

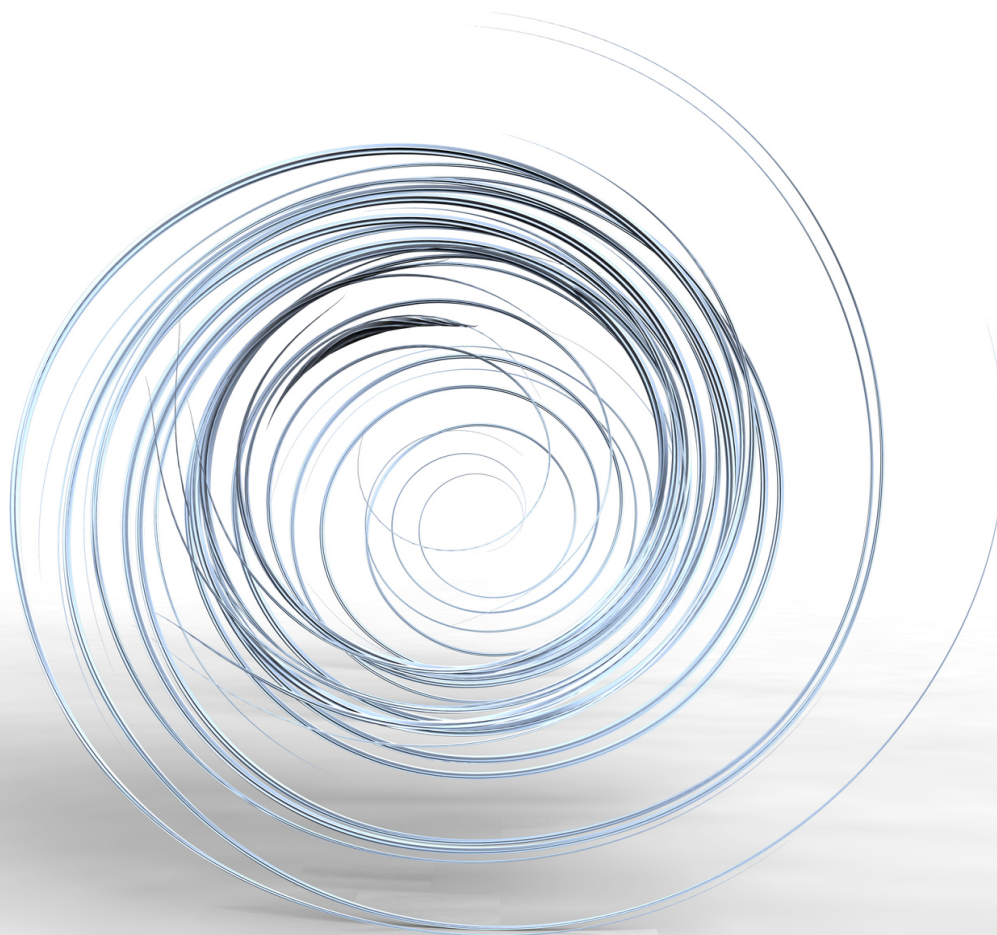
MARINE ESTATE MANAGEMENT STRATEGY

Quarterly snapshot

Reporting period – Year 2, Quarter 3

MARINE ESTATE MANAGEMENT AUTHORITY

INT20/50433



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Part A: Strategy snapshot

Reporting period

Stage	Year	Quarter	From	To
Stage 1 (2018-2020)	2	3	1 January 2020	31 March 2020

Purpose of this snapshot

The purpose of this snapshot is to provide key stakeholders and the community with regular (quarterly) progress updates on the implementation of the Strategy. It includes updates on notable initiative projects (actions) each quarter and what is planned for next quarter. A detailed update for all actions in each initiative is included in the Strategy Implementation Annual Report. This snapshot should be read in conjunction with the [Strategy Implementation Plan](#) and the [Strategy Implementation Annual Report](#).




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.

Stage 1, the first two years of the 10-year Strategy, is focused on addressing the most severe threats to the health of the marine estate. Particular attention and resources are allocated to improving water quality and reducing water pollution, which was identified as the greatest threat to the marine estate by the NSW community and through an evidence-based threat and risk assessment in 2017.

Program highlights this quarter

Of the 53 actions contained in the Strategy, 41 are under way in Stage 1. Many actions have multiple projects (sub actions) within them, which means approximately 100 projects of varying scale are currently active this quarter. The highlights this quarter for each initiative are numerous; a selection of five highlights illustrating the breadth of work and accomplishments achieved this quarter are below.

Project	Highlights
Estuary water quality monitoring 	Partnership established with the Tilba Tilba community for a water quality monitoring program. Landowners have attended training and have successfully collected water quality samples. Samples will provide baseline information to help understand water quality in Victoria Creek, and any changes into the future. A video showcasing this program is nearing completion and is on track for release by end of June.
Oyster reef restoration 	One hectare of oyster reef base constructed at two locations in Port Stephens-Great Lakes Marine Park (mouth of Karuah and Myall Rivers) using over 3300 tonnes of rock and 200m3 of clean oyster shell. Juvenile oyster spat have already been observed growing on the rock base.
Restore fish passage 	Jerrys Plains Fishway - Funding agreement signed with AGL Macquarie. Public Works Advisory completed a hydraulic analysis and provided criteria for detailed fishway design.

Project	Highlights
Aboriginal Sea Country participation	 Eight Aboriginal community members from the Jervis Bay area successfully completed the Coxswains certification course. Participants are actively engaged and employed in local Sea Country ranger teams and in the Narooma Aboriginal cultural tourism pilot.
Fisheries enhancements	 DPI-Fisheries stocked juvenile yellowtail kingfish (<i>Seriola lalandi</i>) into Lake Macquarie (2,500) and Botany Bay (6,500) as part of marine stocking program to boost fish numbers in popular fishing areas.

Part B: Initiative summaries

Initiative summaries include updates on notable individual actions each quarter and what is planned for next quarter. A full update on all projects (actions and sub actions) will be reported in the [Strategy's Implementation Annual Report](#). For more information on the location of projects refer to Figures 5-8 in Appendix B.

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) primarily addressing water quality issues in the Central Region of the marine estate, 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.

The summary for Initiative 1 is split into 1a and 1b for reporting purposes.

1a – DPIE-Environment Energy and Science




Project summary









A wide range of projects are under way to improve water quality and reduce litter entering the marine estate. Water pollution was identified as the greatest threat to the marine estate and is a priority initiative under the Strategy.

Work with local government is progressing well in areas trialling the use of the Risk-based Framework which aims to improve waterway health and integration into coastal management programs. Research and monitoring of waterway health continue to increase the knowledge base, which informs policy and education campaigns.

Quarterly progress and highlights

A breakdown of progress is outlined below.








