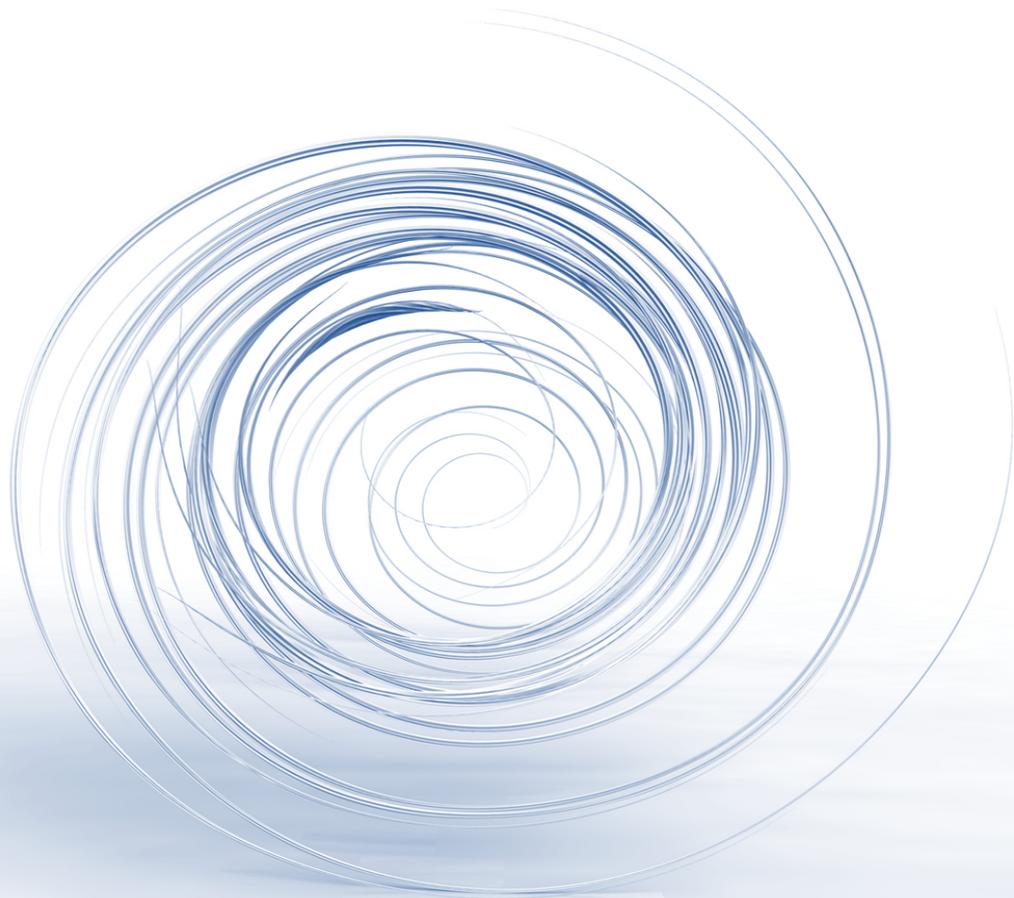




# Marine Estate Management Strategy Annual Report 2019-20

IMPLEMENTATION STAGE 1 – YEAR 2

MARINE ESTATE MANAGEMENT AUTHORITY



## Acknowledgement of Aboriginal people

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Aboriginal people hold deep cultural and spiritual connections to the sea. They have cared for Sea Country for thousands of years, passing on their knowledge and tradition to each new generation. The NSW Government acknowledges their continuing social, cultural, economic and spiritual connections to the marine estate and through meaningful engagement continues to seek opportunities to work collaboratively to ensure a healthy Sea Country now and into the future.

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Marine Estate Management Strategy Annual Report 2019-20: Implementation Stage 1 - Year 2

This report is a supplementary report to the [Marine Estate Management Authority Annual Report 2019-2020](#)

This report covers the period 1 July 2019 to 30 June 2020

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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.

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## Introduction

On 16 August 2018, the NSW Government announced the release of the ten-year [Marine Estate Management Strategy - 2018-2028](#) (Strategy) and funding of \$45.7 million for the first stage of implementation (2018 – 2020). This funding represented a significant investment in the management of one of our greatest natural assets, the NSW marine estate. The marine estate comprises tidal rivers and estuaries, the shoreline, submerged lands, offshore islands, and the waters of the NSW coast from the Queensland to the Victorian border and out to three nautical miles offshore with more than 1,750km of coastline, 826 beaches and 185 estuaries.

The Strategy provides the overarching framework for coordinated management of the marine estate to deliver its vision for *'a healthy coast and sea, managed for the greatest wellbeing of the community, now and into the future'*. This framework is underpinned by the [NSW Marine Estate Threat and Risk Assessment \(TARA\)](#), and outlines a series of management actions across nine initiatives to address the priority threats to environmental assets and social and economic benefits derived from the marine estate by:

1. improving water quality and reducing litter
2. delivering healthy coastal habitats with sustainable use and development
3. planning for climate change
4. protecting the Aboriginal cultural values of the marine estate
5. reducing impacts on threatened and protected species
6. ensuring sustainable fishing and aquaculture
7. enabling safe and sustainable boating
8. enhancing social, cultural and economic benefits
9. delivering effective governance.

The Strategy is being implemented in stages, with Stage 1 spanning the first two years (2018/19 – 2019/20). The actions that have been achieved in Stage 1 addressed some of the most pressing threats to the marine estate, such as water quality, as well as establishing foundational activities and pilots.

## About the annual report

The Marine Estate Management Strategy Implementation Annual Report (Strategy Report), Stage 1, year 2 provides information on the progress of the Strategy actions and initiatives being implemented each year, risk management, finances and anticipated deliverables in the following year. This report is the second annual report and covers year 2 of Strategy implementation from 1 July 2019 to 30 June 2020. [Marine Estate Management Strategy Annual Report 2018-19, year 1](#) was published in December 2019.

The report is compiled following the end of each financial year and made available as soon as practical thereafter. It is informed by the compilation of the [four previous public quarterly reports](#) (under Strategy progress reporting) in the 12-month period and is the final report for the year in review.

The Strategy Report accompanies the [Marine Estate Management Authority Annual Report](#) (Authority Annual Report), which reports on the broader marine estate reform progress each year.

This Strategy Annual Report is in two sections:

1. the year in summary – which provides an overview of the actions delivered, outcomes, fast facts, financial summary and key challenges
2. progress of the Strategy initiatives.

This Strategy Annual Report does not intend to evaluate performance of the Strategy. Management evaluation will occur at strategic periods throughout the ten-year life of the Strategy, to enable adaptive management, and will be in accordance with [Marine Integrated Monitoring Program](#). An evaluation of progress against short term outcomes will occur at the end of Stage 1. Subsequent evaluations will occur at the Strategy midterm (five year) review and again at 10 years (end of the Strategy).

## Section 1 – The year in summary

### Building on solid foundations

Year 2 built on the strong foundations developed in year 1 ensuring we have effective systems and processes in place to manage the Strategy (53 management actions). Work has included:

- finalised the [Marine Integrated Monitoring Program \(MIMP\)](#) to help guide the strategic monitoring of environmental assets and community benefits, evaluate the effectiveness of the Strategy in reducing priority threats and risks and conduct research to fill knowledge gaps identified in the [Statewide threat and risk assessment](#)
- ongoing project management support provided across all Strategy agencies. Risk assessments, rescheduling and reprioritising in response to impacts of extreme events (fires, floods, drought, COVID-19)
- released Strategy [quarter 2, 3, and 4 snapshot reports](#) via the [Marine Estate website](#)
- updated communication and engagement material for Stage 2

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41 of the 53 actions across all nine initiatives were delivered in Stage 1.  
Good governance and collaboration underpin the implementation of the Strategy.

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### Adaptive management

During the period of 2019-20, NSW experienced unprecedented events (drought, fish kills, fires, floods and the COVID-19 pandemic) which presented multiple and significant impacts on project delivery. Staff resources were reassigned to assist with the bushfire response and COVID-19 severely impacted on-ground work, including field-based research, stakeholder engagement and community and Aboriginal survey workshops.

Despite these challenges, project leads have adapted projects to enable the continuation of work and minimise the impacts of these events on Strategy delivery.

### Strategy review

In February 2020 the Strategy program underwent an independent review by a team of experienced practitioners, engaged by Treasury to appraise the Strategy and highlight any risks and issues, which if not addressed could threaten successful delivery. The review team provided a rating of HIGH (highest possible rating) in terms of the level of confidence that the Strategy is being effectively developed and delivered in accordance with the NSW Government's objectives.

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This assessment was a positive accolade of the solid foundations  
established for the Strategy.

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## Enhancing and expanding connections



Figure 1. Our partners in the delivery of the actions. Achieving Stage 1 actions relied on collaboration across government, business, land managers, interest groups and the community.

The success of the Strategy hinges on extensive and meaningful collaboration with a range of stakeholders from agency partners through to industry, local government and the NSW community. A strong focus of year two has been on enhancing and expanding relationships and providing communications. Examples of how this has been done includes:

- sharing regular updates on Strategy progress through the new quarterly report snapshots
- leading specific sector working groups such as the water quality working group and industry specific working groups such as blueberry and macadamia industries and enhancing engagement with Aboriginal community members
- tailoring communications to local governments to meet their needs.

Other forms of collaboration are included in Table 1.

Table 1. Collaboration with stakeholders

Collaboration tool	Outcome
Workshops	Conducting a series of workshops and training to involve agency partners in planning, implementation and reporting across initiatives
Newsletters	Three <a href="#">Marine Estate Management Authority newsletters</a> published
Meetings	Collaboration with councils through meetings and developing and publishing <a href="#">Status update report for local government (initiatives 1-3)</a>

Collaboration tool	Outcome
Media	Media releases – for more information refer to Appendix A (communication and engagement)
International showcase	Showcase innovative approaches to an international audience - Presentation (by Greg Fisk from BMT WBM) on TARA methodology to the United Nations World Ocean Conference – Law of the Sea
Community survey	Consultant appointed to conduct community wellbeing surveys
Community feedback	Asking stakeholders for feedback on projects (see below)

In year 2, impactful benefits were realised and acknowledged by some of our stakeholders. Here are some examples of feedback on positive outcomes.

*“This strategy was an immense milestone in the management of the NSW Marine Estate and followed an exhaustive threat and risk assessment by the Marine Estate Management Authority (MEMA) through an extensive consultation process. For the first time in Australia (and possibly world-wide) a strategy for the management and rehabilitation of the NSW Marine Estate was based on sound, triple bottom line threat and risk assessments”.*

Statement provided by NSW Seafood Industry Council

*“The works undertaken during the project, particularly extensive fencing, have provided fantastic opportunity for us to undertake restoration projects of our own within the areas and expand on the achievements of LLS and associated contractors. This initiative has provided great outcomes for us and we hope to be able to participate in future initiatives if the opportunity arises”.*

Statement provided by landholder who was engaged with North Coast Local Land Services project

*“As residents of Houghlahans Creek Road we would like to express our appreciation for the funding provided by NSW Marine Estate Management Strategy to dust seal this road ....Obviously, dust has been a problem but it has been distressing to see the road base wash into Houghlahans Creek in heavy rain and subsequent flooding (usually twice a year) knowing this ultimately ends up in the Richmond River.....Works to date have been impressive”.*

Statement provided by resident of the Ballina Shire

## Coastal councils

Coastal councils are recognised as key partners in the implementation of the Strategy. Councils along the NSW coast are integral in helping to identify coastal and marine areas that are under threat and in need of management action as well as important partners in addressing these threats. They provide an essential link to the community and facilitate actions that enhance the community benefits we all derive from the marine estate.

Many local government areas along coastal NSW have benefited from the Strategy investment in the first stage particularly through initiatives 1-3 which focus on water quality, marine litter, the health of estuarine and marine habitats, coastal management and climate change, all of which have strong alignment with Coastal Management Programs (CMPs).

Partnerships with coastal councils continued to be strengthened in 2019/2020. While face to face meetings with councils were less than the previous year due to bushfires, COVID-19 restrictions and other factors, a number of meetings were held with councils in the northern region in August 2019. Project staff in all regions continue to liaise with council staff on projects in their local government area to identify partnerships, plan projects and ensure projects are relevant to, and complement council programs where possible especially in the lead up to Stage 2 of the Strategy.

Feedback from councils about the need to share information about projects progress has resulted in:

- quarterly reporting of Strategy projects publicly
- greater local government specific communication material on the marine estate website including a [Status update report for local government \(Initiatives 1-3\)](#) and [Strategy FAQ for local government](#) published in May 2020
- two out of three marine estate newsletters distributed to subscribed councils and other marine estate contacts
- more detailed and frequent updates on Strategy projects on the [Marine Estate website](#).

Marine estate agency staff also attended and presented at the NSW Coastal Conference 2019 (with attendance of around 250) which had the theme 'Connecting Coast, Catchment and Communities'. One of the key areas for discussion related to implementing the NSW coastal management framework, in particular coastal management programs by local councils. Members of the NSW Coastal Council were present to hear from local government, state agencies and other stakeholders. Feedback will help to inform the review of implementation of the Coastal Management framework.

## Industry

Economic benefits are a key component of the Strategy, with actions contributing to improved viability and sustainability of coastal and marine industries, providing new economic opportunities and supporting industry innovation. Specific industries involved in Strategy projects include tourism, fishing, aquaculture, agriculture and emerging horticulture industries. The Strategy aims to enhance social, cultural and economic benefits while ensuring activities are undertaken sustainably. Business owners and staff from various industries are collaborating with the Strategy in some projects across the initiatives by attending training, joining advisory groups, providing feedback and participating in research trials. Further details are included in Section 2.

## Aboriginal people

Coastal Aboriginal people have been managing Land and Sea Country for tens of thousands of years, however, the involvement in coastal and marine management decision-making to date has been limited. The Strategy is addressing this through employment of Aboriginal people, providing training and skills development in marine industries and natural resource management, as well as facilitating a range of actions to better manage Sea Country. Six positions were filled in year 1, including a Senior Manager, Project Officer, a Liaison Officer and three Aboriginal Pathway Program Administrative Assistants to ensure greater input into management of Sea Country. In Year 2 the focus was on the Aboriginal communities on the South Coast of NSW. These projects will be extended to other coastal areas in Stage 2. Further details are included in Section 2 of this report.



