour's Dolphin Marine Conservation Park with support from the Australian Veterinarian Association.

The training provided vets with cotemporary skills and knowledge to assess and deliver appropriate care to marine wildlife that are injured, stranded and hauled out. It outlined the importance of collecting information to better understand the threats faced by these species in the water off NSW.

The training covered:

- why marine animals strand
- assessment of a standard marine animal
- what can be done when animals strand
- common presentations and diagnoses of stranded marine animals
- options and procedures for treatment
- techniques for humanely euthanising marine animals
- necropsy techniques
- how to maximise the knowledge gained from both live and dead strandings.

#### THE OUTCOMES

Seven wildlife training workshops were conducted for 80 interested veterinarians along the NSW coast. Local veterinarians are now better placed to help stranded or injured marine mammals found along the NSW coast that are needing help. Their contact details have been integrated into emergency response procedures to facilitate rapid response.

The workshops have:

- developed networks to improve response capability for stranded and hauled out marine animals
- provided contemporary specialised training on veterinary science of marine wildlife to local veterinarians
- demonstrated how to undertake best practice veterinary procedures on marine wildlife
- provided a framework to maximise the collection of information to improve our understanding of the health and impacts to species in NSW.

Improved data collection on strandings will ultimately help the NSW Government to better understand and mitigate threats to marine animals.

#### DELIVERED BY

NPWS with support from the Australian Veterinary Association, Sea World, Dolphin Marine Conservation Park.

**RELATED ACTIONS** Relates to management actions 5.1, 5.2 and 5.4.



Photo: 15. Dr Duan March talking to vets from the Coffs Harbour and Grafton region about how to handle small cetaceans on the beach. Photo Susan Crocetti DPIE.



Photo: 16. An unwell turtle being assessed by experts at Dolphin Marine Conservation Park as part of its rehabilitation. Photo: Shona Lorigan

## Initiative 6

# Ensuring sustainable fishing and aquaculture



Photo: 17. Coffs Harbour commercial fishing fleet. Photo: Nicola Johnstone, Department of Primary Industries.

## The problem/opportunity

Sustainable fishing and aquaculture need to be provided for, but they also need to be managed to reduce priority threats to the environmental assets of the marine estate. This initiative will support significant social and economic benefits for the people of NSW, as well as cultural benefits to Aboriginal people.

## Steps to achieving our long-term outcomes

Initiative 6 aims to improve the ecological sustainability and economic viability of all types of fishing and seafood harvesting activities in the marine estate. By the end of the 10-year Strategy, we will have developed harvest strategies, undertaken an environmental assessment of recreational fishing, revised recreational fishing rules, supported new marine aquaculture ventures, and worked with industry on fishing and seafood related education and marketing campaigns.

In the short term we will:

- improve understanding among agencies and commercial and recreational fishers of the impacts of fishing and aquaculture on the marine estate
- develop best practice guidelines and rules to ensure ecologically sustainable practices
- enhance opportunities for sustainable commercial and recreational fishing, aquaculture and the values they provide to the community.

An intermediate term aim is for fishers to improve their self-compliance with rules and regulations and for an improved understanding by the community of the risk posed by marine pest and disease to the marine estate and ways they can minimise these risks.

## Initiative objective

To ensure fishing and aquaculture is managed in a way that is consistent with ecologically sustainable use while providing for the health, heritage and social benefits of fishing and seafood consumption.

## Initiative long-term outcomes

- Improved ecological sustainability, economic viability and community wellbeing of fishing and aquaculture in the marine estate

## Management actions and projects

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021
6.1		Introduce harvest strategies and evaluate ecological risk in partnership with stakeholders and shareholders to address threats to fish assemblages from harvest and bycatch that result in reductions in abundance of species and trophic levels.				<ul style="list-style-type: none"> <li>a harvest strategy policy and guidelines</li> <li>progress harvest strategies for case study fisheries</li> <li>broad stakeholder engagement in the development of harvest strategies</li> <li>improved understanding of the management of living marine resources across stakeholder groups</li> <li>improved participation in the development and ownership of the management arrangements impacting on living marine resources</li> <li>indicators for tracking the health and performance of</li> </ul>
	<b>Harvest strategy development</b> Develop and operationalise NSW Government policy and guidelines on fisheries harvest strategies, and progress assessment and management of ecological risk posed by NSW fisheries, prioritising potential management responses. (sub-action 6.1.1 in Stage 1).		DPI-F	Industry, commercial, recreational and Aboriginal fishers, Advisory Councils (AFAC, CommFish, RFNSW, MFAC), Community	Statewide	
	<b>Harvest strategy research</b> Review, develop, evaluate and implement analytical components of harvest strategies and ecological risk assessment, including the use of decision-making tools for NSW fisheries, linking commercial, recreational and Aboriginal cultural fisheries information (links with		DPI-F	Industry Commercial, recreational and Aboriginal fishers Advisory Councils (AFAC,	Statewide	

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021
	management action 6.5; sub-action 6.1.2 – 6.1.4 in Stage 1).			CommFish, RFNSW, MFAC), Community		fisheries within NSW harvest strategies <ul style="list-style-type: none"> <li>• monitoring and decision rules for maintaining NSW fish stocks above sustainable limits within harvest strategies</li> <li>• improved knowledge of the goals of NSW recreational fishers</li> <li>• progress the development of a framework for assessing and managing ecological risk.</li> </ul>
<b>6.2</b>		Conduct an environmental assessment of recreational fishing, periodically review current rules and implement management actions to improve fish stocks and to address threats associated with harvest, bycatch and illegal sale of fish.				<ul style="list-style-type: none"> <li>• develop an environmental assessment for recreational fishing (saltwater)</li> <li>• develop an associated Recreational Fishing Management Strategy (RFMS) for saltwater recreational fishing which will involve development of a suite of measures to control and limit environmental impacts</li> <li>• assess the social, cultural and economic impacts of recreational fishing for integration into the EA</li> <li>• develop a responsible fishing gear replacement scheme to reduce the impacts on bycatch and threatened and protected species – a key component of the RFMS.</li> </ul>
	<b>Recreational fishing environment assessment</b> Develop an environmental assessment of recreational fishing (saltwater), prepare a Recreational Fishing Management Strategy (RFMS) and commence implementation of key recommendations (sub-action 6.2.1 - 6.2.3 in Stage 1).		DPI-F	Industry	Statewide	<ul style="list-style-type: none"> <li>• develop an environmental assessment for recreational fishing (saltwater)</li> <li>• develop an associated Recreational Fishing Management Strategy (RFMS) for saltwater recreational fishing which will involve development of a suite of measures to control and limit environmental impacts</li> <li>• assess the social, cultural and economic impacts of recreational fishing for integration into the EA</li> <li>• develop a responsible fishing gear replacement scheme to reduce the impacts on bycatch and threatened and protected species – a key component of the RFMS.</li> </ul>

