

# Marine Estate Management Strategy Triannual Snapshot

Reporting period March - June 2023

Marine Estate Management Authority

September 2023



Cover image: Rosie Richards ©

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



Figure 1. © Bindarray Maagun (River Feast) by Gumbaynggirr artist Lavinnia Inglis

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# Part A: Strategy snapshot

## Purpose of this snapshot

This Snapshot Report provides stakeholders and the community with regular updates on the implementation of the Marine Estate Management Strategy (Strategy). It includes updates on notable project highlights and informs stakeholders of key deliverables in the third trimester of Year 5 of the Strategy. Additionally, activities planned for the next reporting period (1 July – 30 October 2023) are highlighted in the ‘What’s next’ sections.

For more updates follow us on [Instagram](#), visit the [Marine Estate website](#), or subscribe to the [Marine Estate Newsletter](#). This snapshot should be read in conjunction with the [Strategy Implementation Plan 2022-2024](#).

## Delivering long-term outcomes

The Strategy is a 10-year strategy, 2018-2028. The Strategy’s 9 initiatives contribute to improving water quality, reducing marine litter, improving the health of coastal habitats, reducing threats to marine wildlife, ensuring sustainable foreshore development, ensuring sustainable land use practices, planning for climate change, protecting Aboriginal cultural values of the marine estate, delivering sustainable boating and fishing, enhancing social, cultural, and economic benefits, and delivering effective governance. Additionally, program management, monitoring, reporting, and evaluation are overarching components of the Strategy, embedded to assure the community and stakeholders that the program is implemented and monitored effectively and in an integrated and transparent way.






Continued investment for the remaining 5 years of the Strategy will help to improve water quality by reducing pollution, to ensure our coastal habitats can thrive under the effects of climate change and to increase Aboriginal people’s role in protecting cultural values and managing Sea Country. Long-term funding also ensures the NSW marine estate is resilient and managed sustainably for future generations. .







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

## Program highlights this trimester

This trimester is the third and final reporting period for the 2022-2023 financial year. There are close to 100 projects this year and good progress has occurred throughout the program. In this snapshot, we focus on some of the most notable achievements across the 9 initiatives in the Strategy. A selection of highlights illustrating the extent of work and achievements during this period is in Table 1. Communications and engagement activities during the period are summarised in Appendix B.

Table 1. Key highlights during March – June 2023

Project	Project icon	Location	Progress
Riverbank stabilisation		Midcoast	The on-ground bank stabilisation work along the Branch River has been completed, covering a distance of 700 metres. This work will help minimise sediment loss at this site and ultimately reduce risks to water quality. The Branch River flows into the Karuah River, so this work will positively impact both rivers and the Port Stephens-Great Lakes Marine Park.
Land use pressures on the marine estate		Wollongong Shellharbour	Field sampling and data collection of indicators designed to gather information about ecological condition, streamflow, and ecosystem processes is completed. This information will highlight long-term trends in biological, geomorphic, and riparian condition of the inflowing streams in the Lake Illawarra catchment. Indicators included macroinvertebrates, benthic diatom assemblages, streamflow discharges, and stream metabolism (respiration and productivity). Links to a priority action in the Lake Illawarra Coastal Management Plan (CMP). The data provides initial baseline assessment for ongoing monitoring in a risk-based framework pilot case study area.
Reconnecting fish habitats		Byron Shire	25 km of habitat opened up to migratory fish after a causeway was replaced with a new bridge on the Brunswick River. This will enable fish passage for local native species from ocean to near the village of Main Arm during low flows. .
Climate change monitoring		Statewide	The climate change towed video monitoring program for 2023 has now been completed, with 137 towed video transects conducted to quantify marine habitat cover along the entire NSW coast.  Three peer reviewed papers have been published, detailing research on climate change impacts on <a href="#">long-spined urchins</a> , <a href="#">tropical branching corals</a> , and <a href="#">Australian marine ecosystems</a> .
Reviving cultures		Byron Shire	Arakwal Cultural Camp was held: a 3-day family oriented cultural camp that aims to educate youth about the importance of culture, healthy living, and social and emotional wellbeing, as well as their connections to Land and Sea country. The camp also promoted the protection of Aboriginal cultural values within the Arakwal region. During the camp, 149 participants exchanged cultural knowledge between the community and DPI Fisheries, establishing a positive ongoing relationship between DPI fisheries and the Aboriginal community in the Arakwal region.

