

MARINE ESTATE MANAGEMENT STRATEGY

Quarterly snapshot

Reporting period – Year 3, Quarter 4 (April – June 2021)

MARINE ESTATE MANAGEMENT AUTHORITY

INT21/141697



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

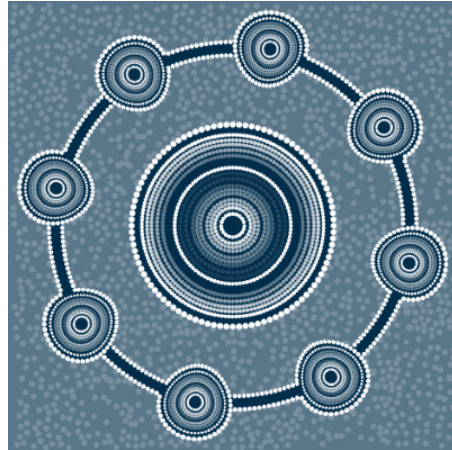


Image 1: Meeting place. Image: iStock.com-Kira

Cover Image – 3 Canoes, Leanne Bartford, Ulladulla Aboriginal Land Council

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Part A: Strategy snapshot

Reporting period

Year	Quarter	From	To
3	4	1 April 2021	30 June 2021

Purpose of this snapshot

The purpose of this snapshot is to provide key stakeholders and the community with regular progress updates on the implementation of the Marine Estate Management Strategy (the Strategy). This snapshot includes updates on notable project highlights and informs stakeholders of key deliverables in the fourth quarter, Year 3. Additionally, activities planned for the next reporting period (1 July 2021 – 31 October 2021) are highlighted in the ‘What’s next’ sections. The Program is moving from quarterly reporting to tri-annual reporting in 2021/22, although look out for regular updates by following us on [Instagram](#), visiting the [Marine Estate website](#), or by signing up to the marine estate newsletter through the link on this [page](#). This snapshot should be read in conjunction with the [Strategy Implementation Plan](#).

Delivering long term outcomes

The Strategy’s nine initiatives contribute to delivering healthy waterways and coastal habitats, sustainable land use practices, as well as planning for climate change, protecting Aboriginal cultural values of the marine estate, reducing impacts on marine life, delivering sustainable boating and fishing, enhancing social, cultural and economic benefits and delivering effective governance. Additionally, program management, monitoring, reporting and evaluation is an overarching component of the Strategy to provide assurance to the community and stakeholders that the program is implemented and monitored effectively and in a coordinated, integrated and transparent way.

Collectively, the initiative projects will improve water quality, reduce marine litter, improve the health of coastal habitats, reduce threats to marine wildlife, ensure sustainable foreshore development, fishing and aquaculture, promote safe and sustainable boating, prepare for climate change and protect the Aboriginal cultural values of the marine estate.






Detailed information on the Marine Estate Management Strategy is available [online](#) and should be referred to when reading this document.

Program highlights this quarter

There are over 100 projects underway in 2020/2021 and good progress has occurred throughout the Program. In the quarterly snapshot we focus on some of the most notable achievements as well as key challenges. The majority of updates provided in the report are found in Initiative 1 (Improving water quality and reducing litter) as a significant portion of Strategy resources is devoted to reducing the most significant threats to the marine estate, which contribute to poor water quality.

Significant work has been achieved this quarter across the nine initiatives in the Strategy. Key highlights this quarter show on-ground works to address water quality are progressing, we continue to build capacity and engage with our stakeholders, and extensive research and monitoring continues.

The highlights this quarter for each initiative are numerous; a selection of six highlights illustrating the breadth of work and accomplishments achieved this quarter are below.

Project	Project icon	Highlights
Oyster reef restoration		The oyster reef restoration team successfully hosted an international conference on shellfish restoration with over 100 delegates attending both in person and online. The team shared information with the experts in the field and contributed information to increase capacity for shellfish restoration around the world.
Estuary foreshore management strategies		The Decision Support Tool (DST), which has been developed to assist experts identify erosion, qualify its severity and recommend best management practice treatment in a consistent manner that can be mapped for an estuary-wide context, is now in testing and refinement. This process is underway at over 60 sites in different estuary types in NSW and will continue over the next six months to December 2021.
Climate change threats to seagrass, mangrove and saltmarsh		Development of a first-pass method to predict migration of mangrove and saltmarsh under sea level rise has been completed. A manuscript describing the method has been submitted for acceptance in a peer-reviewed journal.
Planning to protect marine wildlife		NPWS declared the first ever marine mammal special protection order under the Biodiversity Conservation Regulation 2017 on 29 June. The order prevented boats, aircraft, drones and swimmers from approaching within 500m of a Southern Right Whale that entered and stayed several days in Wallis Lake near Forster.
Mooring strategy		The Private Mooring Map website is now live which enables users to locate available private moorings, enquire regarding wait lists and applicable restrictions, and submit applications.

Part B: Initiative summaries

Initiative summaries include updates on notable project highlights from the reporting quarter as well as what is planned for the next reporting period. A full update on all projects will be reported in the Strategy's Implementation Annual Report for the 2020/2021 financial year. For more information on the location of projects refer to the [Strategy Implementation Plan](#) or [Strategy project locations map](#) on the [marine estate website](#).

Initiative 1 – Improving water quality and reducing litter




Project summary







A wide range of projects coordinated by several collaborative government agencies are underway to improve water quality, reduce litter and manage diffuse water quality issues across coastal areas draining to the marine estate. Water pollution is identified as the greatest threat to the marine estate.




Contributions from several partner agencies have resulted in numerous notable achievements in the fourth quarter. On-ground works addressing significant threats to water quality, including erosion and environmental degradation from farming continued, while policy and governance improvements progressed. Additionally, significant information sharing and collaboration was spearheaded with an international conference hosted by the oyster reef restoration team.