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021
6.3		Explore opportunities for new marine aquaculture ventures.				<ul style="list-style-type: none"> <li>ongoing processing of new applications for marine aquaculture ventures as they arise</li> <li>ongoing investigations into marine aquaculture best practices.</li> </ul>
	<b>Marine aquaculture</b> Utilise the Marine Waters Aquaculture Strategy to identify and establish new marine aquaculture ventures in NSW (sub-action 6.3.1 in Stage 1).		DPI-F	DPI	Statewide	
6.4		Apply best practice guidelines for seagrass protection in the NSW Oyster Industry Sustainable Aquaculture Strategy.				<ul style="list-style-type: none"> <li>ongoing support for PhD research examining the impacts of oyster infrastructure on seagrass in NSW</li> <li>publish preliminary research results, including any recommendations for implementation in</li> <li>ongoing investigations into oyster aquaculture best practices to update the Oyster Industry Sustainable Aquaculture Strategy</li> <li>promote current natural disaster relief assistance and provide assistance to aquaculture businesses to ensure they utilise govt assistance programs to continue business through current and future natural disaster events.</li> </ul>
	<b>Best practices in oyster aquaculture</b> Utilise the Oyster Industry Sustainable Aquaculture Strategy to support industry best practice including reducing threats to important seagrass habitat (sub-actions 6.4.1 – 6.4.3 in Stage 1).		DPI-F	DPI UNSW	Statewide	
	<b>Oyster aquaculture business and environment</b> Assist the recovery of oyster aquaculture farms affected by natural disaster events and incentivise innovative solutions that mitigate future impacts and ensure resilient businesses and sustained healthy estuaries (new project).		DPI-F	DPI	Statewide	

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021
<b>6.5</b>		Integrate various commercial, recreational and cultural fishing data and new research into the Marine Integrated Monitoring Program to address key knowledge gaps associated with harvest and bycatch.				
	<b>Socio-ecological research</b> Review socio-ecological research needs to support MEMS actions and inform research priorities (sub-action 6.5.1 in Stage 1).	DPI-F	DPI	Statewide	<ul style="list-style-type: none"> <li>• a report outlining directions for implementing integrated socio-ecological research and management</li> <li>• improved understanding of recreational fisher motivations and ways to increase fisher satisfaction</li> <li>• improved understanding of the non-economic benefits provided by fishing that enhance community wellbeing</li> <li>• provide new data and research to Strategy monitoring programs</li> <li>• review data across fishing sectors and report to NSW and Commonwealth fisheries managers the status of NSW targeted and incidentally caught fish species to integrate into management decisions including NSW harvest strategies</li> <li>• improved understanding of the effectiveness of current cultural fishing management processes.</li> </ul>	
	<b>Recreational fishing values</b> Examine historical NSW recreational fishing surveys to examine what motivate fishers and what factors relate to a greater sense of satisfaction. This research will inform Strategy monitoring programs (new project).	DPI-F	DPI	Statewide		
	<b>Marine estate benefits</b> Investigate the non-economic benefits from a healthy NSW marine estate gained by stakeholders undertaking fishing activity and examine variables that maximise those returns to benefit management decisions (new project).	DPI-F	DPI	Statewide		
	<b>Cultural fishing monitoring</b> Explore potential pathways to enable assessment of cultural fishing in NSW in terms of participation, catch and effort and relate these aspects to access arrangements within current resource management decision making processes including harvest strategies (links with management action 4.5).	DPI-F	DPI	Statewide		
	<b>Wild catch fish stocks</b> Contribute NSW biological, catch and effort data and information to assist the development of the Status of Australian Fish Stocks Reports and facilitate integration of this data into Harvest Strategies (links with management action 6.1; sub-action 6.5.1 in Stage 1).	DPI-F	DPI	Statewide		

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021
6.6		Enhance fisheries with targeted fish stocking and other activities to improve fishing opportunities where appropriate.				<ul style="list-style-type: none"> <li>conduct supplementary marine fish stockings in line with the protocols developed in the existing <a href="#">Marine Fish Stocking Strategy</a></li> <li>planning for recreational fishing platform in the Batemans Bay region (election commitment) will progress</li> <li>progress recreational infrastructure planning and fishing enhancement opportunities throughout coastal NSW</li> <li>additional artificial reefs deployed including locations off Tweed Heads and Batemans Bay.</li> </ul>
	<b>Fisheries enhancements</b> Undertake marine fish stocking and artificial reef installation at key locations and commence planning for the construction of fishing platforms at Batemans Bay, to improve fishing access (sub-actions 6.6.1 and 6.6.2 in Stage 1).	DPI-F	DPI	Statewide Batemans Bay		
6.7		Partner with the fishing and aquaculture sectors to deliver information and training to fishers in NSW to improve self-compliance, sustainable fishing practices and, develop economic opportunities.				Training opportunities delivered for: <ul style="list-style-type: none"> <li>targeted commercial fishers</li> <li>recreational fishing sector</li> <li>cultural fishing sector.</li> </ul>
	<b>Fishing industry marine stewardship</b> Develop information and training package in partnership with key fishing sectors and assist in delivery (sub-actions 6.7.1 – 6.7.3 in Stage 1).	DPI-F	OW industry NGOs	Statewide		
6.8		Work with fishing sectors and tourism authorities to investigate and implement opportunities to promote fishing and NSW wild caught seafood and build social licence. Links with Initiative 8.				<ul style="list-style-type: none"> <li>delivery of a devolved grants program that aims to promote fishing benefits and build</li> </ul>

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021
	<b>Supporting seafood futures</b> Deliver round 3 of the supporting seafood futures program that seeks to build marketing and promotion capability within seafood businesses through small-scale and large-scale grants. The purpose of the campaign is to increase consumption of NSW seafood, drive the value of NSW seafood through increased awareness and consumption, and build industry capabilities and cohesiveness (sub-action 6.8.1 in Stage 1).		DPI-F	NSW SIA	Statewide	social licence for the commercial, aquaculture, recreational and Aboriginal fishing sectors <ul style="list-style-type: none"> <li>promotion of social licence and the benefits of fishing across the core stakeholder groups.</li> </ul>
6.9		Deliver advisory programs to the community to reduce the risk of spread of marine pest and diseases and enhance the understanding of everyone's general biosecurity duty so they act to minimise aquatic pest and disease risk.				<ul style="list-style-type: none"> <li>social research to determine social barriers and drivers for good marine biosecurity practice</li> </ul>
	<b>Marine biosecurity awareness</b> The spread of aquatic pests and diseases by fouling organisms on recreational vessels is a significant biosecurity threat to the NSW marine estate. This project aims to increase awareness of these threats as well as an understanding of the legislative obligations everyone has to reduce biosecurity risks. This project will involve social research to identify knowledge barriers, benefits and drivers, which will inform a communication package and behaviour change program (action 6.9 in Stage 1).		DPI-BFS	DPI-F TfNSW	Statewide	<ul style="list-style-type: none"> <li>a communication and behaviour change plan that identifies key messages, target audiences, communication methods, timeframes and responsibilities</li> <li>fit for purpose awareness raising advisory tools based on the outcomes of the behavioural and social research outcomes</li> <li>implement a targeted awareness and behaviour change program to reduce the risk of spread of aquatic pests and disease.</li> </ul>