Project	Project icon	Location	Progress
Partnerships to protect marine wildlife		Statewide	A series of educational videos for rehabilitation providers and veterinarians on <a href="#">sea turtle health assessments</a> were published. The videos demonstrate best practice techniques for handling and assessing sea turtles and will improve animal welfare and rehabilitation outcomes.
Aquaculture socio-economic research		Statewide	The final report on the Socio-Economic Contribution of Aquaculture to NSW has been delivered to DPI Aquaculture Management and will be presented to departmental staff and industry stakeholders.
End-of-Life vessel management		Statewide	Consultation on the End-of-Life-Vessel policy options for end-of-life recreational vessels is complete. Livestream events were held and 174 public submissions are being analysed.
Marine estate economic valuation		Statewide	<p>Discussion paper on new environmental markets for coastal and marine assets and services (including blue carbon) commenced to inform an ocean accounts pilot project.</p> <p>A cost-benefit analysis of Oyster Reef Restoration in Port Stephens (delivered under Initiative 1) commenced to help assess the economic viability and potential benefits of restoration efforts.</p>
Greater Sydney Region compliance focusing on marine protected areas		Hawkesbury bioregion marine protected areas	The mobile compliance squad in Greater Sydney spent 728 hours patrolling aquatic reserves and intertidal protected areas this period. They interacted with 577 fishers and found that 54% of marine recreational fishers were compliant with collection regulations, while 86% were compliant with fishing regulations. The overall compliance rate for all inspected fishers was 82%.
Better geographic information systems (GIS) for the marine estate		Statewide	Updated <a href="#">webmaps</a> for all Aquatic Reserves associated with NSW on the DPI website. These maps use embedded mapbox technology that is optimised for mobile devices. They allow users to locate themselves in relation to the reserve and provide information about permitted activities through a text popup and standard symbols

# Part B: Initiative summaries

Initiative summaries include updates on notable project highlights from the reporting period as well as what is planned for the next reporting period. A full update on all projects is reported in the [Strategy Implementation Annual Report for the 2021-2022](#). For more information on the location of projects refer to the [Strategy Implementation Plan 2022-2024](#) or to “find projects” visit [Our projects](#) page on the [marine estate website](#).

## Initiative 1



### Improving water quality and reducing litter







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#### Project summary


During the final period of year 5, the projects within Initiative 1 have made significant progress towards reducing threats and risks, while maximising the benefits of NSW coastal estuaries, rivers, and coastal waters. A notable accomplishment is the almost completed Statewide monitoring of the marine estate’s estuary water quality for 2022-2023, which provides data to assess broadscale condition and trends. Additionally, relevant stakeholders, including local government and other decision making agencies, have been engaged in addressing diffuse source water pollution impacts and management using the Risk-based Framework. On-ground works have been completed in various locations across the marine estate to reduce sediments and nutrients entering into waterways, and project leaders have actively engaged with farmers, industry partners and Councils to promote best practices.

#### Triannual progress and key highlights

Project	Project icon	Location	Progress
<a href="#">Building capacity on the risk-based framework</a>		Richmond River	Significant progress was made on the Richmond River catchment’s Natural Resource Management (NRM) mapping project. A database of completed and ongoing projects aimed at reducing diffuse source water pollution from various stakeholder sectors has been compiled. Stakeholders participated in a training session to learn how to maintain and update their project entries in the database.  Initial findings from trials conducted in macadamia orchards indicate that modifying management practices can positively impact water quality. The study is ongoing and will monitor and analyse rainfall events until the end of 2023-2024 to accurately assess the environmental and financial benefits.
<a href="#">Fish friendly workshops for councils</a>		North Coast	140 participants from Tenterfield, Coffs Harbour, Bellingen, and Clarence Valley Councils attended workshops on fish friendly construction practices. This means that all councils on the north coast, from Tweed to Port Macquarie-Hastings, have now completed the training.