Figure 2. Creating opportunities for industry.

### NSW community

A range of methods have been used to share information about the benefits and progress of the Strategy with the broader NSW community. A variety of channels have been used to provide clear, consistent and accurate information to this large stakeholder group including:

- over 32 media opportunities promoting Strategy actions through websites, print, radio and television
- 3 editions of the [Marine Estate Management Authority newsletters](#) were distributed to approximately 1200 community members and published on the website. The benefits of the Strategy have been communicated to stakeholders via the [website](#) where the [Strategy](#) itself can be downloaded, for stakeholders wanting to read the details of specific Strategy benefits. Also available are graphics and detailed planning documents relating to how the Strategy is being [implemented](#).

For further information about the Strategy communication and engagement for 2019/2020 please see Appendix A – Communications and engagement.

## Key highlights

The second year of the Strategy saw the implementation of a variety of actions across the NSW marine estate (Figures 3 to 6). Communities across the marine estate are already benefiting from cleaner waterways, better engagement and consultation, training and employment opportunities and protection of important coastal and marine species. Key highlights from the second year include:

Water quality and litter	
Project	Highlight
Risk-based framework for waterway health trials in urban areas	Change to strategic and local planning controls at project pilot sites to improve waterway health and stormwater management. Capacity building on the implementation of the Risk-based Framework through a series of workshops with coastal councils and industry.
Improved management of diffuse source water pollution	Review of the 2009 NSW Diffuse Source Water Pollution Strategy completed and approach to refining government arrangements for the management of diffuse source water pollution in NSW was identified.
Marine litter campaign	Developed marine litter campaign (to be launched in year 3 of the Strategy).
Marine litter working group	The University of NSW commenced a Marine Debris Threat and Risk Assessment.
Estuary water quality monitoring	Provided councils and NSW community with information on water quality in their estuaries. Partnership established with Tilba Tilba community for water quality monitoring program.
Clean coastal catchments	Online delivery the <a href="#">Fertiliser Stewardship Group (FSG)</a> forums. Engaged contractor to develop <a href="#">Fertcare</a> accredited course for advisors to north coast horticultural industry.
Oyster reef restoration	Project <a href="#">video</a> on oyster reef restoration project produced. Targeted <a href="#">recreational fishing survey on oyster reef restoration knowledge</a> released. <a href="#">Oyster reef restoration mapping criteria</a> technical fact sheet developed.
Erosion and sediment management	DPIE Planning & Assessment completed research on the current state of erosion and sediment controls utilised by 30 councils across NSW.

Delivering healthy coastal habitats	
Project	Outcome
Marine vegetation management strategies	Refined an approach to display estuarine vegetation, combining future sea level rise inundation areas, historic distribution and constraints into a management tool for natural resource managers.

Bank management strategies	Developed a decision support tool to inform best management practice in bank erosion. Two priority estuaries in NSW have been piloted including Tweed River and Brunswick River.
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Planning for climate change	
Project	Outcome
Monitoring priority environmental assets at risk from climate change	Baseline data collection and analysis of kelp and other marine habitats completed. Indicators of climate change developed.

Protecting aboriginal cultural values of the marine estate	
Project	Outcome
Aboriginal management of Sea Country – cultural values	<p>The Sea Country School Education Program was delivered to over 200 primary school students on the NSW South Coast in December 2019.</p> <p>Seven Aboriginal community members from the Jervis Bay area successfully completed the Coxswains certification course. Participants are actively working in local Sea Country ranger teams and in the Narooma Aboriginal cultural tourism pilot project.</p>

Reducing impacts on threatened and protected species	
Project	Outcome
Improving reporting of interactions with marine wildlife - data and reporting	<p>Continued improvements to the Marine Wildlife Management Manual (internal) to guide operational responses to marine wildlife interactions.</p> <p>The National Parks and Wildlife Service online wildlife reporting system, Elements, has been expanded to allow groups that help look after injured marine wildlife to record their data. Dolphin Marine Conservation Park are the first to use the system real time, to report wildlife being rescued and in care.</p>
Commercial fishing observer program – reducing threats to threatened and protected species and bycatch from fisheries	Over 300 fishing trips observed across seven estuaries and multiple offshore locations contributing data to a better understanding of threats to fish assemblages and threatened and protected species.
Strategies for mitigating interactions – developing and implementing management responses to reduce interactions with whales	Trials of modified fishing gears that have the potential to reduce whale entanglements commenced. Knowledge gained from gear trials will be used to further inform future best practice advice

Sustainable fishing and aquaculture	
Project	Outcome
Oyster aquaculture: best practice	<p>Assisted NSW oyster businesses, providing guidance to determine site selection and design and ensure viable practices with minimal impacts on the environment or community.</p> <p>Implemented research project led by University of NSW examining how shading and bio-deposition processes from different oyster infrastructure can affect important seagrass habitat determine best practice to minimise potential impacts.</p>
Fisheries enhancements	<p>Innovative and state of the art offshore artificial reefs deployed at accessible locations off Wollongong and Newcastle, providing habitat to attract a variety of popular recreational targeted fish species.</p> <p>Over 9,000 juvenile kingfish stocked into Lake Macquarie and Botany Bay to enhance fish stocks.</p>
Fishing: reducing impacts	<p>Worked alongside industry to remove over 500kg of waste in NSW estuaries.</p> <p>Worked alongside industry and non-government organisations to deliver formal training to professional fishers, helping demonstrate responsible practices.</p>
Harvest strategies (fishing)	<p>Draft Harvest Strategy Policy and Guidelines advanced through Ministerial advisory councils to ensure robust, consistent and transparent harvest strategy development.</p> <p>Stakeholder working groups are being formed for collaborative development of harvest strategies.</p> <p>Research collaborations established with <a href="#">Commonwealth Scientific and Industrial Research Organisation</a> (CSIRO) and University of Tasmania to build expertise capacity in harvest strategy development and understanding of ecological risk.</p>

Enabling safe and sustainable boating	
Project	Outcome
Improved mooring management	<p>Four Hybrid Environmentally Friendly Moorings have been installed at sites around Shoal Bay, Port Stephens – Great Lakes Marine Park as part of a trial of new type of mooring apparatus to protect sensitive seagrass communities while keeping boaters safe.</p>
Safe and sustainable boating	<p>The NSW Government has announced \$28 million under Round 3 of the NSW Boating Now Program for maritime infrastructure and facilities needed across NSW for safe, accessible and enjoyable recreational and commercial boating. Assessment of applications received for Round 3 of the Program has been completed.</p>

Enhancing social, cultural and economic benefits	
Project	Outcome
Marine education strategy	Finalised draft Marine Estate Education Strategy for targeted consultation with stakeholders in year 3.
Community wellbeing framework	<p>Finalised the community wellbeing framework to guide collection of data for the social, cultural and economic components of the MIMP</p> <p>Commenced development of specific indicators to inform all elements of the framework.</p> <p>Drafted questionnaire and sampling approach for engaging coastal residents and visitors.</p> <p>Commenced questionnaire and sampling approach for engaging Aboriginal peoples</p>
Marine Integrated Monitoring Program (MIMP)	Finalised and published the 'Integrated monitoring and evaluation framework for the MIMP'

Delivery effective governance	
Project	Outcome
Strategy governance and project management	<p>Ongoing project management support provided across all Strategy agencies. Risk assessments, rescheduling and reprioritising in response to impacts of extreme events (fires, floods, drought, COVID-19)</p> <p>Completed an independent Treasury assessment of the program and achieved a HIGH rating – the highest rating possible for program management, implementation and governance</p>

## Stage 1, year 2 achievements

### water quality and litter



set pathway to **improve waterway health** by developing partnerships with state and local governments and industry



**erosion and sediment management improved** by consultation with key internal and external stakeholders



**35+** participants engaged in **fish friendly workshops**

### healthy coastal habitats



**300+** hectares of **wetland protected**



**15+** kilometres of **dirt roads sealed**



**160+** hectares of riparian **native vegetation protected** by fencing



**estuarine mapping improved** by finalising seagrass, mangrove and saltmarsh maps for various location across NSW



**completed macrophyte maps** to understand the extend of 2019/20 bushfires to mangroves and saltmarsh areas



**50** macadamia orchards managed by **integrated orchard management reducing erosion**



**5** **blueberry demonstration farms established** with two demonstration trials commissioned

## Stage 1, year 2 achievements

### climate change



predicted distribution of **estuarine wetlands under sea level rise** scenarios completed for all NSW estuaries



**baseline data collected** on kelp and other marine habitats and **climate indicators developed**

### Aboriginal cultural values



Sea Country Education Program delivered to **200** primary school students on the South Coast



**7** people **obtained Coxswains certificate**



engaged with the traditional owners to **deliver the Arakwal Sea Country Healthy Lakes and Lagoons project**

### threatened and protected species



**9** threatened seahorse **hotels installed** in Sydney Harbour



**completed Saving Our Species annual reporting** for threatened marine

### sustainable fishing and aquaculture



**40+** master fisherman **graduates completed** training



prepared for deployment of **Tweed offshore artificial reef**

## Stage 1, year 2 achievements

### safe and sustainable boating



**\$28m** Boating Now Round 3 funding available for **maritime infrastructure and facilities** needed across NSW for safe, accessible and enjoyable recreational and commercial boating. **200+** projects delivered since the program was launched



**4** hybrid **environmentally friendly moorings** installed at Shoal Bay. **Trialling new innovative moorings to protect sensitive seagrass** communities while keeping boaters safe



**1400+** powered domestic commercial vessel inspections undertaken for safety and environmental standards

### community benefits



**Marine Estate Education Strategy** developed to be launched in Stage 2



**Marine Integrated Monitoring & Evaluation Framework** completed to track the Strategy's success



**Community Wellbeing Framework** developed to guide the strategic collection of social, cultural & economic data

### effective governance



**improved transparency** by developing quarterly snapshots reports on **100+** projects



**Richmond River** catchment **governance** reviewed

## CASE STUDY – RESTORING THE RICHMOND RIVER

The Richmond River in the Northern Rivers region of NSW has undergone significant modification and misuse over the last century while providing habitat for fish and birds, supporting agriculture, fishing, recreation and tourism and being a spiritual place for Aboriginal people.

The Marine Estate Management Strategy presents an opportunity for collective action to restore the health of the Richmond River with projects from all nine initiatives in the Strategy working together to improve the health of the river and deliver benefits to community, industry and the environment.

The below figures demonstrate work completed to date (2018-2020) in the Richmond River and progress on restoration of the river will continue to be reported on throughout the life of the 10-year Strategy.





**\$640,000**  
in grower contributions to  
macadamia projects



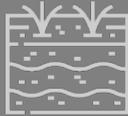
a coordinated catchment  
**WATER QUALITY MONITORING**  
**PROGRAM** developed and  
being implemented



**1** dedicated **BLUEBERRY** nutrition  
and fertiliser **RESEARCH FACILITY**  
**CONSTRUCTED**



**2** fertiliser industry  
education events



**2** rehabilitation option studies  
for the **TUCKEAN SWAMP**



a new **GOVERNANCE STRUCTURE**  
**PILOT** in the Richmond River  
catchment



conducted **347** independent observations  
of estuary fisheries to check interactions with  
non-target species



**9** local vets trained in  
specialist marine wildlife  
rescue, care and  
treatment



**1025** fishery observer mud crab trap lifts and  
**2522** crabs measured



**40+** first responders undertook  
marine wildlife response  
preparedness training



**7** monitoring sites  
off Ballina assessing  
**marine climate**  
**change impacts**

41 of 53 key actions the Strategy delivered – many are ongoing in Stage 2



Figure 3. Map illustrating the spatial extent of the Strategy projects by local government area.

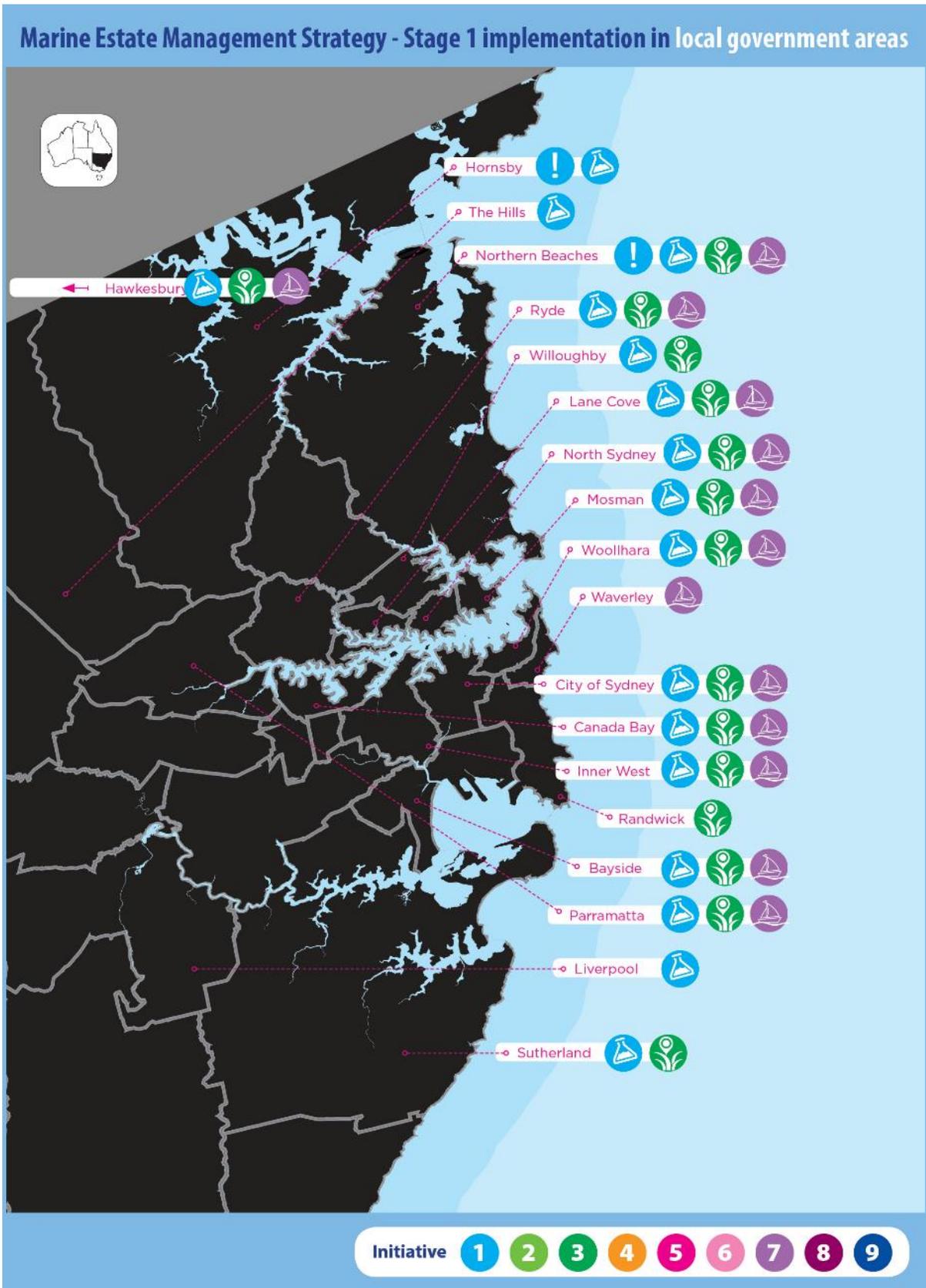


Figure 4. Map illustrating the spatial extent of the Strategy projects in the Greater Sydney area.