## More information

More information on Initiative 6 projects are on the marine estate web site: [strategy-implementation/ensuring-sustainable-fishing-and-aquaculture](https://www.marineestate.nsw.gov.au/strategy-implementation/ensuring-sustainable-fishing-and-aquaculture)

## Case study

### DEVELOPING A COMMUNITY AWARENESS PROGRAM TO REDUCE MARINE BIOSECURITY RISK AND ENHANCE COMMUNITY UNDERSTANDING OF THEIR GENERAL BIOSECURITY DUTY

#### THE SITE

Statewide - key organisations or services relevant to recreational vessels that are moored or berthed in waters of the NSW marine estate will be targeted.

#### THE PROJECT

The initial focus of the project will be to survey organisations to identify the current level of understanding of the marine biosecurity risks that moored or berthed recreational vessels present to the marine estate, with a subsequent focus on implementation of awareness raising and behaviour change communication activities for key marine estate stakeholder groups.

Marine pests and diseases have been assessed in the statewide TARA as a priority threat to the viability of marine industries such as aquaculture and commercial fishing, as well as to the community's safety, health and wellbeing.

Vessel movement is recognised as the key vector for translocation of non-native marine invasive species throughout Australia and globally. Vessel hull fouling contributes significantly to this risk on a regional, domestic and national scale. However, there is currently no specific national or state legislation or regulation that addresses the transfer of marine pests and diseases through the movement of small or medium sized vessels.

In NSW the *Biosecurity Act 2015* indicates that all waterway users have a responsibility to minimise, prevent or eliminate biosecurity risks posed by their actions in order to meet their general biosecurity duty. But the reality is that many waterway users and relevant service providers may not be aware of their obligations or understand how to properly manage the biosecurity risks associated with their activities in the NSW marine estate.

This project will involve a behavioural research study to identify barriers and benefits to key marine estate users in adhering to their general biosecurity duty, such as ensuring vessel hull surfaces, equipment and infrastructure are clean before movement between waterways. A pilot survey will be undertaken on a smaller scale initially, informing the development of a statewide survey, targeting key stakeholders across the NSW marine estate. Using the outcomes of this study a targeted communication strategy addressing key drivers for positive change in behaviours of marine estate waterway users will be implemented. The project will deliver an advisory and educational program to the marine estate community aimed at increasing their understanding of general biosecurity duty and actions they can take to reduce the risk of spreading marine pests and diseases.

#### THE OUTCOMES

Key outcomes are:

- Increase protection for the marine environment from marine pests and diseases improving the ecological sustainability, economic viability and community wellbeing of fishing and aquaculture in the marine estate.
- Obtain a greater understanding of barriers to biosecurity management in key stakeholders and risk creators and potential drivers of behavioural change.
- Develop and deliver an advisory and educational program to the marine estate community on good biosecurity practices and actions they can take to meet their general biosecurity duty.
- Increase commitment to and uptake of good biosecurity practices, such as hull cleaning and reporting suspect fouling, from key risk creator groups in the NSW marine estate

**DELIVERED BY:** NSW DPI Biosecurity and Food Safety

**RELATED ACTIONS:** Relates to management actions 6.9, 7.3 and 7.5.



Photo: 18. Invasive Marine Alga Caulerpa on chain – photo Melissa Walker



Photo: 19. Boat hull fouling, Newcastle, Photo: Midcoast Boatyard and Marine

## Initiative 7

# Enabling safe and sustainable boating



Photo: 20. Coffs Harbour boat harbour. Photo: iStock.com/funky-data ©

## The problem/opportunity

Boating activity will increase in the future. We need to accommodate this increase while managing the social, economic and environmental benefits of the marine estate.

## Steps to achieving our long-term outcomes

This initiative aims to meet the demand for safe and sustainable boating access to our waterways. This will be achieved with a suite of discrete projects and ongoing business activities.

In the short term, the actions in this initiative will improve boating infrastructure. They will also increase community, government and industry awareness of the regulatory framework to support safe and sustainable boating.

In the intermediate term, we will build on these actions and refine them to continue education programs and achieve increased compliance with guidelines and regulations for safe and sustainable boating.

The aim is to improve opportunities and experiences for both recreational and commercial boating, while balancing social, economic, cultural and environmental values on NSW waterways.

## Initiative objective

To balance protection of coastal and marine habitat and species with ongoing access and safe and sustainable boating.

## Initiative long-term outcomes

Boating provides increased social and economic benefits for NSW communities while supporting sustainable social, economic, cultural and environmental benefits of the marine estate.

TfNSW will continue to fund its commitments in for Strategy implementation through the NSW Waterways Fund. This will include seeking opportunities to initiate additional activities that support the objective of safe and sustainable boating, and address the risks and threats identified in the statewide TARA.

## Management actions and projects

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021 [Note – some actions will be delivered over multiple years]
7.1		Reduce the threats to seagrass from vessels through improved regulation, administration, education, new mooring technologies and delivery mechanisms.				<ul style="list-style-type: none"> <li>standards to improve the safety and environmental outcomes from mooring apparatus. Accompanying the standards will be options for the adoption and enforcement of the standards, including options for increasing the use of EFMs</li> <li>a detailed review of opportunities to use novel mooring apparatus and novel mooring field design, including field trials</li> <li>targeted education programs to improve boaters</li> </ul>
	<b>Environmentally friendly moorings</b> Establish a performance-based standard for Environmentally Friendly Moorings (EFM) and review policy and regulatory options for improving adoption and maintenance of EFM (sub-action 7.1.1 in Stage 1).		TfNSW	DPI-F Industry	Statewide	

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021 [Note – some actions will be delivered over multiple years]
						understanding of how to protect seagrass. <ul style="list-style-type: none"> <li>noting some actions will be delivered over multiple years.</li> </ul>
<b>7.2</b>		Establish a framework to manage increased mooring demand through the Moorings Review project.				<ul style="list-style-type: none"> <li>improved customer access to moorings</li> <li>improved audit of moorings</li> <li>compliance programs focusing on ensuring mooring apparatus are kept in good condition, and the mooring licence conditions are met</li> <li>enhanced spatial performance of mooring fields</li> <li>develop policy options for the management of End-of-Life vessels.</li> <li>noting some actions will be delivered over multiple years.</li> </ul>
	<b>Mooring strategy</b> Review and modernise the strategy for mooring management and administration to improve access to moorings (sub-action 7.2.1 in Stage 1).		TfNSW	DPI-F	Statewide	
	<b>Mooring audits</b> Improve the strategy for audit of moorings and enforcement of mooring licence conditions (sub-action 7.2.2 in Stage 1).		TfNSW		Statewide	
	<b>Mooring access</b> Optimise mooring density in mooring fields to better meet demand (sub-action 7.2.3 in Stage 1).		TfNSW	DPI-F	Statewide	