Quarterly progress and highlights

A breakdown of progress is outlined below.



Project	Project icon	Lead agency	Location	Progress
Risk-based framework for urban waterway health		DPIE-EES	The Hills, Hawkesbury, Camden, Campbelltown, Liverpool, Fairfield, Blacktown and Penrith	A new set of stormwater development controls developed for Wianamata-South Creek that explicitly protects and restores the creeks within the Aerotropolis. These were publicly exhibited and industry feedback on controls is now under review.
NSW Litter Prevention Strategy		DPIE-EES	Statewide	Confirmation received that the State's 40 per cent litter reduction target has been achieved, with a 43 percent reduction in NSW litter volume since 2013/14. A 60 per cent litter reduction by 2030 target was announced in the new Waste and Sustainable Materials Strategy 2041. The Key Littered Item Study, a new marine based litter monitoring program was confirmed as the indicator to track progress against the target.
Estuarine water quality monitoring		DPIE-EES	Statewide	2020/21 estuarine water quality sampling completed. Data from sampling soon to be available on Sharing and Enabling Environmental Data (SEED), and report card grades showing condition of estuaries soon available on website.








Project	Project icon	Lead agency	Location	Progress
Coastal floodplain study		DPI-F	Northern NSW	<p>Consultation sessions on draft reports were held with Clarence, Richmond and Tweed Councils, Water Research Lab (WRL) and DPI staff. Reports prioritise acid and deoxygenated water risk areas across target catchments, provide suggested remediation options, and model impacts of sea level rise on drainage infrastructure and vulnerable floodplain areas.</p> <p>Additional floodgate survey contracts for Tweed, Hastings, Macleay, Shoalhaven and Manning catchments signed, data collected for Tweed and Shoalhaven.</p>
Fish friendly workshops for councils		DPI-F	Northern NSW	<p>Four workshops (with 91 attendees) were completed at Byron, Tweed, Kyogle and Lismore Councils. This brings the total number of workshops for the program to 9 LGAs in the North Coast. Previous workshops from 2019 to March 2021 have been held at Kempsey, Nambucca, Port Macquarie-Hastings, Ballina and Richmond Councils. The program has now reached 231 workshop participants.</p> <p>Audit of construction sites completed. All 13 LGAs on the NSW North Coast have been audited with over 160 sites inspected.</p>
Oyster reef restoration		DPI-F	Statewide	<p>An additional 1.5ha of reef area added to Myall and Karuah sites in the Port Stephens-Great Lakes Marine Park (total now 2.5ha). International Conference on Shellfish Restoration held in Nelson Bay with over 100 delegates in attendance. Shellfish Reef Restoration Guidelines published and made available digitally via the marine estate website, with media promotion underway.</p>
Clean coastal catchments research		DPI-Ag	Northern NSW	<p>Blueberry - Research at Wollongbar now fully operational. Staff and farmers at Coffs Harbour trained in the use of Priva (fertigation control equipment). Latest blueberry research published and presented at two international Symposia.</p>
Riverbank vegetation improvements		LLS	Midcoast	<p>Approximately 52ha of maintenance works entailing follow up weeding, watering and plant replacement completed this quarter.</p>
Clean coastal catchment on-ground works		LLS	Coffs Harbour, Clarence Valley, Bega Valley, Eurobodalla	<p>Irrigation assessments completed at 9 farms in April.</p> <p>Six agreements developed with landholders in the Merimbula, Tuross, Tilba, Buckenbowra, Shoalhaven and Congo catchments, totalling 33 ha/7km of riparian vegetation protected and</p>

Project	Project icon	Lead agency	Location	Progress
Riverbank stabilisation		LLS	Ballina Kiama, Eurobodalla,	enhanced and 11.5ha revegetation along 2.4km stream length. Bank stabilisation works totalling 760m completed on two sites - including 100 snag hotels. Bank erosion works completed at two sites totalling 285m of bank protection works.
Coastal wetland rehabilitation		DPI-F	Midcoast, Kempsey, Port Stephens, Shoalhaven	NPWS, DPIE-Coastal Lands Protection Scheme (CLPS) and TfNSW working with MEMS Wetland Rehabilitation team to secure several priority properties to enable rehabilitation of vast areas of floodplain wetland. Monitoring program initiated at Clybucca and Crookhaven sites. Tomago wetland rehabilitating well after repairs undertaken to modified floodgates and tidal flushing reintroduced.
Marine litter campaign		DPIE-EES	Statewide	Marine litter campaign launched in February 2021 is now completed. Campaign evaluation included a state-wide survey of 1700 NSW residents. The evaluation results will inform the delivery of the next campaign in 2022.

What's next?

Work that is planned to occur in the following reporting period is highlighted below, although unexpected changes to scheduling can occur and will be communicated to affected stakeholders.

Project	Project icon	Lead agency	Location	Anticipated work
Risk-based framework for regional waterway health		DPI-F	Lismore Kyogle, Byron, Ballina, Lismore and Richmond Valley	Water quality monitoring project to identify results of implementation of the Best Management Practice on macadamia plantations delivered under Clean Coastal Catchments, in partnership with DPI Ag, Southern Cross University, North Coast LLS, local government and private landholders. Formation of a collaborative partnership group and hold the first meeting with stakeholders from previously run Richmond River catchment workshops.
Coastal floodplain study		DPI-F	Tweed, Richmond, Clarence, Macleay, Hastings, Manning & Shoalhaven	Continue with remaining local government consultation on draft reports. Communicate and consult with local government about any proposed changes prior to inclusion. Complete Manning and Hastings survey work (Macleay a future focus).