PROJECTS BY LOCAL GOVT AREA		Initiative <span style="background-color: #0070C0; color: white; border-radius: 50%; padding: 2px 5px;">1</span> <span style="background-color: #4CAF50; color: white; border-radius: 50%; padding: 2px 5px;">2</span> <span style="background-color: #4CAF50; color: white; border-radius: 50%; padding: 2px 5px;">3</span> <span style="background-color: #FF9800; color: white; border-radius: 50%; padding: 2px 5px;">4</span> <span style="background-color: #E91E63; color: white; border-radius: 50%; padding: 2px 5px;">5</span> <span style="background-color: #E91E63; color: white; border-radius: 50%; padding: 2px 5px;">6</span> <span style="background-color: #9C27B0; color: white; border-radius: 50%; padding: 2px 5px;">7</span> <span style="background-color: #9C27B0; color: white; border-radius: 50%; padding: 2px 5px;">8</span> <span style="background-color: #0070C0; color: white; border-radius: 50%; padding: 2px 5px;">9</span>
 <p><b>Risk-based framework for waterway health</b></p> <p>Local and State government are applying the Risk-based Framework for Considering Waterway Health Outcomes in Strategic Land use Planning Decisions to support stormwater management in urban catchments.</p>	 <p><b>Estuary domestic foreshore structure strategies</b></p> <p>Developing estuary wide domestic foreshore structure strategies to guide and streamline future applications for domestic developments along foreshores (such as pontoons and boat ramps).</p>	
 <p><b>Coastal floodplain management</b></p> <p>Improving our knowledge of floodplain issues, improved management of floodplain infrastructure, reconnecting coastal floodplains and the development of drainage management plans.</p>	 <p><b>Estuary bank management strategies</b></p> <p>Developing estuary wide bank management strategies to streamline bank protection work proposals and optimise rehabilitation opportunities.</p>	
 <p><b>Clean coastal catchments</b></p> <p>Providing help to farmers in intensive coastal agricultural industries to reduce their impact on water quality while maintaining long term economic and environmental sustainability.</p>	 <p><b>Marine vegetation management strategies</b></p> <p>Develop marine vegetation management strategies that maximise resilience, accommodate sea level rise, address key threats (clearing and drainage, four-wheel driving) and encourage rehabilitation opportunities.</p>	
 <p><b>Fish friendly workshops</b></p> <p>Delivery of a targeted education program to local council staff and key external industries that is tailored to the conservation of fish and fish habitats and associated common council works program in each region.</p>	 <p><b>Restore fish passage</b></p> <p>Fish passage is being restored at priority weir and road crossings, giving fish the opportunity to migrate.</p>	
 <p><b>Oyster reef restoration</b></p> <p>Restoring natural oyster reefs improves water quality and provides other benefits. This project includes a pilot restoration site, community education and future site planning.</p>	 <p><b>Estuary mapping of seagrass, saltmarsh and mangrove</b></p> <p>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.</p>	
 <p><b>Riparian vegetation rehabilitation</b></p> <p>Delivering on-ground works to rehabilitate degraded riparian areas helps filter run-off from the land, prevents erosion by stabilising river</p>	 <p><b>Aboriginal management of Sea Country</b></p> <p>A Sea Country ranger program will include training and employment of Aboriginal people in marine estate</p>	

PROJECTS BY LOCAL GOVT AREA		Initiative <span style="background-color: #0070C0; color: white; border-radius: 50%; padding: 2px 5px;">1</span> <span style="background-color: #4CAF50; color: white; border-radius: 50%; padding: 2px 5px;">2</span> <span style="background-color: #4CAF50; color: white; border-radius: 50%; padding: 2px 5px;">3</span> <span style="background-color: #FF9800; color: white; border-radius: 50%; padding: 2px 5px;">4</span> <span style="background-color: #E91E63; color: white; border-radius: 50%; padding: 2px 5px;">5</span> <span style="background-color: #E91E63; color: white; border-radius: 50%; padding: 2px 5px;">6</span> <span style="background-color: #9C27B0; color: white; border-radius: 50%; padding: 2px 5px;">7</span> <span style="background-color: #9C27B0; color: white; border-radius: 50%; padding: 2px 5px;">8</span> <span style="background-color: #0070C0; color: white; border-radius: 50%; padding: 2px 5px;">9</span>
banks and provides biodiversity benefits.	industries, providing their cultural expertise in Sea Country management.	
 <p><b>Estuary bank protection works</b> River bank erosion is being addressed through environmentally friendly bank stabilisation works. Bank stabilisation improves water quality by reducing sediment entering rivers through erosion.</p>	 <p><b>Seal interaction plan</b> Education and compliance campaigns for targeted marine species to improve protection and conservation.</p>	
 <p><b>Wetland restoration</b> On-ground work on the coastal floodplain to reduce impacts of wetland drainage that degrades marine estate values at the site and for downstream users and habitats.</p>	 <p><b>Promoting the community benefits of fishing</b> Multiple projects to promote the consumption of fresh seafood in the community, supporting the fishing industry.</p>	
 <p><b>Reducing erosion from roads &amp; tracks</b> Sediment enters waterways from gravel roads and tracks. This is being reduced through remediation works such as road sealing on priority roads and tracks.</p>	 <p><b>Safe and sustainable boating</b> The NSW Boating Now program continues to improve access to waterways through the provision of funding for maritime infrastructure.</p>	
 <p><b>Estuarine water quality monitoring</b> Water quality and ecosystem health is being monitored and reported on so that poor water quality is detected early and benefits of management are confirmed.</p>	 <p><b>Marine education strategy</b> A Marine Education Strategy for primary schools will help children learn about physical &amp; mental health benefits of connecting with nature, &amp; the skills they need to become environmental stewards of the marine estate.</p>	
 <p><b>Governance framework pilot</b> A new governance structure is being developed at a pilot scale in the Richmond catchment to improve river health outcomes.</p>		

Figure 5. Strategy project icons that are being implemented in specific areas.

## STATEWIDE PROJECTS

Initiative **1** **2** **3** **4** **5** **6** **7** **8** **9**

### Biodiversity offsets



Protecting biodiversity through coordinated improvements to delivery of aquatic biodiversity offsets and working with private landholders to conserve environmentally significant coastal habitats.

### Harvest strategies (fishing)



Harvest strategies are being developed for two target fisheries. They seek to maintain fish stocks at environmentally sustainable levels, while providing fishers with more reliable resource access.

### Marine litter campaign



A new campaign has been developed in collaboration with marine users to target marine litter.

### Recreational fishing environmental assessment and review of rules



An environmental assessment and associated fishery management plan will identify key environmental threats and risks and develop a management framework to address and mitigate those risks. Recreational fishing rules will be periodically reviewed to improve fish stocks and address environmental risks as necessary.

### Risk-based Framework for Waterway Health



Providing tools and guidance material to build local government capacity to use the framework in land use planning and stormwater management decisions.

### Application of Marine Waters Aquaculture Strategy



The Marine Waters Sustainable Aquaculture Strategy guides implementation of new marine aquaculture ventures.

### Dredging audit



The nature of commercial dredging in estuaries is under review. Ways to improve environmental outcomes during and after dredging will be identified and recommendations will be made.

### Application of Oyster Aquaculture Strategy



Best practice guidelines for seagrass protection are outlined in the NSW Oyster Industry Sustainable Aquaculture Strategy. These guidelines are being applied in oyster farms across the state.

### Coastal design guidelines review



Improving the design of our coastal cities and towns and promoting environmentally sustainable infrastructure in coastal urban areas.

### Fisheries enhancements



Fish stocking programs and the development of fishing infrastructure will enhance recreational fishing opportunities.

### Estuary training wall enhancements



Develop plans for design features that can be built into maintenance works undertaken at existing estuary training walls to improve environmental and recreational opportunities.

### Seafood industry training



Partnering with OceanWatch, the Master Fisherman Program has expanded its training to commercial fishermen to raise awareness of the threats to the marine estate.

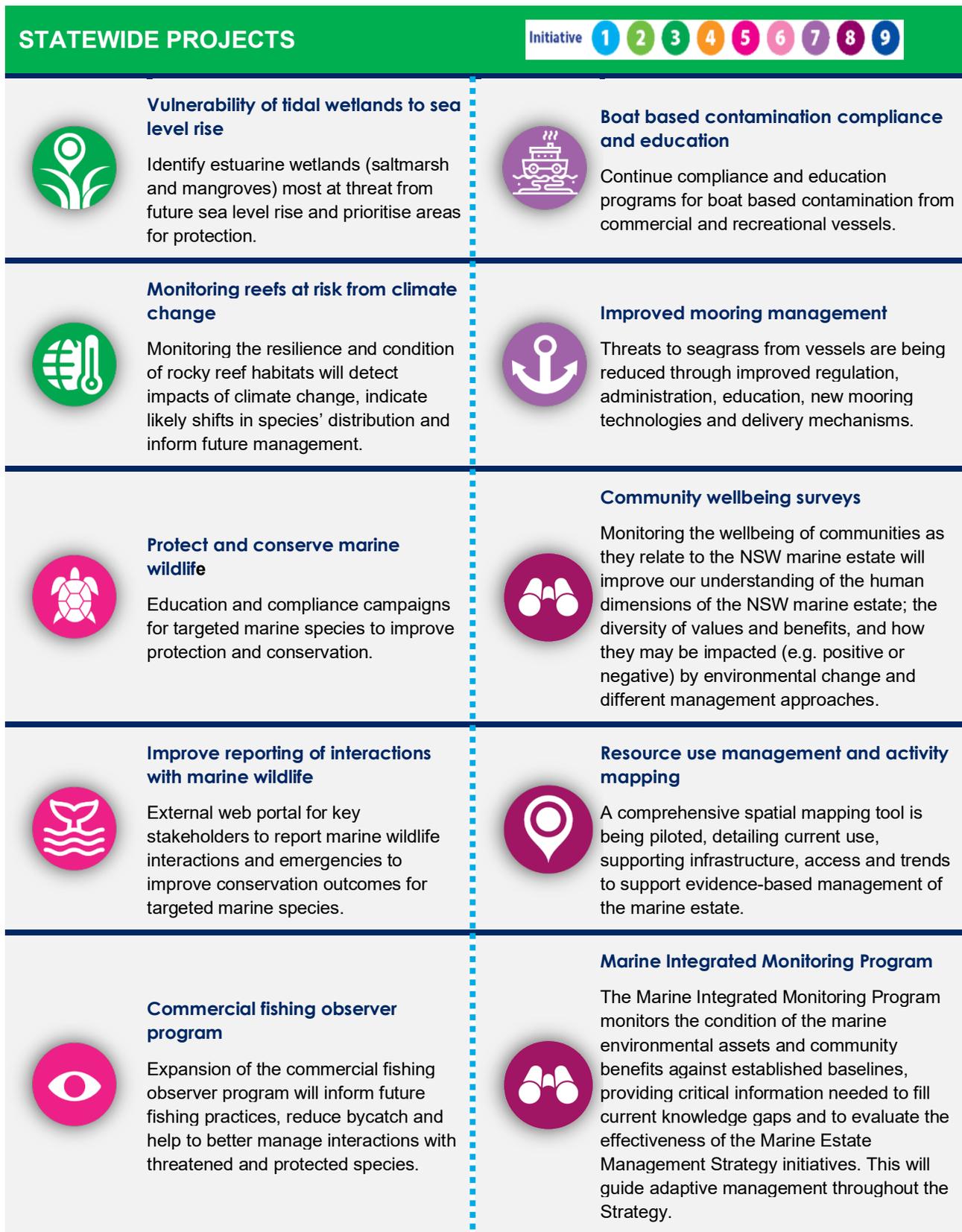


Figure 6. Statewide Strategy projects that are not specific to an area.

## What we want to achieve

A series of eight overarching program outcomes are inherently linked across initiatives and articulate the desired long term change intended to result from implementation of the Strategy.

The Marine Integrated monitoring Framework will measure the success and provide an assessment of the Strategy’s delivery, process and achievements. A baseline/formative evaluation of Stage 1 will commence in late 2020. The aspects of the evaluation are:

<b>PROCESS EVALUATION</b>	focuses on delivery of management actions
<b>OUTCOME EVALUATION</b>	focuses on assessing the extent to which outcomes are achieved or are on track to be achieved

Following the evaluation, findings will be shared published on the marine estate website.