Project	Action #	Spatial area	Progress
Risk-based framework for waterway health	 1.1.1	Hornsby Council	The objectives of the pilot project in Hornsby Shire Council has been delivered and Council have reviewed their processes to see how they can effectively apply the Risk-based Framework.
Risk-based framework for waterway health	 1.1.1	Shellharbour and Wollongong Councils	Created fact sheets on stormwater devices to help implement the regional stormwater strategy in the Lake Illawarra catchment. These will be finalised and available in mid-late 2020. Completed fieldwork to inform new stormwater flow targets in Council development control plans (DCP).
Risk-based framework for waterway health	 1.1.1	South Creek Local Councils	Risk-based Framework has been adopted as a key tool for managing riparian corridors along waterways in the draft Aerotropolis State Environmental Planning Policy (SEPP) and DCP . Partnership with Western Sydney Partnership Office and Sydney Water has been established to achieve improved waterway health. Identified important waterways and wetlands needed to




Project	Action #	Spatial area	Progress
			maintain or improve the biodiversity within the catchment.
Risk-based framework for waterway health	 1.1.1	Northern Beaches	Local Strategic Planning Statement 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 DCPs.
Improved management of diffuse source water pollution	 1.2.3	Statewide	Released key spatial data to support place-based planning and determine an area's environmental values (high ecological value data sets) - available to stakeholders via the Sharing and Enabling Environmental Data in NSW (SEED) portal . These include high ecological value waterways and water dependent ecosystems in Greater Sydney and all NSW coastal catchments and estuary health risk maps to inform scoping studies of CMPs.
Build capacity to implement the Risk-based Framework	 1.2.4	Statewide	Reports from consultation with stakeholders on the barriers to implementation of the Risk-based Framework have been finalised and help plan the next phase of the project, which will involve development of practice notes to guide stakeholders. Outcomes of this engagement will be shared with the public in mid-late 2020.
Water quality Objectives Update	 1.2.5	South Creek LGAs and Northern Beaches Council	Liaised with councils to develop an approach to community engagement and raising community awareness of water quality outcomes.
Marine litter campaign	 1.4.1	Statewide	Video clip being developed to support the Hey Tosser marine litter campaign.
Marine litter working group	 1.4.2	Statewide	Review of marine debris research in NSW is under way. Information on the sources of marine debris and threats to animals, plants and people is being collated and will be mapped as part of the marine debris threat and risk assessment (TARA).
Estuary water quality monitoring	 1.5.1	Eurobodalla	Partnership established with the Tilba Tilba community for a water quality monitoring program. Landowners have attended training and have successfully collected water quality samples. Samples will provide baseline information to help understand water quality in Victoria Creek, and any changes into the future. A video showcasing this program is nearing completion and is on track for release by end of June.
Estuary water quality monitoring	 1.5.1	Statewide	Estuary health monitoring program continues to provide Councils and the NSW community with information on the water quality in their estuaries .

Project	Action #	Spatial area	Progress
			<p>Progressing the water quality database, which collates current data collected with past estuary health data into a single source. This improves access and use of the data for decision making and scientific research.</p> <p>Webpage to provide the NSW community with information on the health of their estuaries is in development.</p>

What's next

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

Project	Action #	Spatial area	Anticipated work
Risk-based framework for waterway health	 1.1.1	Hornsby Council	Hornsby Shire Council stakeholder workshops communicating how the Risk-based Framework can be used and in with the development of the Coastal Management Plan. A report will be uploaded as part of the toolkit to help others implement the Risk-based Framework.
Risk-based framework for waterway health	 1.1.1	Shellharbour and Wollongong Councils	Undertake a cost-effectiveness analysis of stormwater devices and treatments that meets community expectations. Develop factsheets to help Councils trial the project elsewhere in the Lake Illawarra catchment.
Risk-based framework for waterway health	 1.1.1	South Creek LGA Councils	New waterway health objectives developed for DCP and new stormwater targets developed for use in precinct planning.
Risk-based framework for waterway health	 1.1.1	Northern Beaches	New stormwater strategy developed for Northern Beaches Council DCP. Similar to Hornsby Shire Council, a report will be uploaded as part of the toolkit to help others implement the Risk-based Framework.
Implement findings from review of NSW Diffuse Source Water Pollution Strategy	 1.2.2	Statewide	An approach to revising the Diffuse Source Water Pollution (DSWP) Strategy will be presented to the Authority for endorsement. This will outline the steps to develop and implement effective management of DSWP in NSW.
Build capacity to implement the Risk-based Framework	 1.2.4	Statewide	Findings of consultation with stakeholders (first phase of 1.2.4) and waterway health trials (action 1.1) will be included in practice notes to guide implementation of the Risk-based Framework.
Marine litter campaign	 1.4.1	Statewide	Video clip to be finalised.

Project	Action #	Spatial area	Anticipated work
Marine litter working group	 1.4.2	Statewide	Research and mapping summarised in a background document.
Estuary water quality monitoring	 1.5.1	Eurobodalla	Tilba Tilba Lake (Victoria Creek) Technical Report, and a video showcasing a successful model for community to assist with water quality monitoring to be released.
Estuary water quality monitoring	 1.5.1	Statewide	Research on use of DNA analysis to help determine if water quality is suitable for recreational use. Completion of the water quality database with historical water quality monitoring data.

1b – Department of Primary Industries-Fisheries



Project summary


A wide range of projects are under way to improve water quality and reduce litter entering the marine estate. Water pollution was identified as the greatest threat to the marine estate and is a priority initiative under the Strategy.





On-ground works play a major role in improving water quality including the first large scale (1ha) oyster reef restoration project in NSW at Port Stephens-Great Lakes Marine Park. Local Land Services, via a Memorandum of Understanding, have delivered over 70ha of riparian vegetation improvements along 39km of river length, stabilised almost 1.5km of eroding river banks and worked with local councils to improve gravel roads in 26 locations covering over 8km. 45 agreements have been established to improve macadamia orchard management, reducing erosion from 292ha. Collaborative work with National Parks and Wildlife Service successfully expanded the Everlasting Swamp National Park for better wetland and water quality outcomes for the Clarence River. Policy development, community education programs, consultation on erosion and sediment control reviews, environmental offset and coastal floodplain drainage policy development projects have all progressed.


Quarterly progress and highlights

A breakdown of progress is outlined below.

Project	Action #	Spatial area	Progress
Risk-based framework for waterway health	 1.1.2	Richmond Valley and Ballina	A steering committee, including DPIE-Environment, DPI-Fisheries, Rous Water and Sothorn Cross University (SCU), met to help integrate the Richmond River Water Quality Monitoring Strategy with SCU PhD studies, Coast and Estuary funded projects and the Richmond River Estuary Management Plan. Specialised auto-sampler technology was successfully trialled by SCU.
Coastal floodplain management	 1.2.7	Statewide with current emphasis on Tweed, Richmond, Clarence	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.