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021 [Note – some actions will be delivered over multiple years]
		<b>End-of-Life vessel management</b> Develop options to manage vessels that are reaching or have reached the end of their useful life to mitigate potential environmental risks and enhance access to moorings (new project).	TfNSW		Statewide	
7.3		Manage boat-based contamination through the AMSA national framework and implement an education program in NSW to address the environmental impacts of water pollution from recreational vessel cleaning, antifouling and sewage pump out into waterways.				<ul style="list-style-type: none"> <li>• clarification of TfNSW's ARA status</li> <li>• up-to-date information on marine pollution and the national framework for domestic commercial vessels through the Maritime Access Line</li> <li>• undertaken the statutory review of the Marine Pollution Act 2012</li> <li>• improved compliance programs for Domestic Commercial Vessels</li> <li>• improved education programs for recreational boaters with a focus on environmental regulations</li> <li>• noting some actions will be delivered over multiple years.</li> </ul>
		<b>Marine pollution responsibilities</b> Review TfNSW's Appropriate Regulatory Authority (ARA) status across all NSW navigable waters under section 86 of the <i>Protection of the Environment Operations (General) Regulation 2009</i> with a focus on pollution from vessels in marine parks (sub-action 7.3.1 in Stage 1).	TfNSW	DPIE-EES	Statewide	
		<b>Marine pollution legislation</b> Complete the statutory review of the <i>Marine Pollution Act 2012</i> . The Act protects the State's marine and coastal environment from pollution by oil and certain other marine pollutants discharged from ships. The Act implements the International Convention for the Prevention of Pollution from Ships (MARPOL) in NSW (sub-action 7.3.2 in Stage 1).	TfNSW	EPA Port Authority AMSA	Statewide	
		<b>Vessel environmental standards</b> Continue to enforce environmental standards and regulations among domestic commercial vessels and recreational vessels (sub-action 7.3.3 in Stage 1).	TfNSW		Statewide	

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021 [Note – some actions will be delivered over multiple years]
		<b>Recreational boater education</b> Continue to educate recreational boaters about compliance with environmental regulations (sub-action 7.3.4 in Stage 1).	TfNSW		Statewide	
7.4		Partner with industry to investigate a pilot program at marinas in NSW to design and install sump drain run-off handling systems with sediment traps.				<ul style="list-style-type: none"> <li>to be progressed in future years in Initiative 1 (see 'marina pollution monitoring' project (sub-action 1.5.6 in stage 1)).</li> </ul>
7.5		Reduce impacts of boating on wildlife through coordinated education, research, compliance, reporting and data sharing (links to Initiative 5, 8.1 and 9.4).				<ul style="list-style-type: none"> <li>progressed in Initiative 5 (see 'Species education' project (action 5.3 in Stage 1))</li> <li>review the current knowledge of anchoring impacts and best management practices</li> <li>identify and plan to fill key knowledge gaps about the impacts of offshore vessel anchoring</li> </ul>
		<b>Review of offshore anchoring</b> Review and investigate the effects of large commercial shipping vessel anchoring within the Greater Sydney region (new project).	DPI-F	Port Authority of NSW TfNSW Industry	<b>Central region</b> Wollongong	
7.6		Integrate various research and monitoring into the Monitoring Program to address key knowledge gaps associated with shipping movements and interactions with threatened and protected species.				<ul style="list-style-type: none"> <li>relevant research integrated into the Monitoring Program and knowledge gaps filled noting some actions will be delivered over multiple years.</li> </ul>
		<b>Vessel monitoring</b> Identify available data and undertake gap analysis (action 7.6 in Stage 1).	TfNSW	DPIE EES NPWS DPI-F	Statewide	

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021 [Note – some actions will be delivered over multiple years]
7.7		Continue improving environmentally sustainable boating, conflicting uses and waterway access to the marine estate through the NSW Boating Now program.				<ul style="list-style-type: none"> <li>improved access to the marine estate through funding to deliver new and updated maritime infrastructure, including public boat ramps, trailer parking, pontoons, wharves etc.</li> <li>noting some actions will be delivered over multiple years.</li> </ul>
	<b>Boating Now</b> Work with partners to deliver projects funded through Round 3 of the <a href="#">Boating Now Program</a> (sub-actions 7.7.1 and 7.7.2 in Stage 1).	TfNSW		Statewide		
7.8		Deliver waterways infrastructure in accordance with the Maritime Safety Plan to enhance social, cultural and economic benefits through an interagency approach (also see 8.8).				<ul style="list-style-type: none"> <li>implement the Maritime Infrastructure Plan and continue to work collaboratively with partners to invest in maritime infrastructure and facilities to support the Plan's outcomes and strategic objectives</li> <li>continue to improve boating access infrastructure and facilities through the Boating Now Program</li> <li>noting some actions will be delivered over multiple years.</li> </ul>
	<b>Maritime infrastructure</b> Collaborate with key stakeholders in the implementation of the <a href="#">Maritime Infrastructure Plan 2019-2024</a> that sets out an overarching strategy to support maritime infrastructure in priority areas in NSW (sub-action 7.8.1 in Stage 1).	TfNSW		Statewide		
	<b>Waterway compliance</b> Consider options for a camera network to address dangerous and non-compliant behaviour in Port Hacking and Georges River (sub-action 7.8.6 in Stage 1).	TfNSW		<b>Central Region</b> Port Hacking & Georges River		

## More information

More information on Initiative 7 projects are on the marine estate web site: [strategy-implementation/enabling-safe-and-sustainable-boating](https://www.marineestate.govt.nz/strategy-implementation/enabling-safe-and-sustainable-boating).

## Case study

### OLD FERRY ROAD RESERVE SMALL CRAFT LAUNCH

#### THE SITE

Old Ferry Road reserve, Illawong - Georges River

#### THE PROJECT

This project included construction of a new formal small craft launch facility to accommodate increased demand for access to the Georges River from kayaks, canoes and other non-powered vessels. The project was completed in early 2020 and was jointly funded by the Sutherland Shire Council and TfNSW through the Boating Now program.

#### THE OUTCOMES

The project delivered the following items to meet growing demand at this popular boating location:

- new fixed wharf suitable for smaller boats to pick up and drop off passengers
- new non-powered craft launch to provide safe access for kayaks, canoes, surf skis and paddle boards
- general foreshore upgrade including upgrades to the car park, picnic area and pedestrian pathways.