Project	Project icon	Lead agency	Location	Anticipated work
Fish friendly councils		DPI-F	Bellingen, Coffs Harbour, Larence & Tenerfield Statewide	Four Fish Friendly Council workshops planned, with Bellingen and Coffs Harbour Councils in July and Clarence and Tenerfield Councils in August 2021 (pending COVID-19 restrictions). Release of Fish Friendly Council project videos on erosion and sediment control, remediation orders, temporary crossings and dewatering.
Oyster reef restoration		DPI-F	Port Stephens	Finalise plans for citizen science activities for the South Coast and commence engaging the community on this opportunity. Placement of 4 information signs for the Port Stephens project and host naming ceremony with Worimi people.
Riparian vegetation		LLS	Bega Valley, Shoalhaven, Eurobodalla, Ballina and Midcoast LGAs	Complete extended landholder projects and establish new ones. Extend monitoring program, establish new monitoring sites.
Clean coastal catchment works		LLS	Bega Valley, Eurobodalla Coffs Harbour, Clarence Valley	Work with landholders to ensure that on-ground works are completed according to revised schedules. 17 applicants shortlisted for funding will be reviewed, and funds allocated for work.
Marine Debris Working Group		DPIE - EES	Statewide	Final report from UNSW summarising threat and risk assessment results.
Marine Litter Campaign		DPIE - EES	Statewide	NSW EPA will review the campaign evaluation (statewide survey of 1700 NSW residents).
Estuarine water quality monitoring		DPIE- EES	Statewide	Health of the Estuaries reporting dashboard on NSW environment webpages.

More information

More information on Initiative 1 projects is on the marine estate web site [here](#).

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

Project summary






Initiative 2 seeks to improve coastal and marine habitats, and foreshore and waterway management, through various projects. A multiagency and local government collaborative effort is underway to better coordinate the prioritisation of rehabilitation works and funding, and strategies that facilitate streamlined approvals.

This quarter has seen a focus on consultation on, and peer review of several key strategy documents, mapping tools and guidelines documents designed to improve coordination. This has included consultation with 11 coastal councils to discuss key issues with the current regulatory approval processes for coastal floodplain drainage management. Toward the end of the quarter a methodology document for development of Marine Vegetation Strategies was shared with experts to complete a period of peer review. Also, the Estuary Foreshore Decision Support tool has entered a period of extensive testing by experts in a wide range of settings along the NSW coastline.

Significant seagrass, mangrove and saltmarsh mapping has been achieved with updated mapping completed for priority estuaries and the now automated process of mapping of artificial structures and disturbances. Work is also underway on analysing a large underwater video data set to produce maps of reef fish assemblages throughout the Greater Sydney region.




Quarterly progress and highlights

A breakdown of progress is outlined below.

Project	Project icon	Lead agency	Location	Progress
Coastal design guidelines review		DPIE-PA	Statewide	Guidelines reviewed by stakeholders including MEMS agency partners and coastal councils. Extensive feedback received which will help ensure the guidelines meet stakeholder needs.
Subtidal reef monitoring		DPI-F	Greater Sydney	Publication of the scientific paper - "Habitat and humans predict the distribution of juvenile and adult snapper (<i>Sparidae: Chrysophrys auratus</i>) along Australia's most populated coastline" in Estuarine, Coastal and Shelf Science .
Domestic waterway structure strategies		DPI-F	Shoalhaven	Soil Conservation Service contracted to remove 3 unauthorised and unclaimed structures in St. Georges Basin to reduce priority threats and risks to environmental, social, cultural and economic values.
Estuary foreshore management strategies		DPI-F	Statewide	The Decision Support Tool (DST) testing and refinement underway, with testing occurring in over 60 sites in NSW to continue over the next six months to December 2021.
Reviewing jetty designs		DPI-F	Greater Sydney	Finalisation of fieldwork assessing the best jetty designs to preserve seagrass in Port Hacking has been completed.

What's next?

Work that is planned to occur in the following reporting period is highlighted below, although unexpected changes to scheduling can occur and will be communicated to affected stakeholders.

Project	Project icon	Lead agency	Location	Anticipated work
Reviewing jetty designs		DPI-F	Greater Sydney	Finalisation of the statistical analysis assessing jetty design features on seagrass distributions in Port Hacking.
Marine vegetation strategies		DPI-F	Statewide	Finalisation of a report prioritising coastal wetland restoration using a first pass prioritisation for blue carbon and co-benefits in NSW.
Subtidal reef monitoring		DPI-F	Greater Sydney	Finalisation of maps of reef fish assemblages across Greater Sydney region. Finalisation of a paper on kelp distributions across Greater Sydney region.

More information



More information on Initiative 2 projects is on the marine estate web site [here](#).

Initiative 3 – Planning for climate change

Project summary



Initiative 3 aims to incorporate climate change impacts into adaptation planning, strategies and decision making. Progress is being made to monitor and report on the ongoing and likely effects of climate change in the NSW marine estate. The aim is to fill knowledge gaps in climate change impacts. Improving our knowledge of climate change impacts contributes to increasing the capacity of coastal and marine managers and communities to anticipate climatic impacts. During Quarter 4 a first-pass method to predict migration of mangrove and saltmarsh under sea level rise was completed. This method and related outputs will contribute to prioritisation of future research efforts and management options in line with targeted outcomes of the initiative. Monitoring and research is improving scientists understanding of the impacts of climate change on the marine estate. Baseline data has been collected for the third year on rocky reef biota and has formed the basis of new scientific publications.

Quarterly progress and highlights

Project	Project icon	Lead agency	Location	Progress
Climate change threats to seagrass, mangrove and saltmarsh		DPIE-EES	Statewide	Development of a first-pass method to predict migration of mangrove and saltmarsh under sea level rise completed. A manuscript describing the method has been submitted for acceptance in a peer-reviewed journal.
Climate change monitoring		DPI-F	Statewide	Collection of 2021 habitat and fish assemblage data in NSW has been completed providing a 3 year baseline from which future change can be measured. Monitoring of climate driven storm damage to kelp forests has begun. Predictions of habitat distributions under future climate scenarios is nearing completion and publication.