## Financials and staffing

### Finance

The Strategy was allocated \$45.7 million over the first two years. Year 2 approximately \$26.58 million was planned to be expended on projects. The majority of funding was allocated to projects that improve water quality, including more than \$6.8M for on-ground works.

Figure 7 illustrates funding allocated to each Strategy initiative in year 2. Due to unprecedented challenges in 2020 (described in Key Challenges above), actual expenditure was less than planned expenditure for some initiatives (Figure 8). At June 2020 (end of Year 2) \$24.62 million had been spent on Strategy projects, which was 7% below what was anticipated. Underspends were able to be carried forward for use in year 3.

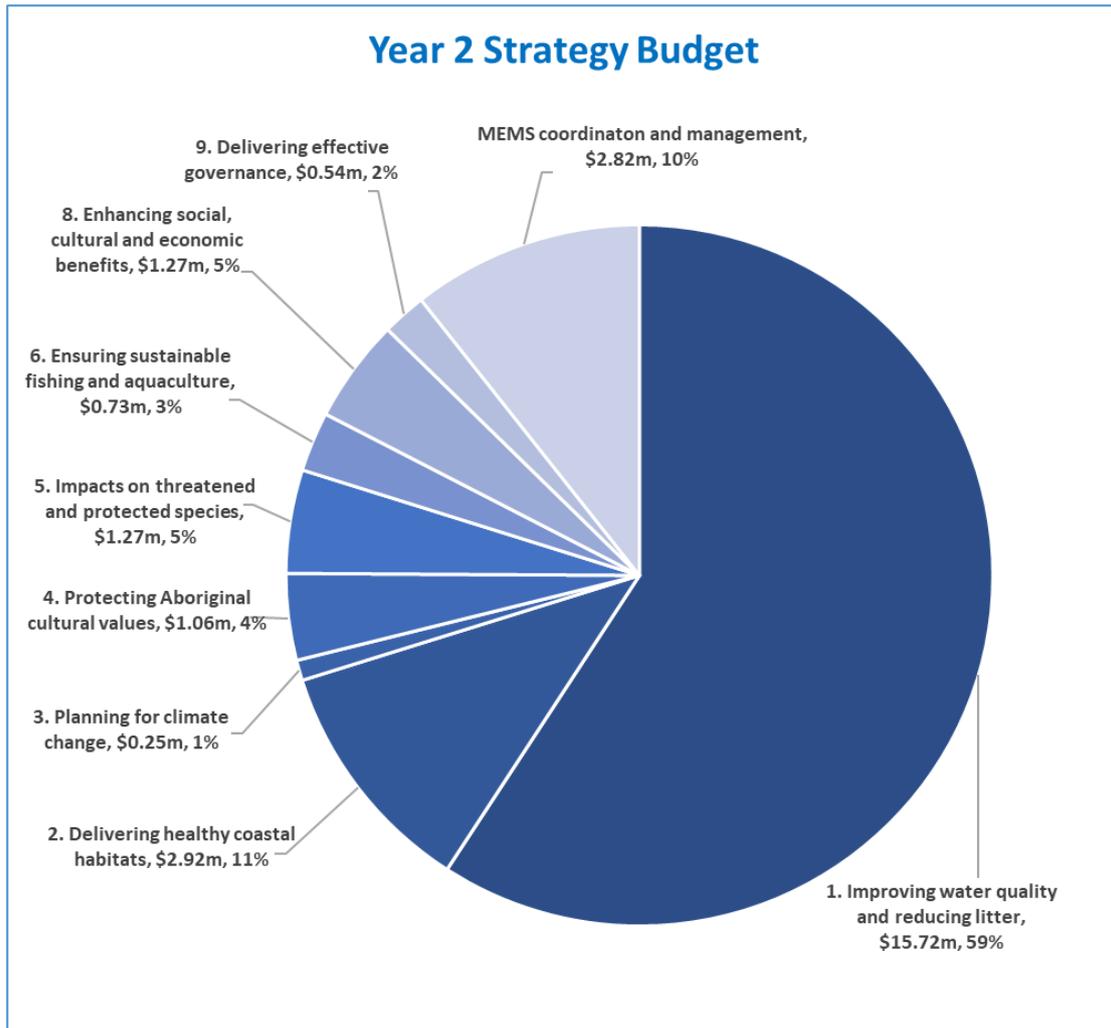


Figure 7. Year 2 Strategy Budget delivering for each initiative

*Note: Initiative 7 - Enabling safe and sustainable boating is not shown in the figure as it was funded by Transport for NSW.*

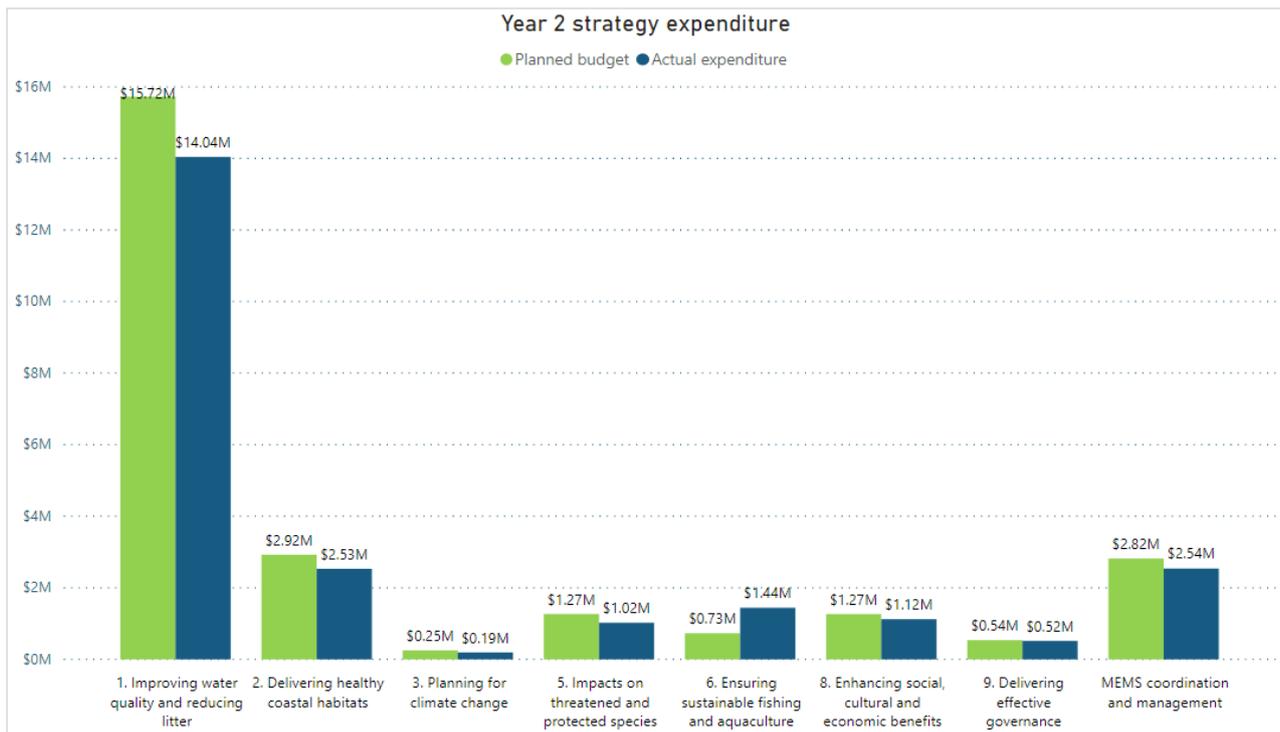


Figure 8. Year 2 planned v actual expenditure delivering on initiatives across the Strategy.

## Staffing

Staff resources allocated to the Strategy in Stage 1 included 88 new positions (79 full-time equivalent roles) across multiple government agencies. These are temporary positions that enable the delivery of the Strategy and facilitate the broad-scale benefits to the community over time.

The number of positions created across the Strategy agencies were as follows:

- DPI – Fisheries – 47 positions
- DPI – Agriculture – 3 positions
- DPIE – Planning – 1 position
- DPIE – Water – 2 position
- DPIE – Crown Lands – 2 position
- DPIE – Environment, Energy and Science – 24 positions
- Local Land Services – 8 positions
- Natural Resources Access Regulator – 1 position.

Additionally, there is substantial support provided by ongoing staff across the Strategy government agencies on an in-kind basis. The success of the Strategy over its ten-year life is dependent on further commitment to resourcing in subsequent stages.

The Strategy has also created additional employment across the NSW coast by engaging with contractors and consultants for research, on-ground works and community engagement.

## Key challenges and risks

During the period of 2019-20, NSW experienced unprecedented events (drought, fish kills, fires, floods and COVID-19). Risks were assessed and recorded in risk registers at the action, initiative and program levels. They were formally reviewed by the Authority every three months during quarterly reporting periods, and more frequently on a case-by-case basis as required. The risk analysis criteria used were designed specifically for the Strategy to ensure management of risk is robust and impacts monitored and managed rigorously. For any high-level risks, additional reporting is required through the development of a risk management plan which clearly articulates what mitigation measures are in place to manage the risk. This was particularly important for Year 2 given the extent of extreme events the Strategy had to manage.

## Section 2 – Key initiatives progress



### Initiative 1 – Improving water quality and reducing litter

Initiative 1 is split into two sections:

- **1a** reports on work led by Department of Planning Industry and Environment–Environment Energy and Science (DPIE – Environment, Energy and Science) primarily addressing water quality issues in the Greater Sydney Region and coordination of marine litter projects.
- **1b** reports on the work led by Department of Primary Industries–Fisheries (DPI – Fisheries) which primarily focuses on improving diffuse source water quality in the regions, including on-ground works and coastal floodplain management.

#### 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.

Budget Year 2

\$ 15,723,184

### Management challenges and opportunities

Water pollution was identified by the statewide TARA as the number one threat to the marine estate. Water pollution and litter are significant contributors to poor water quality in the marine estate. Water quality affects the health of habitats and wildlife as well as the many social, cultural and economic benefits provided by the marine estate.

**Initiative summary Year 2 (2019-20)**



**Water quality improvements:**

- new facilities for agricultural fertiliser use research established
- first large-scale oyster reef restoration commenced in the Port Stephens-Great Lakes marine park and provides 1 hectare (ha) of habitat
- 301.5 ha of wetlands protected
- 168.05 ha of riparian native vegetation protected by fencing and 196.52 ha riparian native vegetation enhanced/rehabilitated
- Sealed 15.27kms of roads
- More than 3kms of stream bank stabilised with engineering works.



**>\$11 million allocated to address water pollution:**

- development of a new marine litter campaign to be implemented in Stage 2
- collaborating with local government and industry to improve the management of waterway health in urban catchments
- measuring estuary water quality across the state
- engaging with agriculture industries to achieve improved water quality outcomes.

**Initiative 1a**

**Putting the Strategy into action**

	Project	Location	Our achievements
	Risk-based framework for waterway health	Wianamatta South Creek catchment (Hawkesbury)	Risk-based Framework has been adopted as a key tool for managing waterways and riparian corridors in the draft <a href="#">Aerotropolis State Environmental Planning Policy (SEPP)</a> and <a href="#">Development Control Plan (DCP)</a> .  Mapped important waterways and wetlands needed to maintain or improve the biodiversity within the catchment.
		Hornsby Shire	Hawkesbury Shire Council reviewed process to effectively apply the Risk-based Framework.
		Shellharbour and Wollongong	Shellharbour and Wollongong Councils created fact sheets on stormwater devices to help implement the regional stormwater strategy in the Lake Illawarra catchment.  Fieldwork to inform new stormwater flow targets in Council development control plans (DCP).
		Northern Beaches	Northern Beaches - <a href="#">Local Strategic Planning Statement</a> has been published, which incorporates the Risk-based Framework. Modelling of current and future land use scenarios in the Northern Beaches Local Government Area (LGA) is under way to inform DCP's.

	Project	Location	Our achievements
	Build capacity to implement the Risk-based Framework	Statewide	Consultation with stakeholders on knowledge gaps and capacity to implement of the Risk-based Framework have been finalised. Outcomes of consultation used to plan the next phase of the project, which will involve development of practice notes to guide stakeholders.
		Statewide	Released key spatial data to support place-based planning and determined an areas' environmental values. Data available to stakeholders via the Sharing and Enabling Environmental Data in <a href="#">NSW Sharing and Enabling Environmental Data (SEED)</a> portal. These <a href="#">high ecological value waterways and water dependent ecosystems in Greater Sydney regions</a> and all NSW coastal catchments and estuary health risk maps to inform scoping studies of CMPs.
	Improved management of diffuse source water pollution	Statewide	During Stage 1, the current governance arrangements and approaches to managing diffuse source water pollution in NSW were reviewed. This work was undertaken to inform Stage 2 and initiate a process to improve the management of diffuse source water pollution in NSW.
	Estuary water quality monitoring	Statewide	Partnership established with the Tilba Tilba community for a water quality monitoring program. Landowners attended training and have successfully collected water quality samples. Samples will provide baseline information to help understand water quality in Victoria Creek. A video showcasing this program is completed and is on track for release in November 2020.
		Statewide	The estuary health monitoring program to provide Councils and the NSW community with information on the <a href="#">water quality in their estuaries</a> is ongoing. The data collected supports evidence-based decision-making by councils for the management and protection of waterway values.
		Statewide	Commenced collaborative monitoring of bushfire impacts with Councils and providing ongoing advice.
		Statewide	Guidance on use of DNA analysis to help determine water quality suitability for recreational use provided to councils.

	Project	Location	Our achievements
		Statewide	The marine debris threat and risk assessment methodology has been finalised and peer reviewed.
	Review of the NSW Water Quality Objectives	LGAs in South Creek catchment and Northern Beaches	<p>Liaised with all councils within the South Creek catchment and Northern Beaches Council to develop an approach to community engagement and raising community awareness of water quality outcomes.</p> <p>A guide to engagement on community environmental values and uses of waterways has been completed.</p>
	Marine litter working campaign	Statewide	Development of an integrated strategy and new animated works to support the “ <a href="#">Don't be a Tosser</a> ” marine litter campaign has been completed and will be aired in Stage 2.
	Marine litter working group	Statewide	The working group has convened four times since commencing in September 2019. The University of NSW has commenced a Marine Debris Threat and Risk Assessment. Experts are engaged providing advice on the social, economic and environmental stressors, threats, assets and values.