#### DELIVERED BY

Sutherland Shire Council, with support and funding from the TfNSW Boating Now Program.

#### RELATED ACTIONS

Relates to management action 7.7.



Photo: 21. Completed construction of a new formal small craft launch facility to accommodate increased demand for access to the Georges River. Photo: Sutherland Shire Council.

## Initiative 8

# Enhancing social, cultural and economic benefits



Photo: 22. River camping. Photo iStock.com/Ogdum ©

## The problem/opportunity

There is a need to continue to build our understanding of the social, cultural and economic use and benefits, including intrinsic value, of the marine estate to better inform decision making. There is also a need for greater awareness and understanding among the community of the benefits of the marine estate and how their actions may affect these benefits.

## Steps to achieving our long-term outcomes

This initiative aims to improve the social, cultural and economic benefits that the NSW community derives from the marine estate, increase stakeholder and community adoption of safe and sustainable use of the marine estate, and an awareness of its benefits. To do this, the Strategy will deliver over 10 years: a marine estate education strategy; a marine integrated monitoring framework; social, cultural and economic research; digital mapping; valuation of human use activities and a blue growth strategy.

In the short term, we will achieve this by improving stakeholder and community awareness of the benefits, threats, and management arrangements relevant to the marine estate and ways for them to participate in marine estate management.

In the intermediate term, we aim to see:

- increased stakeholder and community awareness of sustainable use of the marine estate
- social cultural, and economic values better incorporated into planning and management
- increased stakeholder and community participation in management
- improved information base on human dimensions of the marine estate relevant to management
- greater adoption of ecologically sustainable growth among marine industries.

## Initiative objective

To improve the social, cultural and economic benefits that the NSW community derives from the marine estate by responding to priority threats.

## Initiative long-term outcomes

Improved social, cultural and economic benefits of the marine estate that contribute to the wellbeing of the NSW stakeholders and community.  
Increases stakeholder and community adoption of safe and sustainable use of the marine estate

## Management actions and projects

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021
8.1		<p>Increase stakeholder and community awareness of marine estate values, management arrangements and promote safe and ecologically sustainable use of the marine estate by:</p> <ul style="list-style-type: none"> <li>building on existing school and community education programs to encourage environmental stewardship, enhance self-compliance and promote physical and mental health benefits associated with nature</li> <li>developing and promoting best practice guidance and codes of practice to reduce resource use conflicts</li> <li>developing online information resources and expansion of digital technologies.</li> </ul>				<ul style="list-style-type: none"> <li>a curriculum-based schools' package for marine education</li> <li>targeted consultation in development of marine estate education packages tailored to specific user groups.</li> </ul>
	<p><b>Marine estate education strategy</b> Implement the NSW Marine Estate Education Strategy and curriculum-based schools package (sub-actions 8.1.1 – 8.1.4 in Stage 1).</p>		DPI-F	DPIE-EES DPIE-PA TfNSW, NGOs, NSW schools, Community	Statewide	

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021
8.2		Improve awareness of, promote and identify threats to marine historic and non-Aboriginal cultural heritage to inform future management in the marine estate.				
	<b>Maritime heritage review</b> Undertake a localised risk assessment of threats to marine historic heritage, piloted in the Coffs Harbour region and provide recommendations to address threats in future Strategy stages (new project).		DPI-F	HNSW	Coffs Harbour	<ul style="list-style-type: none"> <li>maritime cultural heritage site specific management plan</li> <li>installation of interpretive signage to inform the community about the local maritime history, its value and relevant regulations to protect maritime heritage</li> <li>contribute to the extension of the Coffs Harbour City Council heritage trail at Woolgoolga</li> <li>develop a guide to inform the interpretation and protection of other localised maritime heritage.</li> </ul>
8.3		Establish and deliver the Marine Integrated Monitoring Programs social, cultural and economic components, to: <ul style="list-style-type: none"> <li>develop a shared understanding of the NSW community's attitudes, values, perceptions, experiences, knowledge, aspirations, patterns of use to support evidence-based decision making and adaptive management</li> <li>communicate data and results publicly through appropriate information portals.</li> </ul>				<ul style="list-style-type: none"> <li>comprehensive statewide data on social, cultural and economic components of the marine estate</li> <li>community wellbeing report</li> <li>commencement of economic case study</li> <li>commencement of local ecological knowledge case study</li> </ul>
	<b>Community wellbeing framework</b> Develop and implement a community wellbeing framework that comprehensively captures the human dimensions of the NSW marine estate to guide the strategic collection of social, cultural and economic data and provide the		DPI-F	DPIE-EES DPIE-PA TfNSW LGOV Universities	Statewide	

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021
	foundation for long-term monitoring (sub-action 8.3.1 in Stage 1).					
	<b>Economic benefits monitoring</b> Monitor the economic benefits dimension of the community wellbeing framework of the NSW marine estate (new project).		DPI-F	DPIE-EES DPIE-PA TfNSW Consultant	Statewide	
	<b>Capturing local ecological knowledge</b> Pilot a system for capturing local ecological knowledge to promote the value of using different knowledge systems for understanding and managing the marine estate (new project).		DPI-F		Central Coast	
<b>8.4</b>	  	<p>Develop a baseline of current and future use of the marine estate, initially at a pilot scale, to support effective management, address resource use conflicts and access to the marine estate by:</p> <ul style="list-style-type: none"> <li>• carrying out a comprehensive analysis of human uses, supporting infrastructure and facilities, activity trends, management issues</li> <li>• spatially mapping on a public facing digital platform</li> <li>• identifying hotspots and developing specific management responses to address issues in partnership with agencies and stakeholders</li> <li>• linking outcomes to education and awareness programs to promote best practice. (see 8.1) and links to 8.5.</li> </ul>				<ul style="list-style-type: none"> <li>• activity mapping project (postponed to future years pending funding)</li> <li>• commence development of an economic valuation model to be applied to multiple sectors across the marine estate.</li> </ul>
	<b>Activity mapping</b> Pilot a comprehensive, spatial mapping project of human use activities, to support marine planning prioritisation and management – (sub-actions 8.4.1 and 9.2.1 in Stage 1) (project to postponed to future years).		DPI-F	DPIE-EES DPIE-PA TfNSW LLS, DNSW LGOV, RDA	Newcastle, Port Stephens, Mid North Coast	

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021
	<b>Marine estate valuation model</b> Developing a consistent and comprehensive social and economic valuation model for multiple human use activities across the NSW marine estate (new project).		DPI-F	DPIE-EES DPIE-PA TfNSW, LLS DNSW LGOV, RDA	Statewide	
8.5		Explore opportunities for innovative ecologically sustainable activities in the marine estate, based on the results of activity mapping in action 8.4, by developing a blue growth strategy.				<ul style="list-style-type: none"> <li>Blue growth economy to commence in future years (pending funding)</li> </ul>
	<b>Blue growth economy</b> Working across multiple sectors to develop a Blue Growth Strategy for NSW which explores opportunities for coordinated, innovative, long-term, sustainable development of the marine estate with a focus on those current and emerging activities which provide the greatest opportunity for sustainable growth for NSW (project to commence in future years).		DPI-F	DPIE-EES DPIE-PA TfNSW Industry	Statewide	