Project	Project icon	Location	Progress
Construction sediment management		Statewide	DPE Planning is making the planning system more accessible. DPE Planning's standard conditions of development consent can now be found on the <a href="#">NSW Planning Portal</a> which contains a library of development consent conditions which council officers can apply to development applications. The standard conditions include a condition to manage erosion and sediment at construction sites.
Clean coastal catchments research		Bega Valley	Livestock systems thinking social research interviews were completed with 13 farmers in the Bega Valley. The research is assisting DPI Agriculture scientists to better understand the challenges farmers face related to on-farm nutrient management.
Riverbank stabilisation		Midcoast	The on-ground bank stabilisation work along the Branch River has been completed, covering a distance of 700 metres. This work will help minimise sediment loss at this site and ultimately reduce risks to water quality. The Branch River flows into the Karuah River, so this work will positively impact both rivers and the Port Stephens-Great Lakes Marine Park.
Clean coastal catchments monitoring		Bega Valley	Community information meeting was held at Tanja in May to discuss the results of a collaboration between community members, Local Land Services, and the Department of Planning and Environment (DPE) to improve water quality. The meeting presented water quality monitoring findings, which showed a decrease in diffuse source pollution in local waterways. This improvement resulted from on-ground works at Wapengo Lagoon and Middle Creek.
Land use pressures on the marine estate		Wollongong Shellharbour	Field sampling and data collection of indicators designed to gather information about ecological condition, streamflow, and ecosystem processes is completed. This information will highlight long-term trends in biological, geomorphic, and riparian condition of the inflowing streams in the Lake Illawarra catchment. Indicators included macroinvertebrates, benthic diatom assemblages, streamflow discharges, and stream metabolism (respiration and productivity). Links to a priority action in the Lake Illawarra Coastal Management Plan (CMP). The data provides initial baseline assessment for ongoing monitoring in a risk-based framework pilot case study area.
Marine debris research and management program		Statewide	Conceptual model developed to guide stakeholder understanding of marine debris and litter in NSW waters.





Project	Project icon	Location	Anticipated work
Estuarine water quality monitoring		Statewide	The <a href="#">Health of Estuaries</a> report for the North Coast for 2021-2022 has been published. Statewide field sampling to monitor broadscale condition and trends in water quality of the marine estate is complete for 2022-2023. The focus has been on the central region (Taree to Wollongong), and includes major waterways such as the Hunter River and Hawkesbury River. The data is currently being processed and analysed.

## 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	Location	Anticipated work
Building capacity on the Risk-based framework		Ballina	Ongoing monitoring of impacts on water quality from the beef industry and macadamia orchards, and monitoring responses to changes in practices continues to provide examples of best practice land management, and evidence of its economic and environmental benefits.
		Lismore	
		Emigrant Creek Ballina	Kick off for the Ecohealth 'expanded' methodology including a range of additional water quality monitoring indicators allowing greater detection of positive changes resulting from large scale riparian revegetation, road sealing and bank stabilisation.
Oyster reef restoration		Eurobodalla	Living shoreline component of the Wagonga Inlet project completed including reshaping the bank and rehabilitating the saltmarsh.
		Port Stephens	Commence acoustic tagging and tracking of Dusky Flathead and Yellowfin Bream in the Port Stephens area to monitor their use of oyster reef and other habitat types.
Clean coastal catchments on-ground		Coffs Harbour Clarence	Execute 8 new contract agreements to upgrade and improve irrigation and monitoring systems at blueberry and vegetable farms. These contracts include systems for capturing and re-using water and one contract that addresses erosion. Additionally, one farm will be transitioning to a fully recirculated and closed system.
Clean coastal catchments research		Ballina	Conduct preliminary estimates of nitrogen absorption by blueberries following the first year of experiments at the Wollongbar Blueberry Nutrition Research Facility.
Riverbank stabilisation		Eurobodalla	Undergo 130 metres of riverbank stabilisation on the Deua River.