## Next steps

Expected outcomes Stage 2 (2020-2021)

- Engage a service provider to synthesise the findings of the consultations with stakeholders (first phase of this project).
- Develop practice notes to guide stakeholders implementing the Risk-based Framework.
- Finalise the Tilba Tilba Lake video showcasing a successful model for community to assist with water quality monitoring ready for release.
- Completion of the water quality database with historical estuary monitoring data. Data will be extracted from the database and made publicly available on SEED on a routine basis (i.e. monthly).
- Website to report information about each NSW estuary launched.
- Implementation of the Marine Litter Campaign.

## Initiative 1b

### Putting the Strategy into action

	Project	Location	Our achievements
	Risk-based framework for waterway health	Richmond River	The Richmond River Water Quality Monitoring Strategy steering committee convened to help integrate Phase 1 with Southern Cross University PhD studies, funded via DPIE - Environment, Energy and Science, Coast and Estuary program, Strategy Stage 1 and the Richmond River Estuary Management Plan. Draft version of Richmond River Water Quality Monitoring Strategy released by DPIE – Environment, Energy and Science.
		Northern Region	A steering committee, including DPIE – Environment Energy and Science, DPI – Fisheries, Rous Water and Southern Cross University (SCU), met to help integrate the Richmond River Water Quality Monitoring Strategy with SCU PhD studies, funded via DPIE - Environment, Energy and Science, Coast and Estuary program, Strategy Stage 1 and the Richmond River Estuary Management Plan. Specialised auto-sampler technology funded by Strategy Stage 1 was successfully trialled by SCU and has now been deployed at strategic sites.
	Coastal floodplain management	Northern Region	Northern Region - Drainage Management workshops 3 and 4 held with key interagency representatives. Review of historic drainage unions has commenced.
			Floodplain management issues documented, and the current approvals required under legislation reviewed with a view to simplify. Facilitated workshops with the relevant state agencies looking at several options for simplifying regulations. Meetings held with Rous County Council and NSW Sugar Cane Industry to provide a project update.
		Fieldwork for the floodplain study complete. Water Research Laboratory surveyed 714 floodgate structures, 139 drain cross sections and completed 1,421 soil and groundwater samples across seven priority coastal catchments in NSW.	
		Tweed, Richmond, Clarence, Macleay, Hastings,	Data processing and analysis under way. Flood models supplied with the help of local councils. Catchment prioritisation in development. Project extended to December 2020 to accommodate

	Project	Location	Our achievements
		Manning and Shoalhaven	extended fieldwork required and to ensure comprehensive reporting.
	Roads and tracks	North Coast	Ballina Shire Council, in cooperation with North Coast Local Land Services, sealed 12 more dirt roads, over 7.6 km to reduce sediment input into waterways. Estimated 1000 tonnes of road base material has been prevented from entering waterways.
		South Coast	South East Local Land Services sealed another 13 dirt road sections 2.7km. Works reduced erosion into Corunna Lake in the Eurobodalla Council area and Myola, near Jervis Bay in the Shoalhaven Council area.
		MidCoast	MidCoast Council in cooperation with Hunter Local Land Services sealed roads in 8 locations.  A total of 4.8km of road was surfaced with a substantial number of rock check dams installed and drains rock lined and re-configured.
	Riparian vegetation rehabilitation	South Coast	South East Local Land Services completed 51 ha of protected vegetation along 12 km of stream length. Two short videos have been produced promoting <a href="#">works completed in the Crooked River catchment</a> .
		North Coast	North Coast Local Land Services have caught up with on-ground works after delays due to bushfires, and rehabilitated and enhanced 39.27 ha of vegetation along 23km.
		MidCoast	Hunter Local Land Services has completed 31 projects. 301 ha of wetlands (270 ha estuarine), 106.2 ha of riparian native vegetation protected, 8.3 ha of riparian native vegetation planted (over 6000 tube stock planted), and 44.1 kms riparian native vegetation protected or enhanced.
	Estuary bank protection works	South Coast	South East Local Land Services have completed bank protection projects over 535 metres in year 2 including log bank and sandbag protection of foreshores in Bega and Shoalhaven LGAs.

	Project	Location	Our achievements
		MidCoast	<p>MidCoast Council in corporation with Hunter Local Land Services completed 70m rock revetment, 160m rock fillets and construction of a rock flume to manage eroding mitre drain on the Lansdowne River.</p> <p>Completed 355m of rock fillets and 65m of revetment in the Wallamba River. This site also included 370 m of fencing plus planting 2,000 native tube stock.</p>
		North Coast	<p>North Coast Local Land Services (via Soil conservation Services) completed bank protection works along 800m of riverbank in Emigrant Creek, saving an estimated 600 tonnes of soil every year.</p>
	Oyster reef restoration	Port Stephens	<p>Delivered the first large-scale trial of oyster reef restoration in Port Stephens, NSW. The restoration pilot project provides 1ha of habitat. 3,300 tonnes of rock and 180 cubic metres of recycled oyster shell on two restoration sites created more than 10,000 square metres of reef base of oyster colonisation.</p> <p>For more information visit <a href="#">Restoring oyster reefs in Port Stephens</a>.</p> <p>Project <a href="#">video</a> on oyster reef restoration project produced.</p> <p>Targeted <a href="#">recreational fishing survey on oyster reef restoration knowledge</a> released.</p> <p><a href="#">Oyster reef mapping criteria</a> technical fact sheet developed.</p> <p>Development of restoration suitability model for NSW coast in progress.</p>
		Statewide	<p>Development and launch of recreational fisher survey on oyster reef restoration knowledge, and engagement with recreational fishers.</p> <p><a href="#">International Conference for Shellfish Restoration</a> scheduled for March now postponed until April 2021 due to COVID-19.</p> <p>Continued <a href="#">field-based identification and mapping</a> of remnant oyster reefs.</p>
	Biodiversity offsets		<p>Project scope refined, linkages with other Strategy projects consolidated and collaborating with project partners including DPIE - Environment, Energy and Science, Biodiversity Conservation Trust, DPIE – Crown Lands, DPIE – Water and DPIE – Planning to discuss existing processes and alignment opportunities.</p>

	Project	Location	Our achievements
			Draft document outlining a DPI – Fisheries Biodiversity Offset Policy, compensatory payments and legal implications has been circulated internally and feedback reviewed.
	Clean coastal catchments	Lismore, Ballina and Coffs Harbour	<p>The <a href="#">Fertiliser Stewardship Group (FSG)</a> forums moved successfully online with extended interest and additional professionals contributing to the discussion.</p> <p>The <a href="#">May FSG Newsletter</a> distributed to over 280 professionals. Registered Training Organisation contracted to develop <a href="#">Fertcare</a> accredited course for advisors to the north coast horticultural industry.</p> <p>Fertiliser Stewardship group met. Fertcare agronomist accreditation course (trial) under development.</p>
		Coffs Harbour	<p>Corrindi and Woolgoolga blueberry demonstration sites installed and functioning. Twelve blueberry farms assessed via <a href="#">Hort360 program</a>.</p>
		Lismore, Ballina and Coffs Harbour	<p>The Wollongbar Blueberry Nutrition Research Facility was commissioned. Water and nutrient monitoring networks are fully operational on five demonstration farms (3 blueberry farms and two macadamia farms).</p> <p>Incentive program of 50 macadamia farms for integrated orchard management to reduce erosion over 308ha completed.</p> <p>5 blueberry farms received grants to complete on-farm works to improve water, nutrient and erosion management.</p>
	Wetland restoration	Northern Region	<p>Complete hydrological modelling study for Tomago Wetland and commissioned new floodgate manufacture.</p> <p>Tomago floodgates progressed.</p> <p>3 interagency workshops completed.</p>
		South Coast, MidCoast	<p>Contracted consultants for aspects of other site works (Crookhaven and Kalang Rivers). Continue to work with National Parks and Wildlife Service and Transport for NSW on next large-scale property purchase opportunities.</p> <p>Assessment of environmental planning requirements for Crookhaven and Kalang sites. Complete Crookhaven hydrological study.</p>

	Project	Location	Our achievements
		Northern Region	Collaborative work with NPWS successfully expanded the Everlasting Swamp National Park (Clarence River) to improve wetland and water quality management.
	Fish friendly workshops	Statewide	<p>Successfully delivered a Fish Friendly Workshop for Richmond Valley Council with over 35 participants and a Fish Friendly Workshop booklet produced.</p> <p>Over 68 Fisheries Management Act permit audits completed in eight LGAs. Key contacts made with other North Coast Councils for next stage of audits and workshops.</p>
	Erosion and sediment management	Statewide	<p>Gap analysis completed by the <a href="#">Soil Conservation Services</a> evaluating current council controls against industry best practice. Draft model conditions developed, including factsheets to aid implementation.</p> <p>Consultation with key internal stakeholders on issues of erosion and sediment control on local development construction sites undertaken.</p> <p>DPIE Planning &amp; Assessment completed research on the current state of erosion and sediment controls utilised by 30 councils across NSW.</p>



Dirt road sealed - Wapengo Lake Road - photo by Cliff Shipton



Blueberry demonstration site - Corrindi blueberries. Photo by Melinda Simpson



Barge delivering oyster reef base - Photo by Kirk Dahle, DPI – Fisheries



Inspection of Myall oyster reef Photo by Kirk Dahle, DPI – Fisheries



Karuah Reef (aerial). Photo by Kirk Dahle, DPI – Fisheries



Riverbank protection works (timber groynes) in Emigrant Creek, Tintenbar. Photo by DPI – Fisheries

Table 2. On-ground work outputs – North Coast Local Land Services, South East Local Land Services and Hunter Local Land Services

Output description	Year 1 target	Year 2 target	Unit	Year 1 total			Year 2 total			Overall total
				NC	SE	H	NC	SE	H	
Area of wetland protected								301.5	301.5	
Area of riparian native vegetation protected by fencing	11	21	Hectares	0	38.48		5.3	51.05	111.7	206.53
Area of riparian native vegetation enhanced/rehabilitated	11	21	Hectares	22.41	38.83		39.27	51.05	106.2	257.76
Length of riparian native vegetation enhanced/rehabilitated	19	36	Kilometres	12.02	18.465		23.11	12.73	44.1	110.425
Area planted to riparian native species	0	0	Area	5.115	26.08		7.057	10.73	8.3	57.282
Length planted to riparian native species	6	13	Kilometres	7.24	8.84		8.245	4.31	3	31.635
Rural roads erosion structures	6	13	Number	3	13		12	13	8	49
Length of roads sealed	2325	3150	Metres	1666	1277		7674	2720	4880	18217
Length of stream bank stabilised with engineering works	1875	1500	Metres	340	470		1350	535	1130	3825

Note: The Risk-Based Framework (DPIE - ENVIRONMENT, ENERGY AND SCIENCE) provided a spatial analysis of priority subcatchments impacting on marine estate assets and was utilised by regional staff to guide the delivery of on-ground investments. Investment in the North Coast region differed from South East and Hunter Central regions due to the preference of DPI for Local Land Services to work wholly within the Richmond River Catchment as part of the Richmond River Pilot. Hunter Central and South East Local Land Services worked in a variety of catchments depending on the results of the Risk-Based Framework and local known priorities and delivery preferences.

## Next steps

### Expected outcomes Stage 2 (2020-2021)

- Completion of audits for all remaining North Coast Local Government Areas. Postponed workshops, dependent on COVID-19 restrictions. Key contacts made with priority councils in Central and South region.
- Fertiliser Stewardship Webinars planned for July, August and September and Newsletter in August. Draft report on findings of Clean Coastal Catchments social marketing approach aiming to change farmer behaviours, to reduce fertilisers (nutrients) leaving the farm. Finalise and pilot Fertcare accredited course for horticultural advisors.
- Undertake consultation on model council erosion and sediment control conditions, seek input and refine proposed conditions. Finalise model conditions in preparation for publication.

### Expected outcomes Stage 2 (2020-2021)

- Complete the NSW oyster reef and restoration planning and implementation guide. Receive the historical study report and communicate findings. Close the recreational fisher survey, collate results and communicate to the stakeholder community. Deliver additional promotional products.
- Begin remediation options assessment at Jones Island, Lansdowne River.
- North Coast LLS – sealing last outstanding 550m in Emigrant Creek catchment; Ginn St, Erowal Bay; and new site Currumbene. Plan for Stage 2 works.

### Further information

[Find out more about Initiative 1 projects](#)



## Initiative 2 – Delivering healthy coastal habitats with sustainable use and development

### 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.

Budget Year 2

\$2,293,667

## Management challenges and opportunities

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.

Ultimately, we are aiming for better coordination of management of coastal habitats and species in the marine estate and in alignment with community values. This includes better coordination of investment planning, decision-making and infrastructure management.

### Initiative summary Year 2 (2019-20)



#### Bank management strategies:

- a decision support tool to inform best bank management practice in bank erosion developed.



#### Catchment and floodplain management:

- completed mapping of the extent of 2019/2020 bushfire impacts to mangroves and saltmarshes.

**Initiative summary Year 2 (2019-20)**



Coastal Crown Lands policy development:

- draft statewide policy for the management of Coastal Crown Lands endorsed.



Catchment and floodplain management:

- completed review of current catchment and floodplain management legislation and approval pathways.