## More information

More information on Initiative 8 projects are on the marine estate web site: [strategy-implementation/enhancing-social,-cultural-and-economic-benefits](https://www.marineestate.nsw.gov.au/strategy-implementation/enhancing-social-cultural-and-economic-benefits)

## Case study

### NSW COMMUNITY WELLBEING FRAMEWORK

#### THE SITE

Statewide

#### THE PROJECT

There is no current systematic monitoring of the human dimensions (social, cultural and economic) of the NSW marine estate. As a result, NSW DPI-Fisheries (DPI-F) in collaboration with the community wellbeing working group, has developed a framework that encapsulates the key human dimensions of the NSW Marine Estate – ‘the community wellbeing framework’ (figure 2).

The framework uses a hierarchical structure including dimensions, attributes, indicator themes and indicators to organise the human dimensions of community wellbeing relevant to the NSW marine estate. Five dimensions describe the broad categories of community wellbeing: community use, health and safety; community awareness and environmental stewardship; culture and heritage; economic benefits; and governance and management.

Specific indicators have been selected to guide consistency in monitoring and valid comparisons of data among geographic locations and through time. It is anticipated that data collection to inform indicators will take place every two to five years. The target groups for the 2020-2021 surveys include Coastal residents, visitors, Aboriginal peoples, Marine Estate Management Authority agency staff and relevant stakeholders.

This program is a novel component of the Marine Integrated Monitoring Program.

#### THE OUTCOMES

Key outcomes of the project will be to provide a strategic approach for the ongoing collection of data for the Community Wellbeing Framework. It will also provide the baseline data required to assess long-term trends in community benefits and impacts to benefits, to inform the effectiveness of the Strategy and future threat and risk assessments. The Community Wellbeing Framework will also ensure social, cultural and economic values are better incorporated into planning and management of the marine estate and improve the information base on human dimensions of the marine estate relevant to management.

#### DELIVERED BY

DPI-Fisheries

#### RELATED ACTIONS

Relates to management action 8.3 and all monitoring projects



Figure 2. NSW Marine Estate Community Wellbeing Framework

## Initiative 9

# Delivering effective governance



Photo: 23. Image representing good governance Photo: iStock.com/Gerasimov174 ©

## The problem/opportunity

Complex governance arrangements and overlapping jurisdictions can lead to lack clarity of roles and responsibilities, inconsistencies, duplication and inappropriate regulation. Governance arrangements that are simpler and easier to understand will better support effective management of the marine estate and deliver social, cultural, economic and environmental benefits.

## Steps to achieving our long-term outcomes

Initiative 9 aims to improve coordination, transparency, consistency and inclusiveness, leading to greater efficiency and effectiveness in managing the marine estate during the 10 years of the Strategy. To do this, we will produce:

- a governance framework and catchment scale governance pilot program
- stakeholder and community capacity building programs and education campaigns
- tools to support self-compliance
- compliance and research and monitoring programs.
- new management plans for marine parks and improved management of aquatic reserves and high value sites

In the short term, we will clarify the responsibilities and accountabilities of responsible agencies, so we can improve our capacity to fulfil those roles. We will also focus on our consistency, coordination and communications. This will allow agencies to work together more closely with each other and the community, so everyone can participate in marine estate management and decision making.

Simpler and clearer regulatory process will reduce timescales and costs for obtaining permits and also lead to increased compliance with rules and regulations by landholder, community and businesses.

## Initiative objective

To improve governance arrangements across the marine estate to support coordinated, transparent, inclusive and effective decision making.

## Initiative long-term outcomes

- Improved coordination, transparency, consistency and inclusiveness of managing the marine estate.
- Improved efficiency and effectiveness in managing the marine estate

## Management actions and projects

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021
9.1		<p>Improved coordination and integration across all levels of government (including cross-border and land–sea interface) by developing a governance framework piloted at a catchment scale (see Initiative 1) to:</p> <ul style="list-style-type: none"> <li>• identify overlapping jurisdictional boundaries</li> <li>• clarify roles and responsibilities</li> <li>• align policies and programs</li> <li>• identify opportunities for data management and sharing, research, monitoring and mapping, compliance and reporting, communication and engagement.</li> </ul>				<ul style="list-style-type: none"> <li>• review of Strategy projects, report on governance issues and gaps, and provide recommendations future implementation actions</li> <li>• Community and stakeholder engagement on draft management plan preparation for the five coastal marine parks in NSW</li> </ul>
	<p><b>Improving project governance</b> Identify Strategy projects that have a governance component, any issues and gaps (sub-action 9.1.1 in Stage 1).</p>		DPI-F	DPIE-EES	Statewide (project scale)	<ul style="list-style-type: none"> <li>• site based and regional actions identified, and priority actions implemented at aquatic reserves and high value sites to reduce threats to marine biodiversity and enhance community benefits and uses</li> </ul>
	<p><b>Improved marine park management planning</b> Develop new planning processes for the preparation of management plans, and supporting management rules, with the community, industry and stakeholders to ensure good</p>		DPI-F	DPIE-EES TfNSW DPIE-PA	Cape Byron, Solitary Islands, Port	<ul style="list-style-type: none"> <li>• GIS tools used to collate, analyse and communicate</li> </ul>

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021
		governance, a more streamlined approach and to support improved management of marine park values.			Stephens Great Lakes, Jervis Bay, Batemans	spatial information for marine estate projects.
		<b>Improved management of aquatic reserves and high value sites</b> Improved management of aquatic reserves and other sites of value to the community.	DPI-F	DPIE-EES TfNSW DPIE-PA	Aquatic reserves and Central Region	
		<b>Better geographic information systems (GIS) for the marine estate</b> GIS systems enhanced to support marine estate projects.	DPI-F	DPIE-EES TfNSW DPIE-PA	Statewide	
<b>9.2</b>	  	Increased stakeholder and community participation by building capacity and awareness of coastal and marine management piloted at a catchment scale (see Initiative 1) and locally via marine park management planning pilots.				<ul style="list-style-type: none"> <li>review of Authority agencies (and partners in delivery) roles, responsibilities and regulatory obligations with regard to Strategy implementation, and communicate to agencies, stakeholders and community (project commence in future years – pending funding).</li> <li>stakeholder management plans (project to commence in future years – pending funding).</li> </ul>
		<b>Understanding government stakeholders</b> Identify and map agency roles, responsibilities and regulatory obligations in marine estate matters to enhance collaboration and governance arrangements (sub-action 9.2.1 in Stage 1) (project to commence in future years).	DPI-F	DPIE-EES, DPIE-PA. TfNSW	Statewide	
		<b>Understanding non-government stakeholders</b> Identify marine estate stakeholders and their networks and develop stakeholder management plans to improve communication and engagement (sub-action 9.2.1 in Stage 1) (project to commence in future years).	DPI-F	DPIE-EES, DPIE-PA. TfNSW	Statewide	