Project	Action #	Spatial area	Progress
Coastal floodplain management	 1.2.8	Tweed, Richmond, Clarence, Macleay, Hastings, Manning and Shoalhaven	Fieldwork for the floodplain study complete. Water Research Laboratory (WRL) surveyed 714 floodgate structures, 139 drain cross sections and completed 1,421 soil and groundwater samples across seven priority coastal catchments in NSW. 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 extended fieldwork required and to ensure comprehensive reporting.
Biodiversity offsets	 1.2.9	Statewide	Project scope refined, linkages with other Strategy projects consolidated and collaborations established with project partners including DPIE-Environment, Biodiversity Conservation Trust, DPIE-Lands, DPIE-Water and DPIE-Planning to discuss existing processes and alignment opportunities. Draft document outlining a DPI-Fisheries Biodiversity Offset Policy, compensatory payments and legal implications has been circulated internally and feedback reviewed.
Fish friendly workshops	 1.2.10	Richmond Valley	Successfully delivered a Fish Friendly Workshop for Richmond Valley Council with over 35 participants and a Fish Friendly Workshop booklet produced.
Fish friendly workshops	 1.2.10	Ballina, Kempsey, Lismore, Nambucca, Port Macquarie, Richmond, Tweed, Byron	Over 68 <i>Fisheries Management Act</i> permit audits completed in eight LGAs. Key contacts made with other North Coast Councils for next stage of audits and workshops.
Clean coastal catchments	 1.2.11 1.2.12	Ballina and Coffs Harbour	Fertiliser Stewardship group met. Fertcare agronomist accreditation course (trial) under development. Analysis of on-farm assessments completed to help improve future practices.
Erosion and sediment management	 1.2.13	Statewide	Consultation with key internal and external stakeholders on issues of erosion and sediment control in the construction industry undertaken. Ways to improve practices currently being developed.
Oyster reef restoration	 1.3.1	Statewide; Port Stephens	<p>One hectare of oyster reef base constructed at two locations in Port Stephens-Great Lakes Marine Park (mouth of Karuah and Myall Rivers) using over 3300 tonnes of rock and 180m³ of clean oyster shell. Juvenile oyster spat already observed growing on the rock base.</p> <p>Development and launch of recreational fisher survey on oyster reef restoration knowledge, and engagement with recreational fishers.</p>








Project	Action #	Spatial area	Progress
			<p>International Conference for Shellfish Restoration scheduled for March now postponed until December 2020 due to COVID-19.</p> <p>Continued field-based identification and mapping of remnant oyster reefs.</p>
Riparian vegetation rehabilitation	 1.3.2	MidCoast, Ballina, Bega Valley, Eurobodalla, Shoalhaven, Kiama and Wollongong council areas	<p>Native vegetation has been replanted along 70.78ha (9km) of riverbank to help improve water quality.</p> <p>North Coast Local Land Services (LLS) have caught up with on-ground works after delays due to bushfires, and rehabilitated 25km (50ha) within Emigrant Creek Catchment.</p> <p>South East LLS commenced six new projects despite bushfires and nine more currently under negotiation. Projects include fencing, revegetation, weed control and protection of existing vegetation. Revegetation for seven of the remaining 11 areas commencing in 2018/19 have also been completed.</p>
Clean coastal catchments	 1.3.3	Lismore, Ballina & Coffs Harbour	<p>19 additional Integrated Orchard Management agreements negotiated (45 in total) resulting in another 121ha (292ha total) of macadamia farms managed under this arrangement to reduce erosion entering waterways. Blueberry Applied Research facility construction continues at Wollongbar with associated greenhouses erected. Corrindi and Woolgoolga blueberry demonstration sites installed and functioning. Twelve blueberry farms assessed via Hort360 program.</p>
Estuary bank protection works	 1.3.4	Bega Valley, Eurobodalla, Shoalhaven, MidCoast, Ballina	<p>15m of bank protection works in the Wagonga catchment completed. Works completed on the Pambula and Tomaga Rivers (220m) including log bank and sandbag protection of foreshores. Pambula River native plant revegetation completed by community group.</p> <p>MidCoast Council (via Hunter LLS) completed 70m rock revetment, 160m rock fillets and construction of a rock flume to manage eroding mitre drain on the Lansdowne River. Contract signed for installation of rock fillets on the Wallamba River.</p> <p>North Coast LLS acquired Crown Licence to commence bank protection works (via Soil Conservation Services), along 800m of riverbank.</p>
Wetland restoration	 1.3.5	Clarence Valley, Port Stephens, Ballina, Rous, Richmond, Shoalhaven, Kempsey, Bellingen	<p>Collaborative work with National Parks and Wildlife Service successfully expanded the Everlasting Swamp National Park (Clarence River) to improve wetland and water quality management. Completed hydrological modelling for wetland rehabilitation and geotechnical assessment, installation of new water control infrastructure and co-purchase of property to add to coastal wetlands in the Reserve Estate. Other</p>


Project	Action #	Spatial area	Progress
			locations had significant investment in planning and landholder negotiations, but unfortunately landholder support has subsequently been withdrawn.
Reducing erosion from roads & tracks	 1.3.6	MidCoast, Ballina, Bega Valley, Eurobodalla, Shoalhaven, Kiama and Wollongong council areas	<p>Ballina Shire Council, in cooperation with North Coast LLS, sealed four more dirt roads (1.27km) to reduce sediment input into waterways. Estimated 1000 tonnes of road base material has been prevented from entering waterways.</p> <p>MidCoast Council in cooperation with Hunter LLS sealed 1.4km along Burraneer Drive (Wallis Lake).</p> <p>South East LLS sealed another two dirt road sections (407m). Works reduced erosion into Corunna Lake in the Eurobodalla Council area and Myola, near Jervis Bay in the Shoalhaven Council area. One location could not proceed due to bushfires.</p>

What's next

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

Project	Action #	Spatial area	Anticipated work
Risk-based framework for waterway health	 1.1.2	Richmond River catchment & Ballina	Continuation of work by SCU on development and deployment of specialised water quality sampling equipment across the Richmond River catchment.
Coastal floodplain management	 1.2.7	Statewide with current emphasis on Tweed, Richmond, Clarence	Options for a new drainage management framework will be prepared. Draft drainage management policy will be developed. A status report will be prepared on the historic drainage unions. Engagement with key stakeholders to resume in accordance with COVID-19 safety measures.
Coastal floodplain management	 1.2.8	Tweed, Richmond, Clarence, Macleay, Hastings, Manning and Shoalhaven	All catchments completed, data processed, analysed and sub-catchment prioritisation undertaken. Three of seven catchment restoration plans completed. Targeted review of draft reports by Local Government and industry stakeholders planned to occur in late 2020.
Biodiversity offsets	 1.2.9	Statewide	Collate feedback from internal review of the draft strategy for aquatic habitat offsetting. Initiate a contract to fill a knowledge gap on the values of estuarine habitats. Collaborate on a cost-benefit analysis looking at the benefits of restoring large coastal floodplain wetlands, using Clybucca as a case study.
Fish friendly workshops	 1.2.10	Statewide	Develop a Fish Friendly Workshop resource kit, and a series of storyboards and key messages for a video to