Project	Project icon	Location	Anticipated work
Clean coastal catchments monitoring		Eurobodalla Bega Valley	Conduct spring biological sampling at riparian rehabilitation sites in the Tilba Tilba, Wapengo Lagoon, and Middle Creek catchments.
Estuarine water quality monitoring		Central zone and sentinel sites	2022-23 Estuary grades awarded and report cards updated on website. Estuary webpages on the NSW Environment website updated, including: <ul style="list-style-type: none"> <li>• report card grades summarising ecosystem health from the 2021-2022 sampling period</li> <li>• estuarine recreational water quality condition grades from the 2021 Beachwatch sampling program</li> <li>• updated <a href="#">contextual information</a> on why different estuaries received different condition grades.</li> </ul>

## More information

More information on Initiative 1 projects is on the marine estate website [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 and overall is progressing well. Many projects have made significant progress and delivered numerous outputs in the final trimester. A multiagency and local government co-operative approach is taken to collaborate, inform, build relationships, and set expectations in coastal habitat management. Importantly this trimester, onground fish passage outcomes in the Brunswick River have been improved, resulting in better opportunities for both native fish and marine estate users.






#### Triannual progress and key highlights

Project	Project icon	Location	Progress
<a href="#">Breakwall governance and management</a>		Statewide	Of the 108 structures identified in the Strategy Stage 1 breakwall audit, 95 lacked clear ownership. Ownership has now been assigned to these structures. Further engagement with coastal councils uncovered 46 more unowned structures, and out of those, 24 have been assigned an owner. This progress is a positive step towards ensuring better accountability and maintenance of marine estate assets.
<a href="#">Coastal Design Guidelines review</a>		Statewide	The Coastal Design Guidelines are almost finished following consultations with key stakeholders. The latest revisions involve the inclusion of illustrations to improve understanding of the information.
<a href="#">Aquatic biodiversity offsets</a>		Statewide	UNSW Water Research lab in collaboration with DPI Fisheries have delivered an evidence based key fish habitat valuation assessment to inform Fisheries managers of the current and potential state of DPI Fisheries key fish habitat offset policy under the <a href="#">Fisheries Management Act</a> .
<a href="#">Domestic waterfront structure strategies</a>		Tweed Byron Shoalhaven	<a href="#">Domestic waterfront strategies</a> for Tweed River, Cape Byron Marine Park, Jervis Bay Marine Park, Lake Illawarra, Burrill Lake, Shoalhaven River and St Georges Basin have been mapped (total of 1017 km) with accompanying strategy documents completed and in final reviews.

Project	Project icon	Location	Progress
Estuary bank management strategies		Port Macquarie-Hastings	The decision support tool for producing a Bank Management Strategy for the Camden Haven River is being implemented in partnership with the Port Macquarie Hastings Council. Extensive testing and feedback have led to improvements in the tool. Ongoing enhancements will be facilitated through a research collaboration with the University of Melbourne to identify the best practices for stabilising the foreshore.
Reconnecting fish habitats		Byron	25 km of habitat opened up to migratory fish after a causeway was replaced with a new bridge on the Brunswick River. This will enable fish passage for local native species from ocean to near the village of Main Arm during low flows.

## 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	Location	Anticipated work
Commercial dredging best practice		Statewide	Finalise the close-out and termination requirements for latent and recently expired commercial dredging licences identified as a high priority action from the commercial dredging audit completed by Crown Lands.
Intermittently closed and open lakes and lagoons (ICOLL) management		Statewide	Draft report summarising the current management of ICOLLs in NSW based on the audit findings. The report's purpose is to guide the councils in developing guidelines.
Domestic waterfront structure strategies		Tweed Byron Shoalhaven	Domestic waterfront structure strategies for Tweed River, Cape Byron Marine Park, Jervis Bay Marine Park, Lake Illawarra, Burrill Lake, Shoalhaven River and St Georges Basin are published on the <a href="#">marine estate</a> website and the supporting data has been uploaded to the <a href="#">DPI Fisheries Spatial Portal</a> .
Marine vegetation management strategies		Statewide	Finalise research collaboration agreement with project lead, University of Wollongong, for the ARC Linkage Project: Are coastal wetlands vulnerable to bushfires?, exploring key knowledge gaps after unprecedented fires in recent years.
Threats to estuarine fish assemblages		Greater Sydney	A research paper on cumulative effects to seagrass and fishes in Pittwater, on the northern beaches, published in the journal <a href="#">Science of the Total Environment</a> .