What's next?

Work that is planned to occur in the following reporting period is highlighted below, although unexpected changes to scheduling can occur and will be communicated to affected stakeholders.

Project	Project icon	Lead agency	Location	Anticipated work
Climate change monitoring		DPI-F	Statewide	Tagging of kelp will commence to allow estimation of death rates and examination of the impacts of storms on kelp forests. Experiments will be conducted to examine the impacts of low salinity on kelp photosynthesis and survival.
Climate change threats to seagrass, mangrove and saltmarsh		DPIE-EES	Statewide	Map package of predicted mangrove and saltmarsh migration under sea level rise will be published on the NSW Government environmental data portal SEED .

More information

More information on Initiative 3 projects is on the marine estate web site [here](#).

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

Project summary



There are high-risk threats that cumulatively affect Aboriginal cultures and cultural heritage associated with Sea Country. There are also significant knowledge gaps relating to Aboriginal cultural values. Aboriginal people and their cultural values are not yet appropriately represented or engaged in the management of the marine estate. Initiative 4 aims to increase the broader community's understanding of Aboriginal Sea Country values. It also aims to increase the economic opportunities and employment for Aboriginal people, as well as increase their ownership and active involvement in managing the marine estate.

An important focus of this quarter was to consolidate existing projects such as South Coast Sea Country Schools Education and to expand this to Worimi and Yaegl. Of note, there were 361 downloads of the online version of the South Coast Sea Country Schools Education program in this quarter. Additionally, the team worked to build existing and new partnerships across the marine estate. The continued partnership of Initiative 4 with LLS, EES, Crown Lands Far South Coast Landcare Association, Eurobodalla and Bega Valley Shire Councils and the ranger programs of the five Southern Region Local Aboriginal Land Councils resulted in a successful outcome of the coastal weeds and marine debris project. A strong partnership with Heritage NSW and MEMS Initiative 3 (Planning for Climate Change) resulted in the repatriation of 7,000-year-old skeletal remains from a site near Batemans Bay which was being eroded by wave action. The Initiative 4 staff facilitated a positive outcome with three Local Aboriginal Land Councils and the Native Title applicants.

Quarterly progress and highlights








A breakdown of progress is outlined below.

Project	Project icon	Lead agency	Location	Progress
Cultural Economic Development		DPI-F	Clarence Valley, Coffs Harbour	Theory based component of the Certificate 2 Marine Operations (Coxswain Grade 1 Near Coastal) training was undertaken by 11 participants from Yaegl, Coffs Harbour LALC, Tweed-Byron LALC and Arakwal communities.
Reviving Cultures		DPI-F	Port Stephens, Clarence Valley	Completed meetings with Worimi and Yaegl to expand the existing Sea Country School Education Program from the Southern Region to the Northern Region.
Aboriginal Engagement		DPI-F	Statewide	Engaged the National Aboriginal Design Agency (NADA) in providing design concepts for an Aboriginal identifier (saltwater and freshwater) for multipurpose corporate use.
Aboriginal Engagement		DPI-F	Statewide	Purchased three purpose built Aboriginal cultural education trailers which will be wrapped in Aboriginal branding, providing a new experience between DPI and Aboriginal communities that aims to improve engagement.
Elders as mentors		DPI-F	Coffs Harbour	Held the Yaegl cultural immersion 'Elders as Mentors' on Country meet and greet day at the Solitary Islands Marine Park. Approximately 30 Elders were in attendance.

Project	Project icon	Lead agency	Location	Progress
Sea Country Rangers		DPI-F	Bega Valley	Completed the 2021 Coastal weeds and marine debris program with rangers employed from Eden, Bega, Merrimans, Wagonga and Cobowra Local Aboriginal Land Councils.
Cultural Research and Monitoring		DPI-F	Eurobodalla	Supported community involvement in the climate adaptation project at a site near Batemans Bay in partnership with EES & Heritage NSW.

What's next?

Work that is planned to occur in the following reporting period is highlighted below, although unexpected changes to scheduling can occur and will be communicated to affected stakeholders.

Project	Project icon	Lead agency	Location	Anticipated work
Aboriginal engagement		DPI-F	Statewide	Hold an Indigenous workshop as part of the Australian Marine Science Association conference to improve engagement and participation of Aboriginal people in research and science.
Sea Country Rangers		DPI-F	Nambucca Valley	Monitor the commencement and support the delivery of the Clean River Clean Sea Country project through Aboriginal rangers.
Cultural Interpretations		DPI-F	Clarence Valley	Continue discussions with Yaegl and Arakwal on cultural interpretation projects.
Cultural Interpretations		DPI-F	Eurobodalla	Support the 'Repainting Our Shellfish Reef and Cultural Landscape' project at the River of Art Festival through cultural story-telling and paint workshops.
Cultural research and monitoring		DPI-F	Shoalhaven and Bega Valley	Hold further Sea Country Science Camps in Eden and Jervis Bay and facilitate engagement of Aboriginal people in research projects.
Sea Country Rangers		DPI-F	Bega Valley	Support improvements to the Tura Headland walking track to prevent further damage to the cultural heritage site through the employment of Aboriginal rangers.
Cultural research and monitoring		DPI-F	Eurobodalla	Supporting the Muranna Point shell midden sorting and identification project.

More information

More information on Initiative 4 projects is on the marine estate web site [here](#).

Initiative 5 – Reducing impacts on threatened and protected species

Project summary



Taking action to protect threatened and protected species in the marine estate by working with the community, partners, industry and government partners to share information and resources to respond to marine wildlife events, undertake monitoring programs and ensure people using the marine estate minimise interactions with threatened and protected marine species.