Project	Action #	Spatial area	Anticipated work
			be used within future Fish Friendly Council Workshops. Completion of Byron Shire Council permit audit.
Clean coastal catchments	 1.2.11 1.2.12	Ballina and Coffs Harbour	Further communications efforts with Fertiliser Stewardship group through electronic means due to COVID-19. Report on the findings of Clean Coastal Catchments social marketing approach, aiming to change farmer behaviours, to reduce fertilisers (nutrients) leaving the farm. A trial of the Fertcare accredited agronomist training conducted.
Erosion and sediment management	 1.2.13	Statewide	Consultation with stakeholders about the proposed changes to sediment and erosion control rules for construction sites. Revised rules then finalised for construction sites.
Oyster reef restoration	 1.3.1	Statewide; Port Stephens (on-ground works)	Prioritise site selection and draft NSW specific advice for future NSW oyster reef restoration projects. Prepare for additional on-ground works in Stage 2. Continue field-based identification and mapping of remnant oyster reefs. Gather and collate information from the recreational fishing survey.
Riparian vegetation rehabilitation	 1.3.2	MidCoast, Ballina, Bega Valley, Eurobodalla, Shoalhaven, Kiama and Wollongong council areas	<p>North Coast LLS – completion of an additional 8km of riparian vegetation rehabilitation to reach the overall target of a total of 33km, primarily adjacent to macadamia farms.</p> <p>South East LLS – completion of remaining projects, including revegetation and erecting of fences. Maintenance of 2018/19 sites where necessary to replace plants impacted by drought conditions.</p>
Clean coastal catchments	 1.3.3	Lismore & Coffs Harbour	Blueberry Applied Research facility greenhouses fully commissioned. Blueberry incentives program grantees contracted and works commence. Erosion control research on macadamia farms completed. Greenhouse vegetable industry monitoring trial completed, and report approved for publication.
Estuary bank protection works	 1.3.4	Bega Valley, Eurobodalla, Shoalhaven, MidCoast, Ballina	<p>South East LLS – completion of two large river bank protection sites on the Bega and Shoalhaven Rivers. Identify and contract one more priority site for works, replacing a project that did not proceed due to fires.</p> <p>Hunter LLS – complete bank protection works on the Wallamba River.</p> <p>North Coast LLS – complete construction of 800m bank protection works to stabilise a steep eroding bank and provide for the recruitment of mangrove seeds into an embayment area.</p>
Wetland restoration	 1.3.5	Shoalhaven and Kempsey Shire Councils	Progress Crookhaven River project and Clybucca Wetland on-ground works and related Recreational Fishing Trust Flagship Habitat Grant application.

Project	Action #	Spatial area	Anticipated work
Reducing erosion from roads & tracks	 1.3.6	Ballina, Eurobodalla, Shoalhaven, Bega Valley, MidCoast	<p>North Coast LLS – through Ballina Shire Council, seal an additional four dirt roads over 2.7 km (preventing an estimated 300 tonnes of road base material entering Emigrant Creek following significant rain events).</p> <p>South East LLS – track completion of remaining projects with Bega Valley, Eurobodalla and Shoalhaven local government partners.</p> <p>Hunter LLS – MidCoast Council to complete four sites along The Branch Lane, six sites along the Wallamba River and one site at Coolongolook River.</p>

More information on Initiative 1 projects are on the marine estate web site: [strategy-implementation/water-quality-and-litter](#).

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







Project summary







Improved marine vegetation, foreshore and waterway management via rehabilitating vegetation, restoring fish passage, investigating and reviewing policies and potential impacts related to breakwater designs and foreshore structures. A multiagency and local government collaborative effort to prioritise rehabilitation works and funding, while providing strategies that facilitate streamlined approvals.

Policies, management strategies and focused works associated with marine vegetation, bank management, foreshore structures and fish passage are due for completion on 30 June 2020. The increasing cross agency collaboration and coordination has enabled the completion of the draft statewide policy for the management of Coastal Crown Lands, the NSW Coastal Design Guidelines prepared for review and consultation as well as significant progress on the Jerrys Plains Fishway.

Quarterly progress and highlights




A breakdown of progress is outlined below.









Project	Action #	Spatial area	Progress
Breakwater improvements	 2.1.2	Statewide	Multiagency workshop held on multi-use and environmental features for breakwater maintenance and upgrades. SCU literature review of multi-use and environmental features incorporated into breakwater upgrades. Statewide audit of break walls under way.
Commercial dredging audit	 2.1.3	Statewide	Data on commercial dredging approvals issued by DPIE-Lands has been collected, analysed and included in a draft report.
Coastal design guidelines review	 2.2.1	Statewide	NSW Coastal Design Guidelines consultation and review commenced.
Coastal Crown Lands policy development	 2.3	Statewide	Draft statewide policy for the management of coastal Crown Lands completed. Consultation to commence.
Estuary domestic foreshore structure strategies	 2.3.1	Tweed, Brunswick, lower Richmond, Clarence, Macleay and Nambucca rivers; Bonville Creek and St. Georges Basin	A mapping process has been developed for the Foreshore Structure Strategy and is now being trialled in the lower Richmond River.
Marine vegetation management strategies	 2.3.2	Tweed & Ballina LGAs	Mangrove distribution mapping reviewed and updated. Regional analysis completed for estuaries near local airports (i.e. Ballina and Coolangatta), and near power

Project	Action #	Spatial area	Progress
			lines that require routine clearing of mangroves for line of sight and safety reasons.
Marine vegetation management strategies	 2.3.2	Statewide	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	 2.4.1	Statewide with current emphasis on North Coast	Agreement on development of a multi-agency 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.
Catchment and floodplain management	 2.4.1	Ballina & Clarence LGAs	Meeting with Rous County Council and NSW Sugar Cane Industry, providing an update on the coastal floodplain study.
Restore fish passage	 2.4.2	Singleton	Funding agreement signed with AGL Macquarie to design and construct a fishway at Jerrys Plains Weir on the Hunter River. Public Works Advisory completed a hydraulic analysis and provided criteria for detailed fishway design.
Estuarine mapping	 2.5.1	Botany Bay	Seagrass, mangrove and saltmarsh maps finalised for Botany Bay.
Estuarine disturbances mapping	 2.5.3	Great Lakes, Shoalhaven, Eurobodalla LGAs	Maps of fire damage to mangroves and saltmarshes completed for Wallis Lake, Clyde River and Narrawallee Inlet.

What's next

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

Project	Action #	Spatial area	Anticipated work
Training wall enhancements	 2.1.2	Statewide	Project completed. Report produced prioritising locations for breakwall enhancement works.
Commercial dredging audit	 2.1.3	Statewide	Recommendations to update Crown Lands' processes when issuing and managing commercial dredging licences will be completed and report finalised.
Coastal design guidelines review	 2.2.1	Statewide	Draft Coastal Design Guidelines prepared for exhibition.

Project	Action #	Spatial area	Anticipated work
Coastal Crown Lands policy development	 2.3	Statewide	Draft Coastal Crown Lands Policy reviewed and endorsed by NSW Coastal Council.
Estuary domestic foreshore structure strategies	 2.3.1	Tweed, Brunswick, lower Richmond, Clarence, Macleay and Nambucca rivers; Bonville Creek and St. Georges Basin	Domestic Foreshore Structure map made available online and a booklet component for the lower Richmond River ready for endorsement by the interagency working group.
Marine vegetation management strategies	 2.3.2	Statewide	Commencement of consultation with authorities regarding the draft marine vegetation clearance code. Review results from the blue carbon assessment with University of Wollongong.
Estuary bank management strategies	 2.3.3	Tweed and Nambucca LGAs	Decision support tool developed and tested to improve management of estuarine bank erosion and determine its applicability within the Tweed and Brunswick estuary areas.
Catchment and floodplain management	 2.4.1	Statewide with current emphasis on North Coast	Options for a new drainage management policy framework prepared.
Restore fish passage	 2.4.2	Singleton	Jerrys Plains Weir fishway design developed and near finalised.
Estuarine mapping	 2.5.1	Shellharbour, Shoalhaven	Finalise seagrass, mangrove and saltmarsh maps for Minnamurra River, Jervis Bay and St Georges Basin.
Estuarine disturbances mapping	 2.5.3	Great Lakes, Eurobodalla LGAs	Finalise bushfire impact maps for mangroves and saltmarshes for all affected estuaries.