## More information

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

## Initiative 3

### Planning for climate change

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#### Project summary

Initiative 3 aims to fill knowledge gaps in climate change impacts and incorporate these 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. Improving our knowledge of climate change impacts contributes to increasing the capacity of coastal and marine managers and communities to anticipate climatic impacts.





During this period work began on priority actions in the [NSW Blue Carbon Strategy 2022-2027](#), and the 2 blue carbon demonstration projects on National Park and primary production lands. The Facilitating Climate Adaptation in NSW Marine Parks project was initiated, including a literature review and identification of climate change risks. The climate change towed video monitoring program completed 137 towed video transects of the entire NSW coast and delivered six peer-reviewed published papers. Research collaboration with the climate change citizen science project and [Redmap Australia](#) continues to map changes in fish marine species distribution. An assessment of future ocean warming was conducted, and the exposure of NSW marine parks to the modelled results presented to marine park managers.

#### Triannual progress and key highlights

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Project	Project icon	Location	Progress
<a href="#">Climate change threats to mangrove and saltmarsh</a>		Statewide	Building on the published outcomes of the Statewide first-pass assessment of mangrove and saltmarsh vulnerability to sea level rise, the second-pass assessment is 95% complete. This assessment includes consideration of water and sediment delivery to wetlands from the catchment under climate change.
<a href="#">Estuarine habitat monitoring and threat assessment</a>		Eurobodalla	680 hectares of estuarine macrophyte habitat and 70 artificial structures have been mapped in 3 South Coast estuaries: Batemans Bay, Cullendulla Creek and Clyde River. All new maps publicly available on the <a href="#">NSW Estuarine Habitat Dashboard</a> .
		Statewide	Maps of predicted changes to mangrove and saltmarsh distribution under sea level rise were uploaded for viewing on the <a href="#">Estuarine Habitat Dashboard</a> and are available for download on the <a href="#">SEED Portal</a> .
<a href="#">Blue carbon demonstration on national parks land</a>		Clarence Valley	The hydrological assessment of the Everlasting Swamp blue carbon demonstration site has been completed. The ecological values assessment designed to understand the environmental values at the Everlasting Swamp is almost complete.

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Project	Project icon	Location	Progress
Informing the Climate Change Adaptation Strategy		Statewide	Facilitating climate adaptation in NSW marine parks has commenced. The first Statewide Steering Committee meeting with key marine estate and climate change agencies was held in May 2023, guiding project delivery and connecting the work with existing research and NSW Government programs. A draft risk framework has been developed to assist in identifying climate change impacts across the NSW Marine Park Network and Solitary Islands Marine Park on the Mid North Coast.
Climate change research		Statewide	New 'future ocean warming' dataset developed and includes near and longer-term ocean temperature change information at a spatial resolution suitable for the assessment of the NSW marine estate. This dataset is derived from the latest generation of global climate models. This work improves capacity for future assessments of ocean warming impacts to the NSW marine estate. Results of this assessment have been presented to NSW marine park managers.
Climate change monitoring		Statewide	<p>The climate change towed video monitoring program for 2023 has now been completed, with 137 towed video transects conducted to quantify marine habitat cover along the entire NSW coast.</p> <p>Three peer reviewed papers have been published, detailing research on climate change impacts on <a href="#">long-spined urchins</a>, <a href="#">tropical branching corals</a>, and <a href="#">Australian marine ecosystems</a>.</p>
Climate change citizen science		Statewide	<p>Significant dissemination of <a href="#">NSW citizen science report cards</a> to more than 1000 coastal community members across NSW during the <a href="#">NSW Taste of Seafood</a> festivals.</p> <p>The research article titled "<a href="#">Climate-driven 'species-on-the-move' provide tangible anchors to engage the public on climate change</a>" was recently published in the international journal, People and Nature.</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	Location	Anticipated work
Estuarine habitat monitoring and threat assessment		Statewide	Complete estuarine macrophyte habitat and disturbance maps for Hawkesbury River, Cowan Creek, Patonga Creek.
Blue carbon demonstration on primary production land		Ballina	Continue to develop submission for the Commonwealth Clean Energy Regulator under the blue carbon method and the continued delivery of planning and assessments for the Duck Creek site, including: <ul style="list-style-type: none"> <li>• acid sulfate soil management plan</li> <li>• mosquito management plan</li> <li>• farm management plan</li> <li>• hydrological assessment</li> <li>• case studies for grazing and macadamia land uses.</li> </ul>
Informing the Climate Change Adaptation Strategy		Statewide	The Sea Country content for the <a href="#">Adapt NSW</a> website will be published, providing information and resources for managers including First Nations communities to support climate change adaptation in marine and coastal environments.  Continued delivery of facilitating climate adaptation in NSW marine parks including co-development of risks and adaptation actions with key stakeholders.
Climate change research		Statewide	Completion of a scientific manuscript detailing the projected exposure of NSW marine parks to future ocean warming.  Preliminary results of an assessment measuring spatial shifts in the upper and lower thermal tolerance thresholds of NSW fish fauna under near-future climate change finalised.
Climate change monitoring		Statewide	Scientific paper prepared to examine fish diversity along the NSW coast and how it is likely to be impacted by future climate change.
Climate change citizen science		Statewide	Final design of public signage that encourages marine citizen scientists to spot, log and map species that are unusual to their local areas via <a href="#">Redmap Australia</a> .  Publish the method used to develop the NSW citizen science report card of out-of-range species observations.