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021
9.3		<p>Identify opportunities through the marine park management planning pilots to streamline regulatory instruments to:</p> <ul style="list-style-type: none"> <li>• address inconsistencies, reduce duplication of effort and reduce regulatory burden where appropriate</li> <li>• ensure these instruments are efficient, effective, transparent and proportionate</li> <li>• increase awareness of the authorisations process and requirements for the end user through education and online tools.</li> </ul>	DPI-F	DPIE-EES DPIE-PA TfNSW LLS DNSW RDA LGOV	Statewide	<ul style="list-style-type: none"> <li>• annual report to identify reductions in regulatory burden</li> <li>• marine park authorisations portal and associated advisory material.</li> </ul>
	<p><b>Reducing red tape</b></p> <p>Identify projects addressing regulatory burden at the project level and identify gaps for consideration in future years pending funding. Delivered and reported on within existing projects (See 2.3.1, 2.3.2, 2.3.3, 2.4.3 and 9.1).</p>		DPI-F	DPIE-EES, DPIE-PA. TfNSW	Statewide	
	<p><b>Reducing red tape for marine parks</b></p> <p>Following the development of new marine park management plans, review and improve marine park authorisation requirements in management rules to ensure they are efficient, effective, consistent and minimise regulatory burden (new project).</p>		DPI-F	DPIE-EES, DPIE-PA. TfNSW	Statewide	

Action	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021
	<b>Streamlining authorisation processes</b>		DPI-F		Statewide	
	Review and improve current fisheries and marine park authorisation processes to deliver a streamlined, user-friendly approach that improves customer service, efficiency and availability of data for decision making (new project).					
9.4		Improve coordination and effectiveness of compliance across government by: <ul style="list-style-type: none"> <li>investigating tools to support proactive compliance by users through use of new technologies and education programs (see Initiative 8)</li> <li>collaborate across multiple government agencies to coordinate enforcement, education and data sharing.</li> </ul>				<ul style="list-style-type: none"> <li>review of Authority agencies' compliance effectiveness and include recommendations on potential improvements for self-compliance / education programs.</li> <li>risk-based compliance program developed and implemented, and reviewed annually for continuous adaptive management</li> <li>offshore compliance with new offshore vessel in Greater Sydney region</li> </ul>
	<b>Coordinating compliance</b>		DPI-F	DPIE-EES, DPIE-PA. TfNSW	Statewide	
	Identify and address opportunities to improve coordination and effectiveness of compliance with marine estate regulations, and promote self-compliance, at the project level on a priority basis (action 9.4 in Stage 1). (project to commence in future years)					
	<b>Greater Sydney region compliance focusing on marine protected areas</b>		DPI-F		<b>Central region</b> Newcastle to Wollongong	
	Increased fisheries compliance outcomes in the Greater Sydney region focusing on addressing priority threats to environmental assets. Increased community and stakeholder education and awareness of fisheries and marine protected areas rules and regulations.					

## More information

More information on Initiative 9 projects are on the marine estate web site: [strategy-implementation/delivering-effective-governance](https://www.marineestate.nsw.gov.au/strategy-implementation/delivering-effective-governance).

## Case study

### STREAMLINING AUTHORISATION PROCESSES

#### THE SITE

Six marine parks in NSW – Cape Byron, Lord Howe Island, Solitary Islands, Port Stephens-Great Lakes, Jervis Bay and Batemans Marine Parks

#### THE PROJECT

A range of fisheries and marine park activities may only be authorised following comprehensive assessment to ensure they are sustainable. DPI-F manages these authorisations under fisheries and marine park legislation. Historically, these processes have been largely manual involving many different paper-based permit application forms that may be lengthy, complex and time consuming for customers and staff. Opportunities to capture and analyse valuable activity reporting data have been missed. DPI Fisheries is implementing a new approach to make it easier for customers to seek these approvals.

#### THE OUTCOMES

- The project has mapped over 150 pages of multiple paper-based permit application forms across twelve different DPI Fisheries business units into a single online application portal.
- This portal has been tested with customers and staff and will soon be rolled out to improve customer service. It will then focus on streamlining assessment and data management to increase service efficiency and ensure valuable activity data is available to support future decision-making.

#### DELIVERED BY

DPI Fisheries

#### RELATED ACTIONS

Relates to management actions 9.1 and 9.3



Photo: 24. Anemone Bay, Solitary Island Marine Park – photo Hamish Malcolm

# Program management, monitoring, reporting, evaluation and engagement

## Program management

To ensure effective program management of the Strategy, a governance structure and program management framework has been implemented to support delivery of the Strategy statewide. The framework provides the community and stakeholders assurance that the Strategy is being implemented under a robust governance and project management framework in a coordinated, integrated and transparent way. Much of the work in this area may not be obvious to the general community as there are limited tangible on-ground deliverables, however, good governance and project management underpins the successful delivery of the Strategy and facilitates projects being implemented on time, on budget, within scope and with risks adequately managed.

## Strategy education, communication and stakeholder liaison

The Authority is committed to working collaboratively with the broader NSW community to realise the benefits of a healthy coast and sea through the Marine Estate Management Strategy. The development of the Strategy was possible through contributions from a wide and diverse stakeholder base including Aboriginal communities, community groups, peak industry bodies, environmental groups, scientists, government agencies, and interested individuals. Keeping all stakeholders engaged in, and informed of, the progress and achievements of the Strategy is important to its success.

Accessible, clear, and regular communication, engagement, and education will:

- develop and strengthen delivery partnerships
- recognise the importance of partners in the delivery of the MEMS
- promote progress and achievements
- raise awareness and support among stakeholders and the community
- enable effective community involvement in decision making
- build on existing school and education programs to encourage environmental stewardship and enhance self-compliance
- build support for implementation of the MEMS long term

## Marine Integrated Monitoring Program

The Marine Integrated Monitoring Program (Monitoring Program) has three key purposes:

- to monitor the condition and trend of environmental assets and community benefits to inform the five-year health check
- to evaluate the effectiveness of management initiatives and actions that aim to reduce the priority threats and risks
- fill key knowledge gaps that were identified as part of the statewide TARA process.