More information on Initiative 2 projects are on the marine estate web site: [strategy-implementation/delivering-healthy-coastal-habitats-with-sustainable-use-and-development](#)

Initiative 3 – Planning for climate change



Project summary

Mapping vulnerable estuarine ecosystems and monitoring rocky reefs, to increase resilience and mitigate the effects of climate change. Initial research and monitoring results presented to peer reviewed audiences, receiving positive feedback.

A paper examining statewide baseline data for the distributions of rocky reef habitats in NSW, in 2019, has been published in a peer reviewed journal. The paper identifies key indicators for future monitoring of climate change impacts on species distributions. In addition, ongoing monitoring at selected sites throughout NSW has commenced to examine distributional changes, if any, in 2020. Modelling of the predicted distribution of estuarine wetlands (mangroves and saltmarshes) has been completed for all NSW estuaries.


Quarterly progress and highlights

A breakdown of progress is outlined below.

Project	Action #	Spatial area	Progress
Model intertidal wetlands at threat from future sea level rise	 3.1	Statewide / Great Lakes, Sydney, Eurobodalla	Sampling of saltmarsh distribution in Tilba Tilba Lake (before water levels began to rise due to entrance closure). 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 Tilba. Models being refined.
Monitoring priority environmental assets at risk from climate change	 3.5.2	Statewide	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 Regional Studies in Marine Science research journal.

What's next

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

Project	Action #	Spatial area	Anticipated work
Monitoring priority environmental assets at risk from climate change	 3.5.2	Statewide	Publication of manuscript describing NSW baseline data and selection of climate change indicators. Continued monitoring and filling of knowledge gaps.

More information on Initiative 3 projects are on the marine estate web site: [strategy-implementation/planning-for-climate-change](#)

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




Project summary

Increasing Aboriginal participation in Sea Country management. Building skills in Aboriginal communities through training programs, enabling input of cultural knowledge and expertise into management decisions through Aboriginal officers, and supporting projects caring for Sea Country.

Capacity building programs to increase Aboriginal peoples' participation in marine estate management has been delivered to hundreds of Aboriginal people. Documentation of significant cultural sites in collaboration with local Elders is assisting to address key knowledge gaps to help to reduce threats and risks to Aboriginal cultural heritage.



Quarterly progress and highlights



A breakdown of progress is outlined below.

Project	Action #	Spatial area	Progress
Aboriginal management of Sea Country – cultural values	 4.2	Wallaga Lake	Local men's group 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.
Aboriginal management of Sea Country – participation	 4.3	Jervis Bay, Narooma	Eight 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 management of Sea Country – research and monitoring	 4.5	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.

What's next

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

Project	Action #	Spatial area	Anticipated work
Aboriginal management of Sea Country – cultural values	 4.2	Byron Bay	Deliver the Arakwal Cultural Interpretations project with Cape Byron Marine Park.
Aboriginal management of	 4.3	Coffs Harbour	Deliver Sea Custodians project with the Gumbaynggirr people and Dolphin Marine Rescue Centre to document local Aboriginal cultural protocols for responses to marine wildlife events such as whale

Project	Action #	Spatial area	Anticipated work
Sea Country – participation			stranding, and to build Aboriginal people's capacity to participate in wildlife responses.
Aboriginal management of Sea Country – participation	 4.3	Statewide	Work with local Aboriginal community and Department of Education to put the Sea Country school education program online and allow participation under current COVID-19 restrictions.
Aboriginal management of Sea Country – participation	 4.3	Byron Bay	Deliver the Arakwal Sea Country Healthy Lakes and Lagoons project which involves traditional owners in documenting threats and risks to culture as well as management of water quality and fish kills from intermittent closures of lakes and lagoons.

More information on Initiative 4 projects are on the marine estate web site: [strategy-implementation/protecting-the-aboriginal-cultural-values-of-the-marine-estate](#)

Initiative 5 – Reducing impacts on threatened and protected species

Project summary






Taking action to protect threatened and protected species in the marine estate (for example Humpback whales) 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.





Preparations for 2020 whale migration is under way to ensure the best possible response to marine mammal strandings on beaches, seal haul outs in high use areas on the coast and whale entanglements.

The commercial fishing observer program continues to monitor several commercial fishing activities to better understand interactions with threatened and protected marine species. COVID-19 restrictions has led to more online and remote learning options to support partners in this initiative.

Quarterly progress and highlights



A breakdown of progress is outlined below.




Project	Action #	Spatial area	Progress
Protect and conserve marine wildlife – strategic planning	 5.1	North Coast	Ongoing monitoring of turtle nests and hatching events with community citizen science program under the Saving Our Species program. As part of the program, volunteers collect valuable data to help us better understand marine turtle nesting in northern NSW beaches and the potential threats facing the species. For more information on how to get involved email turtlewatchnsw@gmail.com .
Protect and conserve marine wildlife – strategic planning	 5.1	Statewide	A guide to the disposal of deceased marine mammals has been prepared and will soon be available for use by relevant state and local Government agencies.
Protect and conserve marine wildlife – partnerships	 5.2	Statewide	Continued improvements to the Marine Wildlife Management Manual to guide operational responses to marine wildlife interactions. This is an internal manual which details the policies and procedures for all marine wildlife management planning and operations.
Protect and conserve marine wildlife – partnerships	 5.2	Hunter and Sydney	Annual training undertaken to prepare NPWS Greater Sydney Branch and NPWS Hunter Central Coast Branch) for marine wildlife emergencies and events including seal bites, injured turtles or whales and dolphin strandings.
Protect and conserve marine wildlife – awareness	 5.3	Statewide	Finalised draft of the Code of Practice for Marine Reptiles, progressing to publishing.

Project	Action #	Spatial area	Progress
Commercial fishing observer program – ocean trap & line	 5.5.2	Brunswick Heads, Ballina, Evans Head, Coffs Harbour, Forster	Sampling design was finalised based on earlier trials to monitor interactions with high risk species and activities in the Ocean Trap and Line fishery. More than 20 fishing trips were observed this quarter, totalling 40 in this first year of sampling.
Commercial fishing observer program – estuary general	 5.5.3	Tweed, Richmond, Clarence, Macleay and Camden Haven rivers; Wallis lake, Port Stephens	Monitoring continued in the Estuary Generally Fishery. 86 fishing trips were observed from seven estuaries this quarter. Over 350 trips have been completed over two years (200 year one and 157 in year two).
Commercial fishing observer program – reducing threats	 5.5.4	Statewide	Partnered with OceanWatch Australia and Professional Fishers Association to trial modified fishing gear in the demersal trap sector of the NSW Ocean Trap Line Fishery, as a first step to minimising interactions with threatened and protected species. 13 fishers participating in trials.
Protect and conserve marine wildlife – threatened and protected species	 5.6	Sydney	Nine seahorse hotels 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 (UTS). To follow their progress visit SEA LIFE Sydney Aquarium .