## More information

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

## Initiative 4




### Protecting the Aboriginal cultural values of the marine estate

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#### Project summary

Initiative 4 aims to increase community understanding of Aboriginal Sea Country values, enhance economic opportunities and employment for Aboriginal people, as well as increase active involvement in managing the marine estate. The objective for this period was to continue consolidating marine skills projects in the marine estate's southern and northern regions.



#### Triannual progress and key highlights

Project	Project icon	Location	Progress
Reviving cultures		Byron	Arakwal Cultural Camp was held: a 3-day family oriented cultural camp that aims to educate youth about the importance of culture, healthy living, and social and emotional wellbeing, as well as their connections to Land and Sea Country. The camp also promoted the protection of Aboriginal cultural values within the Arakwal region. During the camp, 149 participants exchanged cultural knowledge between the community and DPI Fisheries, establishing a positive ongoing relationship between DPI Fisheries and the Aboriginal community in the Arakwal region.
Cultural economic development		Tweed	Coxswains course for the northern region held in June. Fifteen members from the community between Coffs Harbour and Tweed Heads participated.
		Eurobodalla Bega Valley	First Aid training was held in Narooma where 22 participants completed the training as a prerequisite for coxswains or scuba divers qualifications.
Cultural research and monitoring		South Coast	Under the Joonga Land and Aboriginal Corporation Urchin Removal project, Joonga scuba divers continued work and collaborations with DPI Fisheries scientists in a pilot sea urchin control project in the South Coast.



## 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	Location	Anticipated work
Cultural economic development		Eurobodalla Bega Shoalhaven	Joonga Land and Water Aboriginal Corporation - Batemans Marine Park Signage project will be piloted to engage a local Aboriginal corporation to provide routine inspection, maintenance and replacement of approximately 73 signs within Batemans Marine Park.
Pipi harvest		North and Central Coast	Further development of the Safe and Sustainable Sea Country Harvest of Shellfish project to enable Aboriginal people to harvest and consume pipis safely will continue.
Climate change on culture		Mid North Coast	Coordinate and fund a PADI research scuba dive course for 7 Bundjalung candidates. This will enable co-management of underwater research projects with DPI science and other tertiary institutions.

## More information

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

## Initiative 5

### Reducing impacts on threatened and protected species

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#### Project summary

Initiative 5 aims to understand and mitigate threats to threatened and protected species in NSW. This will help to improve or maintain conservation status and health of targeted threatened and protected species in the wild.



The focus of Initiative 5 during this period has been expanding capacities and commencing projects related to species health and habitat monitoring.