## Putting the Strategy into action

	Project	Location	Our achievements
	Breakwater improvements	Statewide	<p>Multiagency workshop held on multiuse and environmental features for breakwater maintenance and upgrades.</p> <p>Statewide audit of break walls under way.</p> <p>SCU literature review of multi-use and environmental features incorporated into breakwater upgrades.</p>
	Coastal design guidelines review	Statewide	Extensive consultation undertaken with councils along the NSW coast with Draft Coastal Design Guidelines now developed for internal consultation.
	Commercial dredging audit	Statewide	<p>Data on commercial dredging approvals issued by DPIE – Crown Lands has been collected, analysed and included in a draft report.</p> <p>Commercial dredging audit and submerged lands draft guidelines and policy exhibition communication plan nearing completion.</p>
	Coastal Crown Lands policy development	Statewide	Draft statewide policy for the management of coastal Crown Lands under development. Guidelines developed to accompany policy for interpretation and implementation.
	Estuary domestic foreshore structure strategies	North Coast	<p>Commenced Domestic Foreshore Structure Strategies – participation agreements made with eight North Coast councils.</p> <p>Spatial mapping and draft booklet proceeding.</p> <p>A mapping process has been developed for the Foreshore Structure Strategy and is now being trialled in the lower Richmond River.</p>

	Project	Location	Our achievements
	Estuary bank management strategies	North Coast	Engaged consultant for Support Tool for Bank Management Strategies in Tweed and Nambucca.
	Bank management strategies	North Coast	A decision support tool to inform best management practice in bank erosion developed. Two priority estuaries in NSW have been piloted including Tweed River and Brunswick River.
	Marine vegetation and management strategies	Tweed and Ballina LGAs	Completed biophysical rationale and mapping for the following indicators: elevation, slope, land depression, curvature and quaternary geology in Tweed, Byron and Ballina LGAs.  Mangrove distribution mapping reviewed and updated. Regional analysis completed for estuaries near local airports (i.e. Ballina and Coolangatta), and near powerlines that require routine clearing of mangroves for line of sight and safety reasons.
		Statewide	Refined an approach to display estuarine vegetation, combining future inundation areas, historic distribution and constraints into a management tool for natural resource managers. This enables a more holistic approach to estuarine vegetation management for large areas and can prioritise areas for protection or ongoing use.
		Tweed and Ballina LGAs	Blue carbon assessment study commissioned with University of Wollongong that will contribute to value assessment and prioritisation of mangrove and saltmarsh community protection.
	Catchment and floodplain management	Statewide	Agreement on development of a multiagency options paper for a new drainage management policy.  Options paper discussed with Coastal Water Sharing and Planning Working Group in readiness for draft policy development.
		Statewide	Macrophyte maps completed for Minnamurra River and Jervis Bay.  Extent of 2019/2020 bushfire impacts to mangroves and saltmarshes completed for all affected estuaries mapped.
		Statewide	Review of current catchment and flood plain management legislation and approval pathways for a number of scenarios have been identified. The information has informed

	Project	Location	Our achievements
			the development of several options for an improved regulatory framework.
		North Coast	Meeting with Rous County Council and NSW Sugar Cane Industry, providing an update on the coastal floodplain study in the Ballina and Clarence LGAs.

## Next steps

### Expected outcomes Stage 2 (2020-2021)

- Multi-Use and Eco Features Conceptual Guideline completed, including a worldwide literature review and the audit of existing breakwater structures across NSW.
- Commercial dredging audit report and recommendations reviewed by internal and external stakeholders and finalised.
- Domestic Foreshore Structure map made available online and booklet for the Richmond River to Coraki and Brunswick River estuary ready for endorsement by the interagency working group.
- Commencement of consultation with authorities regarding the draft marine vegetation safety clearance code. Provision of written report to compile the marine vegetation strategy aims, objectives and, methods document.
- Engagement with key stakeholders is expected to resume in Stage 2 in accordance with relevant COVID-19 restrictions.
- Jerrys Plains Weir fishway design complete; tender process held and contractor procured.
- Cook weir, Richmond River, removal commences.
- Draft interactive webpage showing changes in macrophytes in each NSW estuary ready for internal distribution.

## Further information

[Find out more about Initiative 2 projects](#)



### Initiative 3 – Planning for climate change

<b>Initiative objective</b>	
Understand, adapt and increase resilience, to help mitigate the impacts of climate change on the NSW marine estate.	
<b>Initiative long term outcomes</b>	
Adaptation planning, strategies and decision-making across the marine estate incorporates the likely future impacts of climate change.	
Budget Year 2	\$249,992

### Management challenges and opportunities

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 on the marine estate are often poorly understood and not well planned for. This initiative will fill knowledge gaps to increase resilience to help mitigate the impacts of climate change in the NSW marine estate. Due to funding constraints in Stage 1 the investment in climate change research and monitoring was substantially limited. Stage 2 seeks improved funding to begin and implement all five actions, contribute to filling key knowledge gaps regarding response and resilience to climate change and collaborate with other agencies and institutions focusing on climate change adaptation. This will ensure that the likely future effects of climate change are better understood, anticipated and planned for in policy and management.

<b>Initiative summary Year 2 (2019-20)</b>	
	Completed baseline subtidal monitoring of rocky reefs throughout NSW.

## Putting the Strategy into action

	Project	Location	Our achievements
	Model intertidal wetlands at threat from future sea level rise	Illawarra	Completed Macrophyte maps for Lake Illawarra, Lake Conjola, Burrill Lake.  Workshops, engagement and building collaborations with leads and teams have been held.
		South Coast	Sampling of saltmarsh distribution in Tilba Lake (before water levels began to rise due to entrance closure).
		Statewide	Predicted distribution of estuarine wetlands under sea level rise scenarios completed for all NSW estuaries.  Predictive model tested for Manning, Wallis Lake, Hawkesbury and Tilba. Models being refined.
	Monitoring priority environmental assets at risk from climate change	Statewide	Completed standard operating procedures for monitoring rocky reefs.  Baseline data collected, analysed and synthesised.  Presentation was delivered at the NSW Coastal Conference in November 2019. A <a href="#">scientific paper</a> was published (Davis et al. <i>Marine and Freshwater Research</i> ) in November 2019.
			Monitoring of NSW habitat distributions for 2020 and research on potential refugia (area of improved survival) for kelp commenced. Manuscript describing 2019 data collection published in <i>Regional Studies in Marine Science</i> research journal.
			Research teams studied marine ecosystems along 1,000 km of the NSW coastline and identified three important biological indicators that will act as early warning signs of climate-driven changes to NSW's marine environment. For more information visit <a href="#">Marine estate news</a>

## Next steps

### Expected outcomes Stage 2 (2020-2021)

- Predicted distribution of estuarine wetlands under three sea level rise scenarios completed for all major estuaries north of Sydney.
- Monitoring of NSW habitat distributions for 2020 has been completed and reporting on any distributional changes commenced.

### Expected outcomes Stage 2 (2020-2021)

- [Paper on identified biological indicators](#) that will act as early warning signs of climate-driven changes to NSW's marine environment published.
- Data collection on potential refugia for kelp completed and analysis of data commenced.

### Further information

[Find out more about Initiative 3 projects](#)



Artwork: three canoes – Aboriginal painting, by Leanne Bartford, Uladulla Local Aboriginal Land Council

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

### 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.

Budget Year 2

\$1,059,801

## Management challenges and opportunities

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.

### Initiative summary Year 1 (2019-20)



150 Aboriginal community members trained and qualified for general boat licence, deckhand training and coastal weed management

## Putting the Strategy into action

	Project	Location	Our achievements
	Aboriginal management of Sea Country	Southern region	<a href="#">Sea Country Education Program</a> was delivered to over 200 primary school students on the NSW South Coast and over 100 Aboriginal people were trained by Transport for NSW and obtained their boat licence.
		Shoalhaven and Eurobodalla	Online curriculum developed for Sea Country School education project. This will enable primary school students (located in the Shoalhaven and Eurobodalla areas) remote access and increase opportunity to learn about Aboriginal culture and values of the marine estate.
		Statewide	Additional funding secured through the Aboriginal Fishing Trust Fund with proposed projects extending across coastal NSW. 12 cultural permits issued. Progressing draft Hastings Cultural Fishing Local Management Plan.
		Wallaga Lake	Local men's group at Wallaga Lake re-introduced a boat building practice that has been dormant for almost 30 years. Local men built their own boat to fish in their traditional waters which has been a cultural practice of their grandfathers. The group received a grant to make their own fishing net from the Aboriginal Fishing Trust Fund and were granted a fishing permit to supply local Elders with fresh fish.
		Batemans Bay, Mogo	Documenting the Runnyford Wall as a significant cultural fish trap site was undertaken with local Elders of Batemans Bay and Mogo. The site is a fishing place dating back many generations by local Elders and has a unique history as it demonstrates creativity of Aboriginal peoples' cultural practices in adapting traditional fishing methods.
		South Coast	Seven Aboriginal community members from the Jervis Bay area successfully completed the Coxswains certification course. Participants are actively working in local Sea Country ranger teams and in the Narooma Aboriginal cultural tourism pilot project.



Aboriginal fishing using net



Boat building



Aboriginal fish catch



Men's Aboriginal boat building project

## Next steps

### Expected outcomes Stage 2 (2020-2021)

- Elders and mentors – A new project will commence in Stage 2. It 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.
- Develop Sea Country Plans with Aboriginal communities.
- Expand Aboriginal projects that took place on the South Coast to other areas in NSW.
- Commence scoping and implementation of the Aboriginal Engagement Framework for the marine estate. Finalise second round of coxswains training in Southern region.
- Develop Arakwal cultural interpretation signage with Cape Byron Marine Park.
- Develop Yaegl cultural interpretation signage with Solitary Islands Marine Park.
- Deliver Sea Custodians project with the Gumbaynggyirr people and Dolphin Marine Rescue Centre to document local Aboriginal cultural protocols for responses to marine wildlife events such as whale stranding, and to build Aboriginal people's capacity to participate in wildlife responses.
- Delivery of South West Rocks Sea Country regeneration project. Implement Stage 2 of the Safe and Sustainable Sea Country Harvest of Bivalve Shellfish for cultural purposes project.

## Further information

[Find out more about Initiative 4 projects](#)



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

## Initiative 5 – Reducing impacts on threatened and protected species

### 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.

Budget Year 2

\$1,268,231

## Management challenges and opportunities

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

### Initiative summary Year 2 (2019-20)



#### Marine wildlife:

- Trials of modified fishing gears that have the potential to reduce whale entanglements commenced. Knowledge gained from gear trials will be used to further inform future best practice advice.
- Over 180 participants across multiple agencies have undertaken training to improve response to wildlife strandings and entanglements.
- Recognising and facilitating cultural protocols (as a component of a marine wildlife event process, has gained significant traction and is being practiced routinely in some areas).
- Update of the NPWS's wildlife management database to allow access to wildlife organisations: Organisation for the Rescue and Research of Cetaceans in Australia and Dolphin Marine Conservation Park. Inclusion of non-government group using the Elements database will decrease time to help animals, makes it

**Initiative summary Year 2 (2019-20)**

easier for different groups to share information, mean all information is kept in the same place, improve coordination between groups and makes it easier to follow the progress of rescues.

- In partnership with Saving our Species and Australian Seabird Rescue, NPWS is working to protect the loggerhead and green sea turtles. A citizen science program, TurtleWatch, is being driven by community volunteers to collect valuable data to help us better understand marine turtle nesting in northern NSW beaches and the potential threats facing the species.
- Delivered wildlife observer program engaged with fishing industry to reduce wildlife engagement determine threats to fish assemblages.

**Putting the Strategy into action**

	Project	Location	Our achievements
	Protect and conserve marine wildlife – partnerships, awareness and planning	Statewide	Annual training undertaken to prepare NPWS Greater Sydney, Hunter Central Coast Branch and North Coast Branches for marine wildlife emergencies and events including seal haul outs, injured turtles or whales and dolphin strandings and entanglements.  South Coast preparedness day training complete. Whale season debrief held.
		Statewide	Whale watch operator compliance audit complete.  Code of practice for marine reptiles finalised for approval.
		Statewide	A guide to the disposal of deceased marine mammals has been prepared and is available for use by relevant state and local government agencies. <a href="https://www.environment.nsw.gov.au/topics/animals-and-plants/wildlife-management/management-of-deceased-whale">https://www.environment.nsw.gov.au/topics/animals-and-plants/wildlife-management/management-of-deceased-whale</a>
			Fabrication of additional marine wildlife rescue gear including dolphin slings, turtle mats and satellite tracking buoys for entangled whales.  Information on <a href="#">management of deceased whales</a> is now publicly available.
			80 vets trained in marine wildlife to improve survivorship and improve understanding of threats.
			Ongoing monitoring of turtle nests and hatching events with community citizen science program under the <a href="#">Saving Our Species</a> program. For more information on how to get involved email <a href="mailto:turtlewatchnsw@gmail.com">turtlewatchnsw@gmail.com</a> .