NPWS continued to provide specialised marine wildlife training and outreach to improve compliance and wildlife response efforts. Nine large whale disentanglements and general marine wildlife response coordination training days were delivered along the NSW Coast with over 136 participants and four custom seal response and handling courses were delivered in partnership with Taronga Conservation Society and Dolphin Marine Conservation Park. The winter 2021 compliance program on commercial marine mammal operators was completed to identify opportunities to improved compliance. Additionally, the first ever marine mammal special protection in NSW was declared for a Southern Right Whale in Wallis Lake near Forster.

DPI fisheries scientists continued collaborative efforts with NSW commercial fishers who volunteer time on their boats during fishing trips to observe and record catch and effort. The results of this work help inform management decisions using the best available science, which includes scientific outputs produced by the observer project teams this quarter. Additionally, new and continued work with research and industry partners, respectively, is advancing our understanding of factors leading to interactions between fishing gear and migratory whales as well as investigating novel ways to reduce those interactions.

Quarterly progress and highlights


A breakdown of progress is outlined below.





Project	Project icon	Lead agency	Location	Progress
Planning to protect marine wildlife		NPWS	Statewide	NPWS declared the first ever marine mammal special protection order under the Biodiversity Conservation Regulation 2017 on 29 June. The order prevented boats, aircraft, drones and swimmers from approaching within 500m of a Southern Right Whale that entered and stayed several days in Wallis Lake near Forster.
Partnerships to protect marine wildlife		NPWS	Statewide	<p>Delivered training for large whale disentanglement and marine preparedness across the state to over 136 people from partner organisations including ORRCA, Marine Rescue, Local Government, Aboriginal Community, local veterinarians, Dolphin Marine Conservation Park, and Australian Seabird Rescue.</p> <p>Assisted with 97 marine wildlife Elements events.</p> <p>Completed 2021 winter compliance program and identified non-compliance from 2 marine mammal operators. Follow up action is pending.</p> <p>Developed and published Sea Turtle and Sea Snake Rehabilitation Training Standards for the volunteer wildlife rehabilitation sector and guidelines for the initial treatment and care of rescued sea turtles.</p>

Project	Project icon	Lead agency	Location	Progress
Education to protect and conserve marine wildlife		NPWS DPI-F	Statewide Greater Sydney	<p>Updated NSW National Parks webpages for marine mammal approach distances to reflect legislation.</p> <p>Educational products on White's Seahorse including signs and brochures installed and distributed at key locations across Greater Sydney.</p> <p>Hammerhead shark ID guides distributed to district fisheries offices for further distribution to targeted stakeholders.</p>
Improve reporting of interactions with marine wildlife		NPWS	Statewide	Sea World onboarded to Elements database to allow sharing of critical reporting and monitoring data.
Ocean Trawl Fishery observer survey		DPI-F	Statewide	Scientific paper "Understanding discarding in trawl fisheries: A model based demersal case study with implications for mitigating and assessing impacts" submitted to peer reviewed journal detailing analysis of observer data collected from the Ocean Prawn Trawl Fishery contributing to understand the impact of environmental and vessel operational forces on discards.
Ocean Trap and Line Fishery observer survey		DPI-F	Statewide	16 sea days completed this quarter with observers on board and proposed level of sampling of entire program realised in full. 131 days completed during 2020-2021 and over 250 trips completed since 2019-2021.
Strategies for mitigating species interactions		DPI-F	Statewide	<p>Collaborative project with Sydney Institute of Marine Science and University of NSW to investigate the effects oceanic conditions on the probability of humpback whale entanglements in NSW fishing gear.</p> <p>Distributed negatively buoyant rope to demersal fish trap and spanner crab fishers to extend gear trials initiated during the East Coast Whale Mitigation project.</p>

What's next?

Work that is planned to occur in the following reporting period is highlighted below, although unexpected changes to scheduling can occur and will be communicated to affected stakeholders.

Project	Project icon	Lead agency	Location	Anticipated work
Planning to protect marine wildlife		NPWS	Statewide	Host a statewide workshop to develop a NPWS Operating Model for marine wildlife response.

Project	Project icon	Lead agency	Location	Anticipated work
				External publication of the updated NPWS Marine Wildlife Management Manual on the EES website.
Partnerships to protect marine wildlife		NPWS	Statewide	Signed agreements between DPIE-EES and NSW Marine Rescue for assistance with marine wildlife responses.
Education to protect and conserve marine wildlife		NPWS DPI-F NPWS	Greater Sydney Statewide	A collection of interpretive seagrass educational products including signs and primary school educational booklets to be installed and delivered. Marine threatened species videos delivered on DPI fisheries website and social media focussed on Grey Nurse Shark, Black Rockcod, Queensland Groper. Launch the Southern Right Whale ID project - using drones for science to advocate safe and legal image capture of endangered Southern Right Whales to contribute to education and research whilst improving drone compliance.
Observer survey prioritisation		DPI-F	Statewide	Finalise report - Prioritisation of the NSW Commercial fisheries scientific observer program informing future research priorities and effective sampling designs.
Ocean Trap and Line Fishery observer survey		DPI-F	Statewide	Collect, analyse and report findings from sampling program to understand interactions with non-target species and inform science-based management decisions.
Estuary General Fishery observer survey		DPI-F	Statewide	Manuscripts titled "Multiple benefits from the deployment of bycatch reduction devices in east Australian portunid fisheries: An observer based investigation" and "Bycatch reduction devices reduce catches of undersize target species in a portunid fishery" summarising project findings submitted to peer-reviewed journals for publication.

More information

More information on Initiative 5 projects is on the marine estate website [here](#).

Initiative 6 – Sustainable fishing and aquaculture






Project summary





This initiative aims to deliver viable recreational, Aboriginal and commercial fisheries now and into the future. Actions include enhancing fishing opportunities with fish stocking and installing artificial structures, ensuring best management practice through policy reviews and education programs, and exploring new business opportunities.