What's next

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

Project	Action #	Spatial area	Anticipated work
Protect and conserve marine wildlife – partnerships	 5.2	North Coast	Undertake preparedness workshops on the NSW North Coast for marine mammal strandings and entanglements. Development of online learning material for key stakeholders and the public as an alternative means to deliver training due to Covid-19 restrictions. Satellite tracking equipment developed to support large whale species (for example Humpback whales) disentanglement responses.
Improve reporting of interactions with marine wildlife – data and reporting	 5.4	Statewide	Two agreements completed with key partners, providing training and access to the Elements marine wildlife emergency response database and reporting system. Review the trials conducted with partners on

Project	Action #	Spatial area	Anticipated work
			the use of the Elements database so far and provide access to other partners.
Commercial fishing observer program – ocean trap & line	 5.5.2	North Coast Region (All ports from Tweed Heads to Forster)	Continue implementation of the Ocean Trap and Line observer-based survey.
Commercial fishing observer program – ocean prawn trawl	 5.5.4	Central and North Coasts	Analysis of bycatch data collected from the NSW Ocean Prawn Trawl observer program to examine threats to fish assemblages in the Central and Northern Regions of the marine estate.
Commercial fishing observer program – reducing entanglements	 5.5.4	Statewide	<p>Collate information, including current observational data, and report it in line with the National Plan of Action for Minimising Incidental Catch of Seabirds in Australian Capture Fisheries.</p> <p>Analysis of seabird interaction data from NSW fish-trawl and prawn trawl observer programs, examining level of interaction and determine ways to minimise interactions.</p> <p>Finalise analysis of whale entanglement information sourced, to assist in the development and implementation of management responses to reduce interactions between whales and set fishing gear in NSW.</p>

More information on Initiative 5 projects are on the marine estate web site: [strategy-implementation/reducing-impacts-on-threatened-and-protected-species](#)

Initiative 6 – Sustainable fishing and aquaculture






Project summary


Ensuring viable recreational, Aboriginal and commercial fisheries now and into the future. Enhancing fishing opportunities with fish stocking and installing artificial structures, ensuring best practice across fisheries through policy reviews and education programs, and exploring new business opportunities.

Collaborative projects are progressing well, working across government, industry, research organisations and stakeholders. Projects are addressing threats to fisheries and their associated ecosystems, and enable, enhance and ensure fair and equitable access to resources. This quarter saw further progress in harvest strategy development, training and education, fish stocking, grant awards, research partnerships and oyster infrastructure research.

Quarterly progress and highlights





A breakdown of progress is outlined below.

Project	Action #	Spatial area	Progress
Harvest strategies (fishing)	 6.1	Statewide	Harvest strategy development was progress 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.
Recreational fishing environmental assessment and review of rules	 6.2.3	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 from mid-January.
Recreational fishing environmental assessment and review of rules	 6.2.4	Statewide	DPI-Fisheries staff assisted in the 2020 Tide to Tip campaign, a series of Australian oyster industry led clean-up events. The event resulted in the removal of over 500kg waste from numerous estuaries in NSW.
Application of Oyster Aquaculture Strategy	 6.4.3	Port Stephens / Statewide	Research infrastructure in place and data collection commenced examining relationship between oyster aquaculture and <i>Posidonia australis</i> seagrass.
Fisheries enhancements	 6.6.1	Lake Macquarie, Botany Bay	DPI-Fisheries stocked juvenile yellowtail kingfish (<i>Seriola lalandi</i>) into Lake Macquarie (2,500) and Botany Bay (6,500) as part of marine stocking program to boost fish numbers in popular fishing areas.
Seafood industry training	 6.7	Statewide	OceanWatch Australia continue to promote the Master Fisherman Program 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.

Project	Action #	Spatial area	Progress
Promote fishing and wild caught seafood	 6.8	Statewide	Supporting Seafood Futures Grants Program (SSF): seven of nine successful applicants in round two have received their funding. Round one saw 12 applicants receive funding in 2019.

What's next

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

Project	Action #	Spatial area	Anticipated work
Harvest strategies (fishing)	 6.1.1	Statewide	Draft Harvest Strategy Policy finalised and first draft of Harvest Strategy Guidelines developed. Communication through DPI-Fisheries and marine estate websites to inform stakeholders about harvest strategy progress.
Harvest strategies (fishing)	 6.1.2	Statewide	Identify suitable data-limited stock assessment techniques for use in Harvest Strategies.
Application of Oyster Aquaculture Strategy	 6.4.3	Port Stephens	Developing solutions to promote healthy Posidonia seagrass meadows and provide a progress report to the Australian Research Advisory Committee on the oyster infrastructure project.
Promote fishing and wild caught seafood	 6.8	Statewide	Finalise payments to the remaining two successful applicants from round two of SSF.

More information on Initiative 6 projects are on the marine estate web site: [strategy-implementation/ensuring-sustainable-fishing-and-aquaculture](#)

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.

Overall delivery of Initiative 7 is tracking well despite some challenges presented by natural disasters such as bushfire, floods and the COVID-19 pandemic.




Quarterly progress and highlights

A breakdown of progress is outlined below.

Project	Action #	Spatial area	Progress
Safe and sustainable boating	 7.7	Statewide	The Boating Now Program has enabled delivery of over 210 projects so far (31 March 2020). Up to \$28 million in funding is available for new projects under Round Three of the program, which closed on 27 March. Announcement of successful projects is anticipated in mid-2020.
Improved mooring management	 7.1.2	Port Stephens	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. The University of NSW Operation Posidonia Team has transplanted seagrass in the scars around two apparatus anchors.
Enforcement of environmental standards and regulations	 7.3	Statewide	TfNSW has continued to enforce environmental standards and regulations among domestic commercial vessels and recreational vessels. 1,130 inspections were completed which accounts for about 16% of all powered domestic commercial vessels operating in NSW (Financial Year to date).

What's next

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

Project	Action #	Spatial area	Anticipated work
Safe and sustainable boating	 7.7.2	Statewide	Assessment of Boating Now Program projects and announcement of successful projects.
Improved mooring management	 7.1.2	Port Stephens	Continued monitoring of trial hybrid environmentally friendly moorings at Shoal Bay.
Enforcement of environmental	 	Statewide	Continued inspections of powered domestic commercial vessels operating in NSW.

Project	Action #	Spatial area	Anticipated work
standards and regulations	7.3.3		

More information on Initiative 7 projects are on the marine estate web site: [strategy-implementation/enabling-safe-and-sustainable-boating](#)

Initiative 8 – Enhancing social, cultural and economic benefits




Project summary

This initiative has a major research and monitoring component, working with research institutions and government agencies to increase understanding of how we all use and value the marine estate, to maximise community benefits. A monitoring and evaluation framework has been developed to measure the effectiveness of the Strategy as it aims to achieve better social, cultural, economic and environmental outcomes for the community.