	Project	Location	Our achievements
			<p>Continued improvements to the Marine Wildlife Management Manual to guide operational responses to marine wildlife interactions.</p> <p>The NPWS online reporting system, Elements, has been expanded to allow groups that help look after injured marine wildlife to record their data. The first group, are now using the system real time to report wildlife being rescued and in care.</p>
	<p>Improve reporting of interactions with marine wildlife – data and reporting</p>		<p>Testing of marine wildlife emergency data portal for external access complete, documentation developed.</p>
	<p>Commercial fisher and observer program – ocean trap and line, estuary general and reducing threats</p>	<p>Statewide</p>	<p>The design of an observer-based ocean trap and line fishery survey was finalised to monitor wildlife interactions and bycatch in fishing gear.</p> <p>In the estuary general fishery observer program sampling conducted for 157 fishing trips during the year and over 350 trips have been completed over two years.</p> <p>Worked with OceanWatch and NSW Professional Fisherman’s Association on East Coast Whale Entanglement Mitigation Program, including a full day strategic research meeting. Participated in national discussion on the issue of whale entanglements.</p> <p>9 <a href="#">threatened seahorse hotels</a> were placed underwater in Clifton Gardens, Mosman to house a soon-to-be released colony of White’s Seahorse from SEA LIFE Sydney Aquarium as part of a breeding and recovery project. Led by the Aquarium in collaboration with DPI – Fisheries and the University of Technology Sydney. To follow their progress visit <a href="#">Sea Life Sydney Aquarium</a>.</p> <p>80 sampling trips completed for ocean trap and line, totalling 140 to date, from the ports of Brunswick Heads, Ballina, Evans Head, Coffs Harbour, South West Rocks and Forster.</p> <p>No interactions with threatened, endangered or protected species recorded during observed handline and setline fishing trips.</p>



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

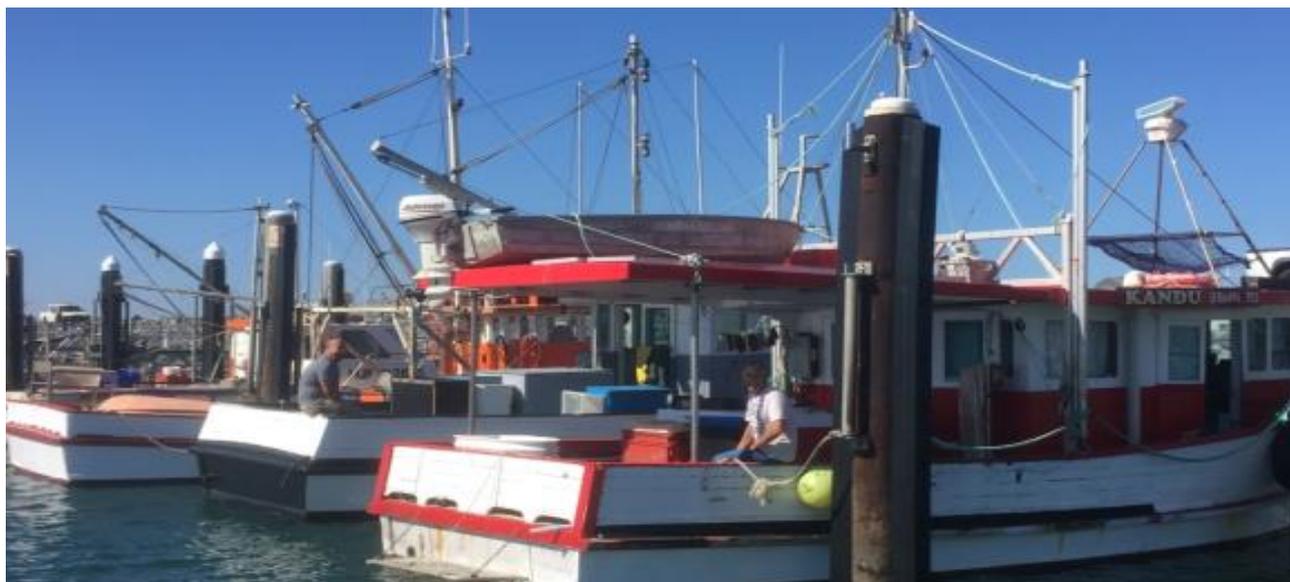
## Next steps

### Expected outcomes Stage 2 (2020-2021)

- [Saving Our Species](#) annual reporting for threatened marine species completed.
- Regular meetings of the newly established Marine Wildlife Working Group including initial review of revising Marine Wildlife Management Manual and Memorandum of Understanding with Marine Rescue and DPI – Fisheries and training requirements.
- Delivery and review of draft online training modules in marine wildlife rescue.
- Two additional agreements completed with key partners, providing training and access to the Elements marine wildlife emergency response database and reporting system.
- Review the trials with partners on the use of the Elements database so far and provide access to other partners.
- Draft observer prioritisation to inform future observer priorities. This ensures future sampling designs are representative, effective and statistically robust.
- Commenced analyses of historical bycatch (non-target species) data collected from the NSW Ocean Prawn Trawl observer program to address threats to fish assemblages (harvest and bycatch stressors) and prioritised future observer work in the Central and Northern bioregions.

## Further information

[Find out more about Initiative 5 projects](#)



## Initiative 6 – Ensuring sustainable fishing and aquaculture

### 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.

Budget Year 2

\$730,338

## Management challenges and opportunities

Sustainable fishing and aquaculture bring many benefits for the NSW community, but they also need to be managed to reduce 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.

### Initiative summary Year 2 (2019-20)



- 40+ Master fisherman graduates completed training
- 400+ inspections of recreational fishers and shellfish collectors
- assisted with removal of over 500kg waste from the marine environment
- Supporting Seafood Futures grants allocated
- draft NSW Fisheries Harvest Strategy Policy and Guidelines progressed.

## Putting the Strategy into action

	Project	Location	Our achievements
	Fisheries enhancements	Lake Macquarie and Botany Bay	DPI – Fisheries stocked juvenile yellowtail kingfish into Lake Macquarie (2,600) and Botany Bay ( <b>6,500</b> ) as part of marine stocking program to boost fish numbers in popular fishing areas in Lake Macquarie and Botany Bay.
		Newcastle and Wollongong	Newcastle and Wollongong offshore artificial reefs deployed.
	Harvest strategies (fishing)	Statewide	An inventory of all recreational fishing data sources available to service harvest strategy development in NSW has been completed.
			Draft harvest strategy policy and guidelines development was presented to fisheries committees that advise the Minister for Agriculture and Western NSW: Aboriginal Fisheries Advisory Committee; Commercial Fisheries Advisory Committee; Recreational Fishing NSW; Ministerial Fisheries Advisory Committee. Positive feedback received from all committees. Manuscript on species prioritisation submitted to a peer reviewed journal.
			Review of residual impact of commercial fishing on NSW marine estate in relation to the statewide Threat and Risk Assessment and the commercial fisheries business adjustment program currently under way.
			Review of DPI – Fisheries datasets to understand data strengths/weaknesses/gaps for servicing harvest strategies is ongoing.
			New research collaborations to support harvest strategy development with <a href="#">Commonwealth Scientific and Industrial Research Organisation</a> (CSIRO) and University of Tasmania.
	Application of marine aquaculture strategy	Statewide	Research infrastructure in place and data collection commenced examining relationship between oyster aquaculture and <i>Posidonia australis</i> seagrass.
		Statewide	Desktop and fieldwork on <a href="#">research project</a> led by University of NSW examining the impacts of how shading and bio-deposition processes

	Project	Location	Our achievements
	Oyster aquaculture: best practice		<p>from different oyster infrastructure can affect important seagrass habitat determine how to minimise potential impacts.</p> <p>Master Fisherman Program training modules and assessment materials updated to align with most recent NSW Ocean Trap and Line Fishery <a href="#">Code of Practice</a> for Reducing Whale Entanglements to inform best practice in the field to reduce whale interactions.</p>
	Promoting the community benefits of fishing	Statewide	<a href="#">Supporting Seafood Futures Grants Program</a> (SSF) – seven of nine successful applicants in round two have received their funding. Round one delivered funding to 12 successful applicants in 2019.
	Recreational fishing environmental assessment	Statewide	DPI – Fisheries staff assisted in the 2020 Tide to Tip campaign, a series of Australian oyster industry led clean-up events. <a href="#">The event</a> resulted in the removal of over 500kg waste from numerous estuaries in NSW.
		South Coast	Signage to encourage responsible fishing around stingrays that frequent boat ramps and fish cleaning tables designed and printed. Signs installed at multiple locations on South Coast.
	Seafood industry training	Statewide	<p>Master Fisherman Program training workshops resulting in accredited fishers promoted through OceanWatch website. DPI – Fisheries attended seafood industry function at Parliament House with OceanWatch, communicating Master Fisherman Program progress.</p> <p>OceanWatch Australia continue to promote the <a href="#">Master Fisherman Program</a> and increase industry participation via industry text messages, emails, individual phone calls, a workshop in Woy Woy, and representation at a community focused seafood festival at Wisemans Ferry.</p>
	Mobile Compliance Squad	Statewide	Officers from the Greater Metropolitan Mobile Squad conducted at least 400 inspections of recreational fishers and shellfish collectors resulting in the issue of 95 written warnings, 62 penalty notices, initiated eight prosecution actions and seized 3460 fish including invertebrates and 17 items of fishing gear.

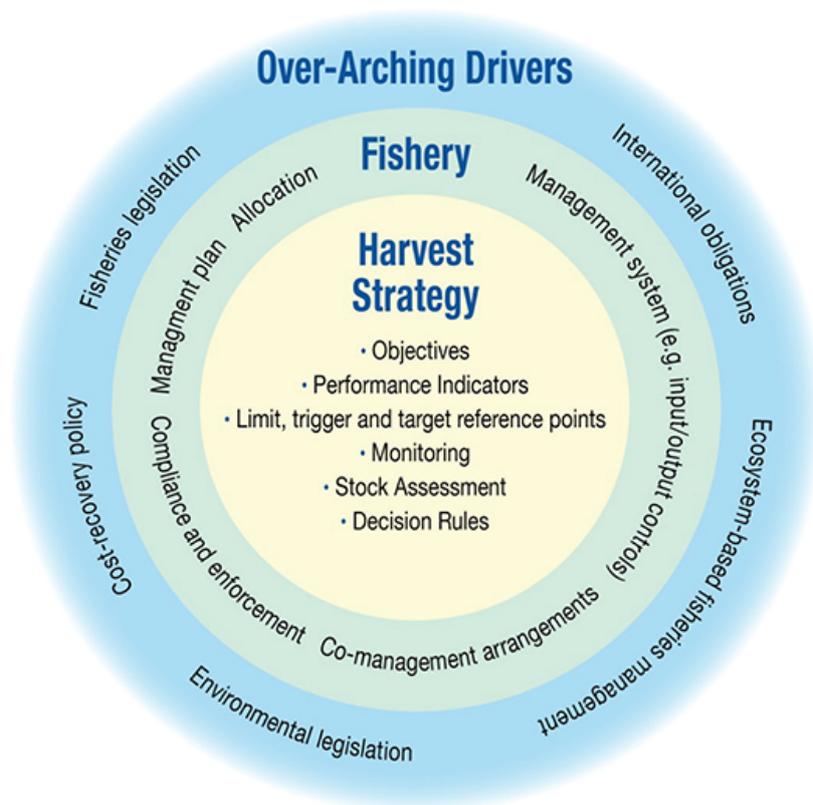


Image: Overarching drivers of Fishery Harvest Strategy

## Next steps

### Expected outcomes Stage 2 (2020-2021)

- DPI - Fisheries will finalise the NSW Fisheries Harvest Strategy Policy, providing the Aboriginal cultural, commercial and recreational fishing industries with greater certainty.
- Public consultation on Draft Harvest Strategy Policy and Guidelines.
- Formation of harvest strategy working groups for priority species and progress development of harvest strategies.
- Progress development and analysis of potential harvest strategies using Fishpath and involving external expert consultation.
- Will complete an environmental assessment of recreational fishing in NSW and prepare a Fishery Management Plan to ensure fishing continues to be sustainable and accessible for future generations.
- Continue investment in marine industries with training and support in sustainable fishing practices provided to fishers to enhance awareness and build capacity in the industry.
- A new Tangler bin project in Sydney with Transport for NSW and a number of Sydney Councils will result in new installations in key fishing locations next quarter.
- Continue preparations to have Tweed offshore artificial reef ready for deployment by end of 2020.

## Further information

[Find out more about Initiative 6 projects](#)



## Initiative 7 – Enabling safe and sustainable boating

### 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.

Budget Year 1

funded by TfNSW

## Management challenges and opportunities

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.

### Initiative summary Year 2 (2019-20)



200+ maritime infrastructure projects delivered since the Boating Now program was launched

Announcement of Boating Now Round 3 with up to \$28 million funding available for new maritime infrastructure projects



1400+ powered domestic commercial vessel inspections undertaken for safety and environmental standards

## Putting the Strategy into action

	Project	Location	Our achievements
	Safe and sustainable boating	Statewide	The NSW Government has announced \$28 million under Round 3 of the NSW Boating Now Program for maritime infrastructure and facilities needed across NSW for safe, accessible and enjoyable recreational and commercial boating. This investment also supports broader economic and social benefits for local communities and visitors. Assessment of applications received for round three is completed. For more information visit <a href="#">NSW Boating Now Program</a> .
	Improved mooring management	Statewide	<p>NSW Maritime is trialling a new type of mooring apparatus to protect sensitive seagrass communities while keeping boaters safe. Four Hybrid Environmentally Friendly Moorings have been installed at sites around Shoal Bay. These moorings use a 4.5t concrete gravity weight to anchor the MarineFlex elasticated rode system. The use of gravity weight anchors ensures that these moorings can be easily maintained for boaters' continued safety. Transport for NSW will continue to observe trial progress and enhance moorings management in NSW. For more information visit <a href="#">Trial of the Hybrid Environmentally Friendly Moorings at Shoal Bay</a></p> <p>Preliminary results of the environmentally friendly mooring trial at Port Stephens-Great Lakes Marine Park are positive. After six months there is no movement of the four apparatus being trialled, noting some significant weather events have occurred in this period.</p>
	Enforcement of environmental standards and regulations	Statewide	TfNSW has continued to enforce environmental standards and regulations among domestic commercial vessels and recreational vessels. More than 1,400 inspections were completed in Financial Year 2019-20 which accounts for about 21% of all powered domestic commercial vessels operating in NSW.



## Next steps

### Expected outcomes Stage 2 (2020-2021)

- Announcement of successful projects from Round 3 of the [Boating Now Program](#).
- Working with partners in the Boating Now Program to improve safe and sustainable access to the marine estate.
- Progressing the development of a performance-based standards to improve the safety and environmental outcomes from mooring apparatus.
- Improving moorings audits and better enforcing of license conditions.
- Reviewing the Marine Pollution Act 2012 and its role in protecting the NSW environment from pollutants discharged from ships.
- Continuing to enforce environmental standards and regulations among domestic commercial vessels and recreational vessels.
- Investigating ways to manage or remove vessels that are reaching or have reached the end of their useful life to reduce potential environmental harm and improve future mooring access.
- Working collaboratively with key stakeholders to invest in maritime infrastructure as part of the [Maritime Infrastructure Plan 2019-2024](#).
- Continuing to educate recreational boaters about compliance with environmental regulations.

## Further information

[Find out more about Initiative 7 projects](#)



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

### 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.

Budget Year 2

\$1,266,537

## Management challenges and opportunities

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.

### Initiative summary Year 2 (2019-20)



Finalised and published Integrated monitoring and evaluation framework for the [Marine Integrated Monitoring Program](#) (MIMP)

Finalised Community wellbeing framework to facilitate strategic monitoring of social, cultural and economic components of the MIMP.