Fourth quarter was highly successful as projects delivered on numerous planned milestones including harvest strategies development for several key fisheries, fisheries enhancements including stocking events, social research engagements with research partners, completion of stakeholder surveys, and commencement of a grants program to assist local seafood business, to name a few. Project leads continue to work closely with stakeholders across the marine estate using novel methodologies to ensure representative, transparent and thorough communications and engagements. Most projects are continuing their work into the new 2021/2022 financial year and are well placed to deliver significant achievements over the course of the 10-year Strategy.

Quarterly progress and highlights



A breakdown of progress is outlined below.


Project	Project icon	Lead agency	Location	Progress
Harvest strategy development		DPI-F	Statewide	Spanner crab Working Group nominations approved and Mulloway Working Group call for expressions released.
Harvest strategy research		DPI-F	Statewide	<p>Research project team completed a review of available data sources for recreational fisheries in NSW and have been working with researchers from University of Tasmania (UTas) to develop performance indicators for key fisheries from NSW Recreational Fisheries data sources.</p> <p>Ecological risk assessment (ERA) methodology for harvest strategies has been identified as a standard process for NSW fisheries. International collaboration as well as independent expert review developed to support development and technical review of ERA.</p>
Recreational fishing environment assessment		DPI-F	Statewide	Workshop completed with Government and industry stakeholders to examine impacts of recreational fishing on the social and economic benefits derived from the marine environment.
Marine aquaculture		DPI-F	Statewide	DPI Fisheries has undertaken a tender process for two marine aquaculture leases and is liaising with successful tenderers regarding their respective potential SSD (State Significant Development) developments.
Wild catch fish stocks		DPI-F	Statewide	Release of the Status of Australian Fish Stocks (SAFS) reports for 2020 .

Project	Project icon	Lead agency	Location	Progress
Oyster aquaculture business and environment		DPI-F	Statewide	<p>Research examining oyster aquaculture infrastructure risk to the environment in seagrass areas presented at Australian Marine Sciences Association conference and scientific reports in progress to be completed by end of 2021.</p> <p>Following review by NSW Aquaculture Steering Committee and the oyster industry, the revised NSW Oyster Industry Sustainable Aquaculture Strategy public exhibition completed.</p> <p>NSW DPI held seven consultative meetings with the oyster industry including NSW Food Authority, Ocean Watch, NSW Farmers, LLS, Rural Financial Councillors, Rural Mental Health, Rural resilience, aquatic biosecurity and aquaculture unit to discuss industry recovery following recent natural disaster events along the NSW coastal areas.</p>
Fisheries enhancements		DPI-F	Shoalhaven Port Macquarie-Hastings, Greater Sydney	<p>22,000 dusky flathead fingerlings were released into St Georges Basin.</p> <p>90,000 juvenile mulloway produced at the Port Stephens Fisheries Institute released in the Georges and Hastings rivers.</p>
Eat more NSW seafood		DPI-F	Statewide	Eat More Seafood NSW 2021 campaign successfully completed with numerous applications in both grant categories for consideration by selection committee.
Marine biosecurity awareness		DPI-F	Statewide	Social research survey responses compiled and analysed to identify barriers, benefits and drivers for managing biofouling. Monitoring and evaluation plan produced to quantify a change in understanding or uptake of communications messaging.

What's next?

Work that is planned to occur in the following reporting period is highlighted below, although unexpected changes to scheduling can occur and will be communicated to affected stakeholders.

Project	Project icon	Lead agency	Location	Anticipated work
Harvest Strategy development		DPI-F	Statewide	Training workshop and first meeting of Spanner Crab Harvest Strategy working group (HSWG), and appointment of mulloway HSWG.
Fisheries enhancements		DPI-F	Statewide	Responsible fishing gear including crab traps and nets, release weights, and catch and release mats to be provided to DPI education officers for further distribution.

Project	Project icon	Lead agency	Location	Anticipated work
Marine biosecurity awareness		DPI-F	Statewide	Develop a multiple pathway, state-wide communications and intervention strategy.

More information

More information on Initiative 6 projects is on the marine estate web site [here](#).

Initiative 7 – Enabling safe and sustainable boating



Project summary

Projects are achieving safer and sustainable boating by developing new mooring technology to minimise seagrass impacts, improving infrastructure including boat ramps and navigational aids, and delivering education campaigns to reduce environmental impacts.

A number of projects have been completed as planned, including Marine pollution legislation and Maritime infrastructure. Transport for NSW is developing the Maritime Safety Plan 2026 as part of the NSW Government's commitment to reduce fatalities and serious injuries on our waterways and is anticipating to release the draft plan for public consultation in the next quarter.



Quarterly progress and highlights

A breakdown of progress is outlined below.

Project	Project icon	Lead agency	Location	Progress
Mooring strategy		TfNSW	Statewide	The Private Mooring Map website is now live which enables users to locate available private moorings, enquire regarding wait lists and applicable restrictions, and submit applications.
Review of offshore anchoring		DPI-F	Wollongong	100% of underwater video surveys to assess potential impact of large commercial vessels anchoring compiled and processed with analysis underway.

What's next?

Work that is planned to occur in the following reporting period is highlighted below, although unexpected changes to scheduling can occur and will be communicated to affected stakeholders. The below list is not exhaustive.

Project	Project icon	Lead agency	Location	Anticipated work
Maritime Safety Plan		TfNSW	Statewide	Publish the draft Maritime Safety Plan 2026 for public consultation.
Review of offshore anchoring		DPI-F	Wollongong	Final analysis of data examining impacts of large ships anchoring on NSW reefs.

More information

More information on Initiative 7 projects is on the marine estate web site [here](#).

Initiative 8 – Enhancing social, cultural and economic benefits



Project summary

This initiative has a major education, research and monitoring component, working with institutions and government agencies to increase understanding of how we all use and value the marine estate, to maximise community benefits.