The implementation of the Monitoring Program facilitates centralised and efficient coordination, reporting and integration of environmental, social, cultural and economic information for the NSW marine estate. The Monitoring Program provides the evaluation framework for the Authority, responsible agencies and relevant Ministers to report on progress of the Strategy in meeting clearly defined outcomes, highlight successes and consider threats that may need further management intervention. The Monitoring Program gives the community confidence that the management of the marine estate is being continually assessed to drive adaptive management.

Program Management and Monitoring Program implementation respond to concerns raised by stakeholders and the community around lack of transparency and accountability in the management of the marine estate,

lack of trust and a perceived lack of consideration of scientific evidence in decision-making. Through these programs, transparency and accountability in the management of the marine estate is improved. They will also raise awareness of the importance of the marine estate, associated threats and the processes in place to monitor and manage it, which will reconnect people with the marine estate.

**Project objective**

To improve governance, monitoring, evaluation and reporting across the marine estate to support coordinated, transparent, inclusive and effective decision making (related to Initiative 9).

**Initiative long-term outcomes**

- Improved coordination, transparency, consistency and inclusiveness of managing the marine estate (contributes to Initiative 9 outcomes).
- Improved efficiency and effectiveness in managing the marine estate (contributes to Initiative 9 outcomes).
- Improved coordination and implementation of the Marine Integrated Monitoring Program for the marine estate.

## Management actions and projects

	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021
		<p>Improved coordination and integration across all levels of government (including cross-border and land–sea interface) by developing a governance framework piloted at a catchment scale (see Initiative 1) to:</p> <ul style="list-style-type: none"> <li>• identify overlapping jurisdictional boundaries</li> <li>• clarify roles and responsibilities</li> <li>• align policies and programs</li> <li>• identify opportunities for data management and sharing, research, monitoring and mapping, compliance and reporting, communication and engagement.</li> </ul> <p><i>Note – this action sits within Initiative 9 but projects in this section support overall program delivery, not at the project scale, and therefore reported here.</i></p>				<ul style="list-style-type: none"> <li>• improved statewide governance and project management framework, developed in response to lessons learnt during implementation)</li> <li>• regular and ongoing rigorous oversight and scrutiny of the Strategy implementation to ensure projects are within scope, budget and timescales and effective management of risk to minimise impacts to program delivery</li> <li>• project management training, support and development for all Strategy project managers across agencies to ensure consistent, efficient and effective management of the Strategy</li> </ul>
	<p><b>Strategy program management</b></p> <p>Implementation of a governance structure and project management framework to support delivery of the Strategy statewide to be reviewed periodically to improve efficiency and effectiveness. Identify and address any inefficiency in governance arrangements at the project level, on a priority basis.</p>		DPI-F	DPIE-EES TfNSW DPIE-PA	Statewide	

	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021
						<ul style="list-style-type: none"> <li>quarterly and annual reporting to stakeholders and the community on progress and future activities to raise awareness and ensure transparency.</li> </ul>
	<p><b>Strategy education, communication and stakeholder liaison</b></p> <p>Implementation of communication tools including website, and newsletters to support and enable engagement, education and stakeholder liaison across the Strategy. Includes delivery of existing projects including the Marine Estate Education Strategy (See 8.1) and understanding non-government stakeholders (See 9.2).</p>		DPI-F	DPI-EES TfNSW DPIE-PA	Statewide	<ul style="list-style-type: none"> <li>develop and implement the marine estate communications and engagement plan</li> <li>develop stakeholder management plans progressed in Initiative 9 (see ‘Understanding non-government stakeholders project)</li> <li>implement the marine estate education strategy progressed in Initiative 8</li> <li>distribution of up to date information on the marine estate and MEMS projects through a range of channels including the NSW Marine Estate Instagram to alert new information on the marine estate website and the marine estate newsletter</li> <li>update of the marine estate website.</li> </ul>
	  	Implement the Marine Integrated Monitoring Program				<ul style="list-style-type: none"> <li>report on coordinated statewide monitoring of environmental assets &amp; community benefits, Strategy outcomes and knowledge gaps</li> <li>interim public report cards</li> </ul>

	Stages	Management actions	Lead agency	Partners	Location	What we will deliver in 2020-2021
	<p><b>Monitoring Program - program management</b></p> <p>Implementation of a governance structure and framework to support delivery of the Monitoring Program to monitor, evaluate and report on Strategy progress, as well as fill knowledge gaps.</p>		DPI-F	DPIE-EES TfNSW DPIE-PA	Statewide	<ul style="list-style-type: none"> <li>• evaluation report on Strategy implementation Stage 1</li> <li>• data collation and management system for central storage and analysis of Monitoring Program evaluation indicator data.</li> </ul>

## Appendix 1 Strategy agencies and partners

Agencies, organisations, research institutions and key stakeholders involved in delivering actions

Table 2. Agencies and partners responsible for implementing the Marine Estate Management Strategy.

Abbreviation	Full name
AFAC	Aboriginal Fishing Advisory Council
ALC	Aboriginal Land Councils
AMSA	Australian Maritime Safety Authority
COM GOV	Commonwealth Government
CommFish	Commercial Fishing NSW Advisory Council
Community	Community
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DNSW	Destination NSW
DPI	Department of Primary Industries
DPI-BFS	Department of Primary Industries – Biosecurity and Food Safety
DPIE-EES	Department of Planning, Industry & Environment – Environment, Energy & Science
DPIE-PA	Department of Planning, Industry & Environment – Planning & Assessment
DPIE-W	Department of Planning, Industry & Environment – Water
DPI-F	Department of Primary Industries – Fisheries
DPI-HP (CL)	Department of Planning, Industry & Environment – Housing & Property (Crown Lands)
EPA	NSW Environment Protection Authority
GSC	Greater Sydney Commission
HNSW	Heritage NSW
Industry	Industry
INSW	Infrastructure NSW
IPART	Independent Pricing & Regulatory Tribunal
LGOV	Local government
LLS	Local Land Services
MFAC	Ministerial Fisheries Advisory Council
MIA	Marine Industry Association
NGOs	Non-government organisations

Abbreviation	Full name
NPWS	DPIE – EES: National Parks and Wildlife Services
NRAR	Natural Resource Access Regulator
NSWFA	NSW Farmers' Association
NSWSC	NSW Shellfish Committee
OLG	Office of Local Government
OW	OceanWatch
Private	Private landowners
RDA	Regional Development Australia
RFNSW	Recreational Fishing NSW Advisory Council
RNSW	Regional New South Wales
SIMS	Sydney Institute of Marine Science
SNSW	Stormwater NSW
SOS	<i>Saving Our Species</i> (DPIE-EES)
SW	Sydney Water
Taronga	Taronga Zoo
TfNSW	Department of Transport
TO	Traditional Owners
UNI	Universities
UNSW	University of NSW
UTas	University of Tasmania
WNSW	Water NSW

The agency previously known as the Office of Environment & Heritage is now established as Environment, Energy & Science under the Department of Planning, Industry & Environment (DPIE-EES).