#### Triannual progress and key highlights

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Project	Project icon	Location	Progress
<a href="#">Planning to protect marine wildlife</a>		Statewide	A workshop was held in June 2023 to investigate novel techniques to manage live stranded large whales. Techniques discussed included improved veterinary monitoring, heavy machine operations to improve body positioning, vessel operations to assist with refloating protocols and satellite tracking to monitor post-release success.
<a href="#">Partnerships to protect marine wildlife</a>		Statewide	A series of educational videos for rehabilitation providers and veterinarians on <a href="#">sea turtle health assessments</a> were published. The videos demonstrate best practice techniques for handling and assessing sea turtles and will improve animal welfare and rehabilitation outcomes.
<a href="#">Education to protect and conserve marine wildlife</a>		Barrenjoey Head Aquatic Reserve	A post-installation survey was completed to evaluate vessel response to seaward-facing approach distance signage at the Barrenjoey Headland seal haul out site. The results showed improved compliance with marine mammal approach distances.
<a href="#">Improve reporting of interactions with marine wildlife</a>		Statewide	A report on the impacts of the East Australian Current on humpback whale migratory pathways was drafted and is under review. This will act as a predictive tool to forecast the risk of interactions between migrating whales and fishing gear.
<a href="#">Estuary general fishery observer survey</a>		Tweed Richmond Clarence Hastings Mid Coast Port Stephens	Analyses of data collected from observer-based survey of fisheries targeting mud crab and blue swimmer crab completed to estimate discards of all commercial species, total discards (commercial + bycatch), total threatened and protected species interactions and the precision of achieved sampling fractions completed.

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Project	Project icon	Location	Progress
Species habitat research		Statewide	A literature review was conducted to assess habitat use and species distribution of marine mega-fauna. This study identified gaps in the literature and will guide future work on assessment of species habitat distribution.
Species monitoring		Statewide	Increased post mortems were conducted on deceased marine mega-fauna to investigate factors leading to stranding events. This was achieved through partnerships with rehabilitation organisations, universities and private practice veterinarians.

## 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	Location	Anticipated work
Planning to protect marine wildlife		Statewide	Commence the “Marine Wildlife Carcass Burial on National Parks Wildlife Service (NPWS) Estate and Aboriginal Protocols” Guidelines. This will investigate the effects of carcass decomposition on the environment and the environmental risks where carcasses are euthanised.
Partnerships to protect marine wildlife		Statewide	Large Whale Disentanglement training for internal and external partners prepared. This will build response capacity and ensure safe work practices.
Education to protect and conserve marine wildlife		Statewide	Communication products to be developed and implemented across communities frequently interacting with seals. Products will define normal seal behaviour and outline appropriate interactions.
Estuary general fishery observer survey		Statewide	Review sea turtle rehabilitation records to determine stranding and outcome trends. This will examine the costs and effectiveness of rehabilitation and investigate links between environmental factors and stranding patterns.
Species monitoring		Statewide	<p>Define and create a set of protocols to assess heavy metal levels in stranded cetaceans. This will include assessing the impacts of measured contaminants and modelling to determine point sources of pollution.</p> <p>Conduct a workshop investigating the status and future of sea turtles in NSW. This will focus on the interactions between anthropogenic (human) run-off, compromised waterways and marine fauna health.</p>

## More information

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

## Initiative 6

### Sustainable fishing and aquaculture



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#### Project summary

Initiative 6 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. The projects within initiative 6 are progressing well. Trap and Line Harvest Strategy development is progressing and a key aquaculture socio-economic report was finalised in this last period.

#### Triannual progress and key highlights




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Project	Project icon	Location	Progress
Harvest strategy development		Statewide	Line and Trap Harvest Strategy Working Group was appointed in March 2023 following a call for Expression of Interests. The working group has met twice and will continue to progress the development of the harvest strategies for snapper and kingfish during 2023-24.
Aquaculture socio-economic research		Statewide	The final report on the Socio-Economic Contribution of Aquaculture to NSW has been delivered to DPI Aquaculture Management and will be presented to departmental staff and industry stakeholders.
Fisheries enhancements		Mid Coast Central Coast	Permit received from the Commonwealth Government for Forster and Central Coast artificial reef projects. Fabrication of steel reef modules is underway.
		Sydney Lake Macquarie Hastings	A total of 125,000 Mulloway fingerlings stocked the Georges River, Lake Macquarie and the Hastings River this autumn, eclipsing the previous mulloway stocking record of 90,000. This project is complementary and not funded by the Strategy.
		St Georges Basin Lade Conjola Burrill Lake	Commercial fish supplier produced and stocked 52,250 Dusky Flathead fingerlings into South Coast systems (St Georges Basin, Lake Conjola and Burrill Lake) during March 2023.