The fourth quarter has seen continued progress in meeting outcomes for Initiative 8. This has involved further development and implementation of new community surveys, as well of progression of economic benefits and valuation work to improve our information base on the human dimensions of the marine estate. There has also been a significant focus on agency collaboration and incorporation of stakeholder feedback to inform future planning for Initiative 8, particularly in relation to the Marine Estate Education Strategy, and social, cultural and economic monitoring. Projects that focus on improving community awareness of benefits, threats and management arrangements, and enhancing community experiences within the marine estate are also tracking well, with the Maritime Heritage Project in Coffs Harbour due for completion in the next few months.



Quarterly progress and highlights

A breakdown of progress is outlined below

Project	Project icon	Lead agency	Location	Progress
Maritime heritage review		DPI-F	Coffs Harbour	Woolgoolga jetty pile public installation progressed and nearing completion, including preparation of site, interpretive signage and web accessible information via QR code.
Community wellbeing framework		DPI-F	Statewide	500 out of a target of 600 interviews have been completed for the statewide Sea Country Survey to inform the Marine Integrated Monitoring Program. Design of a youth survey to monitor the way 14 to 17-year-olds benefit from the NSW coast and impacts to these benefits.

What's next?

Work that is planned to occur in the following reporting period is highlighted below, although unexpected changes to scheduling can occur and will be communicated to affected stakeholders.

Project	Project icon	Lead agency	Location	Anticipated work
Maritime heritage review		DPI-F	Coffs Harbour	Completion of interpretive signage on maritime heritage around Woolgoolga, including site-specific information at jetty pile and Buster shipwreck.
Community wellbeing framework		DPI-F	Statewide	Completion of fieldwork for Sea Country Survey - pending COVID restrictions. Design of the marine estate youth survey complete.

More information

More information on Initiative 8 is on the marine estate web site [here](#).

Initiative 9 – Delivering effective governance



Project summary

Initiative 9 has expanded its scope to include marine planning projects that are critical to the delivery of NSW Government commitments and community expectations for the delivery of holistic governance, that includes protected area planning and management for the five coastal mainland marine parks in NSW, aquatic reserve management, and compliance in the Greater Sydney region.

Strategic review is continuing to align existing and new projects under current management actions and deliver on outcomes. Individual projects are proceeding according to approved scope.


Quarterly progress and highlights

A breakdown of progress is outlined below.

Project	Project icon	Lead agency	Location	Progress
Better geographic information systems (GIS) for the marine estate		DPI-F	Statewide	<p>Provided updated map dataset to FishSmart app developers to update information on fishing closures, fish attraction devices, and Artificial Reefs.</p> <p>Revised distribution maps of <i>Posidonia australis</i> endangered ecological communities with latest available information.</p> <p>Collated spatial data for audit of coastal break-walls.</p> <p>Provided input to habitat classification of oyster reefs at a Federal level.</p>
Greater Sydney region compliance focusing on marine protected areas		DPI-F	Newcastle to Wollongong	<p>Emerging high-risk locations for illegal invertebrate collection identified (previously not patrolled by District Fisheries Officers).</p> <p>Coordinated patrols, education/awareness opportunities, and information sharing with NSW Police Marine Area Command, TfNSW, NPWS, Crown Lands and local Councils, producing positive compliance outcomes and improved transparency, consistency and inclusiveness of managing the marine estate.</p> <p>A total of 65 offences were reported by officers comprised of 3 pending matters, 4 verbal cautions, 38 written warnings, 20 penalty notices and 1 prosecution. A total of 436 invertebrates and fish were seized. These offences and seizures arose from 264 inspections that resulted in an observed compliance rate of about 84%.</p>

What's next?

Work that is planned to occur in the following reporting period is highlighted below, although unexpected changes to scheduling can occur and will be communicated to affected stakeholders.

Project	Project icon	Lead agency	Location	Anticipated work
Better geographic information systems for the marine estate		DPI-F	Statewide	Release update to FishSmart App.

More information

More information on Initiative 9 is on the marine estate web site [here](#).

Part C: Additional program requirements


Program management, monitoring, reporting and evaluation

Project summary

At a strategic level there are several objectives we are seeking to achieve to support the Strategy, including continued implementation of a governance structure and program management framework to support delivery of the Strategy statewide and provide MEMA agencies and staff with the tools and training to ensure robust governance and project management is coordinated, integrated and transparent. We are also seeking to improve communication, engagement and education to increase community awareness of the marine estate, associated threats and benefit, and enable effective community participation. In addition, at the strategic level we are implementing a monitoring program to fill key knowledge gaps, evaluate the effectiveness of the Strategy, and monitor condition and trend of environmental, social, cultural, and economic benefits derived from the marine estate. This contributes to a centralised and efficient integration of environmental, social, cultural and economic data into the management of the NSW marine estate.


Quarterly progress and highlights

A breakdown of progress is outlined below.

Project	Project icon	Lead agency	Location	Progress
Marine Integrated Monitoring Program (MIMP) – program management		DPI-F	Statewide	<p>A draft report for the baseline/formative evaluation of the Strategy was completed by an independent reviewer with final request for information underway.</p> <p>Development of a data management strategy to store, manage, and communicate monitoring data is underway and includes architecture for a MIMP-specific database. That will inform public-facing reporting from the MIMP.</p> <p>Scoping of the approach for the five-year review of the statewide Threat and Risk Assessment (TARA) is ongoing, including a cross-agency workshop held in June 2021.</p>

What's next?

Work that is planned to occur in the following reporting period is highlighted below, although unexpected changes to scheduling can occur and will be communicated to affected stakeholders.

Project	Project icon	Lead agency	Location	Anticipated work
(MIMP) – program management		DPI-F		An updated Integrated Monitoring and Evaluation Framework report that includes refined initiative monitoring plans. Data management strategy for the MIMP, including database architecture development and scoping.