Finalised draft of ten-year Marine Estate Education Strategy

## Putting the Strategy into action

	Project	Location	Our achievements
	Marine Education Strategy	Statewide	<p>Two interagency workshops held to progress the development of the draft NSW Marine Estate Education Strategy and the draft Marine Estate Champions program plan.</p> <p>Finalised the draft Marine Estate Education Strategy in preparation for targeted consultation with key local government educators, Aboriginal organisations and other relevant environmental educators.</p>
	Community wellbeing surveys	Statewide	<p>Finalised Community wellbeing framework (CWF) to guide strategic monitoring of social, cultural and economic components of the Marine Estate – this links to the MIMP.</p> <p>Engaged consultant to assist with implementation of the CWF</p> <p>Commenced development of indicators and questions to inform all elements in the CWF.</p> <p>Drafted questionnaire and sampling approach for engaging coastal residents and visitors</p> <p>Commenced questionnaire and sampling approach for engaging Aboriginal peoples in consultation with cultural working group (Initiative 4).</p> <p>Initiated review and needs analysis for socioecological research associated with the Strategy (in collaboration with the University of Tasmania Centre for Marine Socioecology).</p> <p>Finalised and published the 'Integrated monitoring and evaluation framework for the MIMP' and associated summary.</p>
	Resource use management and activity mapping	Statewide	<p>Marine Estate Activity Mapping (MEAM) metadatabase and data portal specifications completed to capture data on human uses in the marine estate.</p> <p>Aerial survey data of human activity on the coastal fringe between Stockton and Crowdy Head (2017/18) is under way with 3382 images (~45%) now analysed.</p>



Image: NSW marine estate community wellbeing framework illustration by Catfish Creative

## Next steps

### Expected outcomes Stage 2 (2020-2021)

- Finalise the Marine Estate Education Strategy after targeted consultation with key local government educators, Aboriginal organisations and other relevant environmental educators to review the draft Strategy.
- Draft public reports for community wellbeing framework and community wellbeing indicators.
- Implement surveys to collect data on priority indicators within the wellbeing framework for coastal residents, visitors and Aboriginal people.

## Further information

[Find out more about Initiative 8 projects](#)

## Initiative 9 – Delivering effective governance



### 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.

Budget Year 2

\$537,446

## Management challenges and opportunities

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.

### Initiative summary Year 2 (2019-20)

	<p>5 statewide project management training workshops for over 40 Strategy staff.</p>
	<p>Report for governance of the Richmond catchment received</p>

**Initiative summary Year 2 (2019-20)**



4 governance framework stakeholder workshops delivered

**Putting the Strategy into action**

	Project	Location	Our achievements
	Strategy governance and project management	Statewide	<p>Strategy program reviewed by an independent review panel via a Facilitated Recurrent Expenditure Assessment Framework (REAF) health check in February 2020. This resulted in an overall rating of HIGH based on the review panels level of confidence that the Strategy is being effectively developed and delivered in accordance with NSW Government objectives.</p> <p>Ongoing and continual improvements to reporting, financial management, planning and record keeping procedures by providing extensive project management support and training across all Strategy agencies and partners.</p> <p>Risk management, rescheduling and reprioritising in response to impacts of extreme events (fires, floods, drought, COVID-19).</p> <p>Released Strategy <a href="#">Quarter 2, 3 and 4 snapshots</a> via Marine estate website.</p> <p>Facilitated Strategy Stage 2 program development across Marine Estate Management Authority agencies</p> <p>Prepared improved project management and reporting processes for Stage 2.</p>
	Governance Framework pilot	Statewide	<p>Governance pilot project on the Richmond River – <a href="#">Alluvium consultant's report</a> received by government and provided local councils for review and endorsement. The recommendations will then be considered by government as a package for implementation.</p>

## Next steps

### Expected outcomes Stage 2 (2020-2021)

- Update communications and engagement material for Stage 2.
- Finalise the Stage 2 Strategy Implementation Plan.

## Further information

[Find out more about Initiative 9 projects](#)

## Conclusion

The foundations for successful Strategy implementation were built in the first year. This included the development of a project management and governance framework, recruitment of staff, creating partnerships and relationships with stakeholders and commencing the development of a Marine Integrated Monitoring Program. In addition, 41 of the 53 actions in the Strategy commenced. Now that this initial groundwork has been laid, the Strategy has delivered tangible outcomes across the NSW marine estate in the second year, adding to the work that has been achieved in year 1. The overall budget for the second year of the Strategy was \$26.8 million which was used across the initiatives to continue addressing the threats to the NSW marine estate.

## Appendix A – Communications and engagement

Communications and engagement with a wide variety of stakeholders and the community about the Strategy was undertaken on during the year. Key communication and engagement activities are listed below.

### Summary

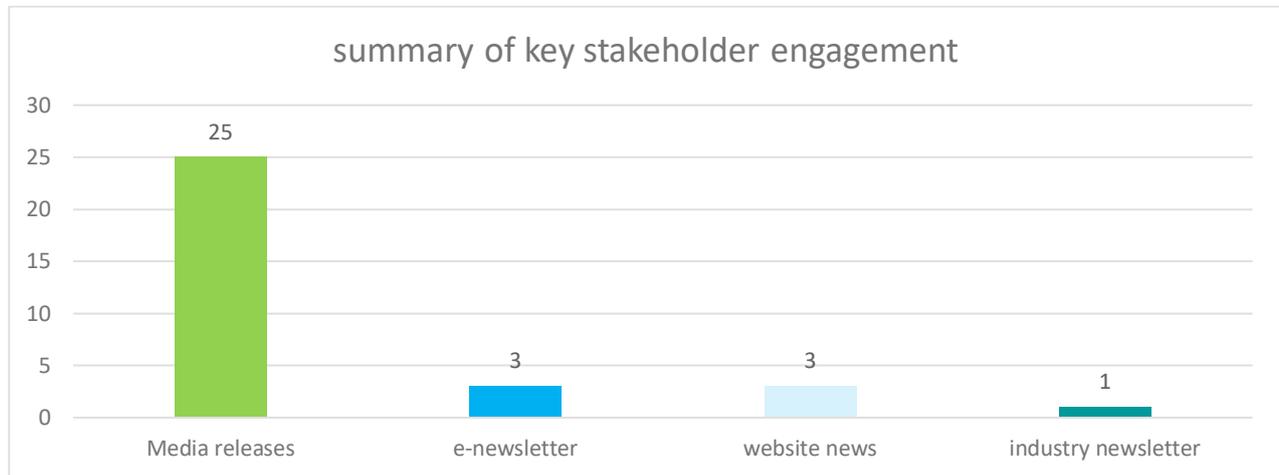


Table 3 Communication and engagement with stakeholders during Stage 1, year 2 (2019-2020)

Date	Stakeholder	Activity	Initiative	Communication and engagement
August 2019	NSW community	Media release	1	<a href="#">Oyster Reef Restoration - the results are in</a>
August 2019	NSW community	Media release	9	<a href="#">Be a part of your local marine park advisory committee</a>
December 2019	NSW community	Marine estate news	2	<a href="https://www.marine.nsw.gov.au/knowledge-centre/latest-news/paving-the-way-for-better-water-quality">https://www.marine.nsw.gov.au/knowledge-centre/latest-news/paving-the-way-for-better-water-quality</a>
December 2019	NSW community	Media release	5	<a href="#">Breeding project for endangered seahorses</a>
December 2019	NSW community	Media release	1	<a href="#">Oyster Reef Restoration gets underway at Port Stephens - Great Lakes Marine Park</a>
December 2019	NSW community	Marine Estate e-newsletter		<a href="#">Marine Estate newsletter December 2019</a> <a href="#">Reporting on marine estate programs</a> <a href="#">Cooperation is key to Richmond River projects</a> <a href="#">Students get hands-on with Aboriginal culture</a> <a href="#">Deep dive on health of NSW coastline</a> <a href="#">Helping hand for protected shorebirds</a> <a href="#">Lord Howe Island sharks are on the move</a> <a href="#">At the ready for marine wildlife in need</a>
January 2020	NSW community	Marine estate news	1	<a href="#">\$5m in grants for bushfire affected coastal waterways</a>
February 2020	NSW community	Media release	5	<a href="#">Successful rescue operation saves a shark's eyesight</a>

Date	Stakeholder	Activity	Initiative	Communication and engagement
March 2020	NSW community	Media release	2	<a href="#">NSW to host the international shellfish restoration conference</a>
March 2020	NSW community	Media release	5	<a href="#">Five-star seahorse hotels launched in Sydney</a>
March 2020	NSW community	Marine estate news	1	<a href="#">Cleaner water on farms creates a cleaner catchment</a>
March 2020	NSW community	Marine estate news	4	<a href="#">Marine estate benefits from Aboriginal knowledge and expertise</a>
March 2020	NSW community	Marine estate news	1	<a href="#">Looking for new life on artificial oyster reefs in Port Stephens</a>
March 2020	NSW community	Marine estate news	4	<a href="#">Volunteers remove tonnes of waste from Dowadee Island</a>
March 2020	NSW community	Marine estate news	2	<a href="#">Brains trust meets to discuss breakwaters</a>
March 2020	NSW community	Marine estate news	4	<a href="#">Preserving traditional fishing practices</a>
April 2020	NSW community	Media release	1	<a href="#">Shellfish Reef Restoration Survey Recreational Fishing Community</a>
April 2020	NSW community	Media release	4	<a href="#">Applications Close Soon - Support for Aboriginal cultural fishing and economic development</a>
April 2020	NSW community	Media release	1	<a href="#">Blueberry trials soon to expand into new greenhouse site</a>
April 2020	NSW community	Marine estate e-newsletter	5	<a href="#">Newsletter - Marine Estate Management Authority - April 2020</a>
			5	<a href="#">Five-star seahorse hotels open in Sydney</a>
			4	<a href="#">Marine estate benefits from Aboriginal knowledge and expertise</a>
			1	<a href="#">Looking for new life on artificial oyster reefs</a>
			1	<a href="#">Brains trust meets to discuss breakwaters</a>
			2	<a href="#">Farm projects help create a cleaner water catchment</a>
			1	<a href="#">Volunteers remove tonnes of waste from Dowadee Island</a>
			1	<a href="#">Volunteers remove tonnes of waste from Dowadee Island</a>
			5	<a href="#">Successful rescue operation saves a shark's eyesight</a>
May 2020	NSW community	Media release	7	<a href="#">Environmental win worthy of celebration: YM Efficiency container retrieval success</a>
May 2020	NSW community	Media release	1	<a href="#">Oyster Reef Restoration Pilot Builds One Hectare of Habitat</a>
May 2020	NSW community	Media release	6	<a href="#">Calls for applications for Total Allowable Fishing Committee</a>
May 2020	NSW community	Media release	7	<a href="#">NSW coastal communities on high alert for debris and containers</a>
May 2020	NSW community	Media release	7	<a href="#">Five shipping containers wash ashore near Norah Head</a>

Date	Stakeholder	Activity	Initiative	Communication and engagement
May 2020	NSW community	Media release	6	<a href="#">Six illegal fishers apprehended on NSW Central Coast</a>
May 2020	NSW community	Media release	7	<a href="#">Scale of container clean up expands</a>
May 2020	NSW community	Newsletter	1	<a href="#">Fertiliser Stewardship Group Newsletter</a>
May 2020	NSW community	Media release	8	<a href="#">NSW 'living museum' celebrates milestone achievement (Long Reef Aquatic Reserve)</a>
June 2020	NSW community	Media release	6	<a href="#">Harvest strategies to drive NSW fishing management decisions</a>
June 2020	NSW community	Media release	7	<a href="#">Hazardous weather impacts NSW coastline but does not hamper clean up effort</a>
June 2020	NSW community	Media release	6	<a href="#">Fishing in Sanctuary Zones not tolerated</a>
June 2020	NSW community	Media release	7	<a href="#">Coastal flights to determine effects of this week's wild weather on containers and debris</a>
June 2020	NSW community	Media release	5	<a href="#">Two hundred sea turtle hatchlings cause for shellebration</a>
June 2020	NSW community	Media release	5	<a href="#">Critically endangered shorebirds at risk from off-leash dogs in Byron Shire</a>
June 2020	NSW community	Media release	6	<a href="#">\$9 million to support NSW Seafood Industries</a>
June 2020	NSW community	Marine estate e-newsletter	5	<a href="#">eNewsletter - Marine Estate Management Authority - June 2020</a>
			2	<a href="#">Research finds NSW commercial fishing is seabird-friendly</a>
			3	<a href="#">Restoring natural water levels to Tomago Wetlands</a> <a href="#">Researchers find climate change indicators</a>

## Appendix B – Presentations related to the Strategy

Table 4. presentations related to the Strategy during Stage 1, year 2 (2019-2020)

Title	Presenter
Monitoring NSW Estuarine Health, Towards a More Holistic Approach	DPIE – Environment, Energy and Science
The NSW Marine Estate Management Strategy – Connecting the Coast, Catchment and Community	DPI -Fisheries
Building Capacity to Implement a Risk-based Framework for Achieving Waterway Health Outcomes	DPIE – Environment, Energy and Science
Updating the NSW Water Quality Objectives – Stage1: Establishing Foundational Mapping Layers	DPIE – Environment, Energy and Science
Urban Heating and Cooling Corridors; the Perfect Climate for Water Sensitive Urban Design	DPIE – Environment, Energy and Science
The Marine Estate Coastal Floodplain Prioritisation Study	DPI – Fisheries
Rebuilding Reefs and Their Connection to Community	DPI – Fisheries
Mitigation of Diffuse Pollutants Via Management of Riparian Zones Riverbanks and Roads	North Coast Local Land Services
Best Management Practice in Intensive Coastal Agriculture: The Clean Coastal Catchments Project	DPI – Fisheries
Marine Integrated Monitoring Program: A Triple Bottom Line Approach	DPI – Fisheries
Estuary wide Strategies to Streamline the Assessment of Domestic Foreshore Structures and Bank Management Works	DPI – Fisheries and DPIE – Crown Lands
Moving on from Rock: a More Natural Approach to Bank Stability Using Logs and Revegetation	Hunter Local Land Services