Initiative 8 has made significant progress this quarter. The draft NSW Marine Estate Education Strategy is progressing, as is the development of a community wellbeing monitoring program, a first for NSW. The Marine Estate Activity Mapping project data portal business specification has also been completed.


Quarterly progress and highlights



A breakdown of progress is outlined below

Project	Action #	Spatial area	Progress
Marine education strategy	 8.1	Statewide	Two interagency workshops held in February to progress the development of the draft NSW Marine Estate Education Strategy and the Marine Estate Champions program, to be trialled on the North Coast.
Community wellbeing monitoring program	 8.3.1	Statewide	Engaged consultants (Ipsos) to co-develop and implement a community wellbeing monitoring program. A draft community wellbeing indicator report has been produced and engagement with Aboriginal communities initiated. Conducted a culture and heritage working group to assist with the collection of data in accordance with the cultural indicators in the Marine Integrated Monitoring Program (MIMP).
Resource use management and activity mapping	 8.4	Statewide	Marine Estate Activity Mapping (MEAM) metadatabase structure has been finalised in readiness for data collection. Completion of Business Aspect MEAM specification for activity mapping system build. 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.

What's next

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

Project	Action #	Spatial area	Anticipated work
Marine education strategy	 8.1	Statewide	Targeted consultation with key local government educators, Aboriginal organisations and other relevant environmental educators to review the draft NSW Marine Estate Education Strategy.

Project	Action #	Spatial area	Anticipated work
Community wellbeing monitoring program	 8.3.1	Statewide	<p>Community wellbeing framework and community wellbeing indicator report drafted.</p> <p>Development of community wellbeing questionnaires for each target group: coastal residents, visitors, Aboriginal peoples and marine estate agency staff. Collection of data for cultural indicators.</p>
Marine estate socio-ecological research	 8.3.3	Statewide	<p>Completed review and needs analysis relating to socio-ecological research associated with the Strategy in collaboration with the University of Tasmania Centre for Marine Socioecology.</p>

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

Initiative 9 – Delivering effective governance



Project summary

This initiative ensures good governance and project management processes are in place, enabling a coordinated approach to deliver the range of projects under way in the Strategy.

Initiative 9 has made significant progress in this quarter with an increase in adoption of process and project management systems, by all agency staff. Stage 2 funding requirements has been finalised and submitted to Government for consideration, as well as a report by an independent assessment panel, who reported a high level of confidence in Stage 2 based on performance in Stage 1, particularly around governance, project management and risk management.


Quarterly progress and highlights

A breakdown of progress is outlined below.

Project	Action #	Spatial area	Progress
Strategy governance and project management	 9.1.1	Statewide	Development of the first public quarterly report (Quarterly Snapshot Report) uploaded to the marine estate website. Refinement of the Health Check and Stage 2 Requirements Report for consideration by government. Facilitated independent review (including interviews) of Strategy Stage 1 implementation and requirements for Stage 2, by an independent panel in accordance with the Recurrent Expenditure Assurance Framework. Positive feedback received and government response provided.
Governance framework pilot	 9.1.2	Richmond River	Governance pilot project on the Richmond River – Alluvium consultant's report received by Government and provided local councils for review and endorsement. The recommendations will then be considered by Government as a package for implementation.

What's next

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

Project	Action #	Spatial area	Anticipated work
Strategy governance and project management	 9.1.1	Statewide	Risk analysis across all initiatives in the Strategy due to extreme events (bushfires, floods, drought, COVID-19) and potential impacts to completion of Stage 1 and commencement of Stage 2. Commence project closure for Stage 1 projects and prepare for Stage 2 projects, to commence at the beginning of July 2020.

More information on Initiative 9 projects are on the marine estate web site: [strategy-implementation/delivering-effective-governance](#)

Appendix A – List of abbreviations

Abbreviation	Definition
Authority	Marine Estate Management Authority
DCP	Development Control Plan
DPI-Agriculture	Department of Primary Industries – Agriculture
DPI-Fisheries	Department of Primary Industries – Fisheries
DPIE-Environment	Department of Planning, Industry and Environment – Environment, Energy and Science
DPIE-Lands	Department of Planning, Industry and Environment – Crown Lands
DPIE-Planning	Department of Planning, Industry and Environment – Planning and Assessment
DPIE-Water	Department of Planning, Industry and Environment – Water
Knowledge Panel	Marine Estate Expert Knowledge Panel
MASC	Marine Estate Agency Steering Committee
MIMP	Marine Integrated Monitoring Program
NSW	New South Wales
SEPP	State Environmental Planning Policy
Strategy	Marine Estate Management Strategy
TARA	threat and risk assessment
TfNSW	Transport for NSW

Appendix B – Key actions the Strategy will deliver



Figure 1. Map illustrating the spatial extent of the Strategy projects by local government area.