More information

More information on Program management, monitoring, reporting and evaluation is on the marine estate web site [here](#).

Appendix A – List of abbreviations

Abbreviation	Definition
Authority	Marine Estate Management Authority
COVID-19	Coronavirus
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DPI-Ag	Department of Primary industries – Agriculture
DPI-F	Department of Primary Industries – Fisheries
DPIE-EES	Department of Planning, Industry and Environment – Environment, Energy and Science
DPIE-Lands	Department of Planning, Industry and Environment – Crown Lands
DPIE-PA	Department of Planning, Industry and Environment – Planning and Assessment
DPIE-Water	Department of Planning, Industry and Environment – Water
FSG	Fertiliser Stewardship Group
GIS	Geographic Information System
Knowledge Panel	Marine Estate Expert Knowledge Panel
LGA	Local Government Area
LLS	Local Land Services
MASC	Marine Estate Agency Steering Committee
MEAM	Marine Estate Activity Mapping
MEMS	Marine Estate Management Strategy
MIMP	Marine Integrated Monitoring Program
MoU	Memorandum of Understanding
NPWS	DPIE- EES: National Parks and Wildlife Service
NSW	New South Wales
RRWQMS	Richmond River Water Quality Monitoring Strategy
SEED	Sharing and Enabling Environmental Data
SEPP	State Environmental Planning Policy
Strategy	Marine Estate Management Strategy
TARA	threat and risk assessment
TfNSW	Transport for NSW
WRL	Water Research Laboratory
QLD	Queensland

Appendix B – Communication and engagement

Date	Stakeholder	Activity	Initiative	Communication and engagement
April				
	NSW community	Instagram	1	Saltmarsh damage
	NSW community	Instagram	1	Don't be a Tosser
	NSW community	Instagram	1	Don't be a Tosser
	NSW community	Instagram	1	Don't be a Tosser
	NSW community	Instagram	1	Becoming a citizen scientist is a snap
	NSW community	Instagram	1	Work completed on Bega River log wall
	NSW community	Instagram	2	Coastal Habitat forum
	NSW community	Instagram	5	Preventing whale entanglement
	NSW community	Instagram	5	A long way from home
	NSW community	Instagram	2	Boating access dredging program
	NSW community	Instagram	5	Learning to save seals
	NSW community	Instagram	3	Celebrating seaweed
	NSW community	Instagram	9	Keeping track of 100 projects
	NSW community	Instagram	5	Stranded whale at Coffs Harbour
	NSW community	Instagram	2	Riparian rehabilitation at Tilba Tilba
	NSW community	Instagram	6	See you at the Narooma Oyster Festival
	NSW community	MEMS newsletter		Marine Estate News April 2021
	NSW community	Website	5	Learning to save seals
	NSW community	Website	5	Stranded whale at Coffs Harbour
	NSW community	Website	9	Keeping track of 100 projects
	NSW community	Website	5	Preventing whale entanglement
	NSW community	Website	5	What's the catch?
May				
	NSW community	Instagram	1	Marine Estate at the Narooma Oyster Festival

Date	Stakeholder	Activity	Initiative	Communication and engagement
	NSW community	Instagram	<u>8</u>	Feedback from the Narooma Oyster Festival
	NSW community	Instagram	<u>1</u>	20th International Conference on Shellfish restoration
	NSW community	Instagram	<u>1</u>	Australia's biggest oyster
	NSW community	Instagram	<u>5</u>	What's the catch?
	NSW community	Instagram	2	Water quality focus on big projects
	NSW community	Instagram	6	Monitoring the NSW Ocean Trap and Line Fishery
	NSW community	Instagram	1	Webinar on erosion control for macadamia growers
	NSW community	Instagram	1	Helping macadamia growers
	NSW community	Instagram	5	Turtle hatchlings at Fingal Beach
	NSW community	Instagram	8	Whale watching
	NSW community	Instagram	4	National Reconciliation week
	NSW community	Instagram	6	Eat more seafood
	NSW community	Instagram	6	More fish for recreational fishers
	NSW community	Instagram	4	National Reconciliation week
	NSW community	Instagram	8	Hiking at Gosangs Tunnel
	NSW community	Instagram	8	Never too cold for a surf
	NSW community	Instagram	4	National Reconciliation week
	Subscribers and stakeholders	MEMS Newsletter		MEMS May newsletter
	NSW community	Website	1	Webinar on erosion control for macadamia growers
	NSW community	Website	6	Progress on NSW harvest strategies
	NSW community	Website	1	Winners of our Water Quality Objectives community survey
	NSW community	Website	6	Eat more seafood NSW grants
	NSW community	Website	1	Community science night at Tilba Tilba
June				

Date	Stakeholder	Activity	Initiative	Communication and engagement
	NSW community	Instagram	1	Restoring water quality to Wapengo Lake
	NSW community	Instagram		World Oceans Day
	NSW community	Instagram	1	Tilba Tilba science night
	NSW community	Instagram	1	Reef revival wrap up
	NSW community	Instagram	1	Oyster reef restoration project
	NSW community	Instagram	8	Cape Byron NSW
	NSW community	Instagram	6	What did you have for breakfast?
	NSW community	Instagram	1	Fertiliser Stewardship newsletter
	NSW community	Instagram	6	Where do the snapper live?
	NSW community	Instagram	8	Soaking up the winter sun
	NSW community	Instagram	1	\$5000 fine for diesel spill in Lake Macquarie
	Subscribers and stakeholders	MEMS Newsletter		MEMS June Newsletter
	NSW community	Website	6	Snapper-razzi 'catch' Greater Sydney's underwater life
	NSW community	Website	1	Ready, set, action
	NSW community	Website	5	Cauliflower soft coral
	NSW community	Website	2	News Wollamia boat ramp