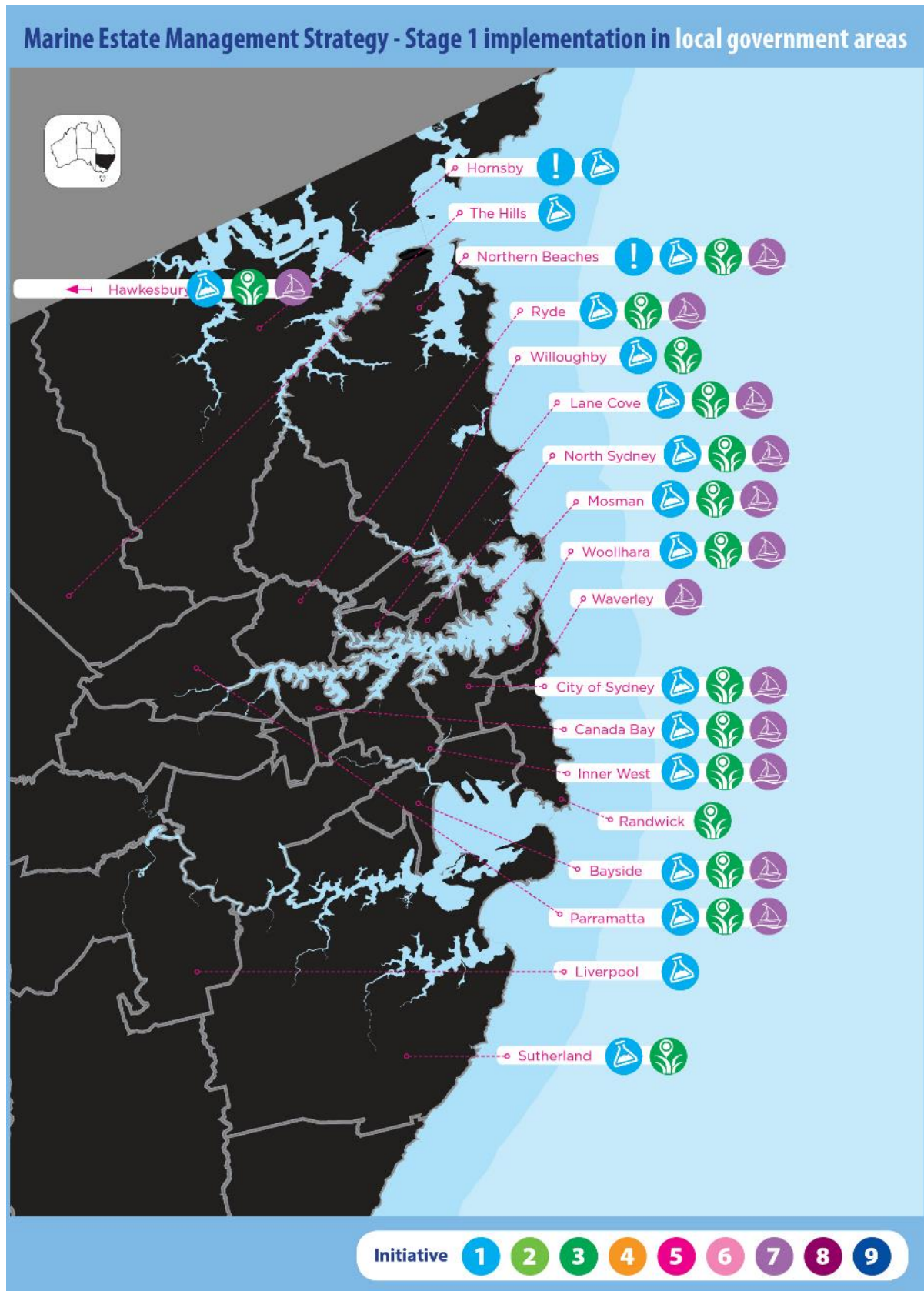


Figure 2. Map illustrating the spatial extent of the Strategy projects in the Greater Sydney area.

ACTIONS BY LOCAL GOVT AREA		Initiative 1 2 3 4 5 6 7 8 9								
	Risk-based framework for waterway health 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.		Estuary domestic foreshore structure strategies Developing estuary wide domestic foreshore structure strategies to guide and streamline future applications for domestic developments along foreshores (such as pontoons and boat ramps).							
	Coastal floodplain management Improving our knowledge of floodplain issues, improved management of floodplain infrastructure, reconnecting coastal floodplains and the development of drainage management plans.		Estuary bank management strategies Developing estuary wide bank management strategies to streamline bank protection work proposals and optimise rehabilitation opportunities.							
	Clean coastal catchments Providing help to farmers in intensive coastal agricultural industries to reduce their impact on water quality while maintaining long term economic and environmental sustainability.		Marine vegetation management strategies 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.							
	Fish friendly workshops 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.		Restore fish passage Fish passage is being restored at priority weir and road crossings, giving fish the opportunity to migrate.							
	Oyster reef restoration Restoring natural oyster reefs improves water quality and provides other benefits. This project includes a pilot restoration site, community education and future site planning.		Estuary mapping of seagrass, saltmarsh & mangrove 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.							
	Riparian vegetation rehabilitation Delivering on-ground works to rehabilitate degraded riparian areas helps filter run-off from the land, prevents erosion by stabilising river banks and provides biodiversity benefits.		Aboriginal management of Sea Country A Sea Country ranger program will include training and employment of Aboriginal people in marine estate industries, providing their cultural expertise in Sea Country management.							
	Estuary bank protection works River bank erosion is being addressed through environmentally friendly bank stabilisation works. Bank stabilisation improves water quality by reducing sediment entering rivers through erosion.		Seal interaction plan Education and compliance campaigns for targeted marine species to improve protection and conservation.							
	Wetland restoration 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.		Promoting the community benefits of fishing Multiple projects to promote the consumption of fresh seafood in the community, supporting the fishing industry.							
	Reducing erosion from roads & tracks Sediment enters waterways from gravel roads and tracks. This is being reduced through remediation works such as road sealing on priority roads and tracks.		Safe and sustainable boating The NSW Boating Now program continues to improve access to waterways through the provision of funding for maritime infrastructure.							
	Estuarine water quality monitoring 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.		Marine education strategy A Marine Education Strategy for primary schools will help children learn about physical & mental health benefits of connecting with nature, & the skills they need to become environmental stewards of the marine estate.							
			Governance framework pilot A new governance structure is being developed at a pilot scale in the Richmond catchment to improve river health outcomes.							

Figure 3. Strategy project icons that are being implemented in specific areas.

STATEWIDE ACTIONS		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 is being 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 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.							
	Vulnerability of tidal wetlands to sea level rise Identify estuarine wetlands (saltmarsh and mangroves) most at threat from future sea level rise and prioritise areas for protection.		Boat based contamination compliance and education Continue compliance and education programs for boat based contamination from commercial and recreational vessels.							
	Monitoring reefs at risk from climate change Monitoring the resilience and condition of rocky reef habitats will detect impacts of climate change, indicate likely shifts in species' distribution and inform future management.		Improved mooring management Threats to seagrass from vessels are being reduced through improved regulation, administration, education, new mooring technologies and delivery mechanisms.							
	Protect and conserve marine wildlife Education and compliance campaigns for targeted marine species to improve protection and conservation.		Community wellbeing surveys Monitoring the wellbeing of communities as they relate to the NSW marine estate will improve our understanding of the human dimensions of the NSW marine estate; the diversity of values and benefits, and how they may be impacted (e.g. positive or negative) by environmental change and different management approaches.							
	Improve reporting of interactions with marine wildlife External web portal for key stakeholders to report marine wildlife interactions and emergencies to improve conservation outcomes for targeted marine species.		Resource use management and activity mapping A comprehensive spatial mapping tool is being piloted, detailing current use, supporting infrastructure, access and trends to support evidence-based management of the marine estate.							
	Commercial fishing observer program Expansion of the commercial fishing observer program will inform future fishing practices, reduce bycatch and help to better manage interactions with threatened and protected species.		Marine Integrated Monitoring Program The Marine Integrated Monitoring Program monitors the condition of the marine environmental assets and community benefits against established baselines, providing critical information needed to fill current knowledge gaps and to evaluate the effectiveness of the Marine Estate Management Strategy initiatives. This will guide adaptive management throughout the Strategy.							

Figure 4. Statewide Strategy projects that are not specific to an area.

Appendix C – Communication and engagement

Communication and engagement with a wide variety of stakeholders and the community about the Strategy was undertaken during this quarterly reporting period. Key communication and engagement activities are listed below:

Table 1. Communication and engagement with stakeholders during the quarter 1 January – 31 March 2020

Date	Stakeholder	Activity	Initiative	Communication and engagement
January	NSW community	Marine estate news	1	\$5m in grants for bushfire affected coastal waterways
February	NSW community	Media release	5	Successful rescue operation saves a shark's eyesight
March	NSW community	Media release	2	NSW to host the international shellfish restoration conference
	NSW community	Media release	5	Five-star seahorse hotels launched in Sydney
	NSW community	Marine estate news	1	Cleaner water on farms creates a cleaner catchment
	NSW community	Marine estate news	4	Marine estate benefits from Aboriginal knowledge and expertise
	NSW community	Marine estate news	1	Looking for new life on artificial oyster reefs in Port Stephens
	NSW community	Marine estate news	4	Volunteers remove tonnes of waste from Dowadee Island
	NSW community	Marine estate news	2	Brains trust meets to discuss breakwaters
	NSW community	Marine estate news	4	Preserving traditional fishing practices