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## 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	Location	Anticipated work
Recreational fishing environment assessment		Statewide	<p>Continue distribution of responsible fishing gear, release weights and catch and release mats by DPI education officers more broadly in NSW. The crab trap and net exchange will recommence in spring. Tackle bins and bin stickers will continue to be distributed by local councils.</p> <p>Cultural assessment background report for the recreational fishing environmental assessment is finalised. The engagement process for the risk assessment of the impacts of recreational fishing on cultural values (saltwater) is scheduled for the second half of 2023.</p> <p>Thirty 'Keep it clean' program events are planned for 2023-24. The social media campaign for the clean-ups will commence in August.</p>
Fisheries enhancements		Georges River	Stocking of advanced sized mulloway.
Fishing industry marine stewardship		Statewide	Script and animations that aim to inform and educate stakeholders and the public on the importance of fisheries data, stock assessments, harvest strategies and sustainable fisheries drafted.

## More information

More information on Initiative 6 projects is on the marine estate website [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 compliance enforcement and education campaigns.

#### Triannual progress and key highlights

Project	Project icon	Location	Progress
Environmentally friendly moorings		Statewide	Stage 3 of the TfNSW-CSIRO Environmentally Friendly Mooring (EFM) research program commenced in June 2023, including in-water deployment of EFMs, inspection and servicing of mooring apparatus, sea-floor monitoring, biodiversity surveys and carbon sampling.
Mooring access		Statewide	Ongoing investigations into mooring standards and the progress of environmentally friendly moorings will inform a review of the number of available moorings in each field across the state.
End-of-Life vessel management		Statewide	Public consultation on policy options to improve the management of End-of-Life-Vessels is complete. Livestream events were held and 174 public submissions are being analysed.
Review of offshore anchoring		Wollongong	Assessed the potential impacts of large ships anchoring on seabed habitats offshore and hosted an educational workshop on anchoring with stakeholder groups.

#### 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	Location	Anticipated work
Environmentally friendly moorings		Statewide	Continuation of the in-water deployment of EFMs across 3 maritime regions and related monitoring activities.
Vessel environmental standards		Statewide	The Marine Pollution Regulation (Regulation) review is ongoing.
Review of offshore anchoring		Wollongong	Commence seafloor monitoring surrounding anchoring sites.

#### More information

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

## Initiative 8

### Enhancing social, cultural and economic benefits




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#### 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.

A key focus for Initiative 8 this period was towards ensuring that social, cultural and economic values are better incorporated into planning and management of the marine estate. This included providing new social, cultural and economic monitoring data to inform outcome evaluation across the Strategy initiatives, and initiating a cost-benefit analysis for oyster reef restoration being conducted under Initiative 1. Methods to integrate economic and environmental data to inform decision making using a Natural Capital Accounting approach were progressed. New projects were also initiated towards continued improvement of our information base on the human dimensions of the marine estate via analysis of economic market insights and assessment of new environmental markets (including blue carbon).





#### Triannual progress and key highlights

Project	Project icon	Location	Progress
<a href="#">Marine Estate Education Strategy</a>		Statewide	<a href="#">Marine Estate Agents primary school program</a> was finalised following a pilot with 228 NSW students and feedback from teachers on the curriculum based content.  Careers videos which showcase the diversity of jobs related to the NSW marine estate have been completed (e.g. commercial fisherman, education ranger, research scientist). The videos will form part of the marine estate high school program currently under development.
<a href="#">Social and cultural benefits monitoring and research</a>		Statewide	Outcome monitoring data (social, cultural, economic) were analysed and collated to inform the Strategy program evaluations as required under the Integrated monitoring and evaluation framework for the <a href="#">Marine Integrated Monitoring Program (MIMP)</a> .  This includes findings from internal marine estate agency staff survey.
<a href="#">Economic benefits monitoring and research</a>		Statewide	Economic data for long-term monitoring updated to include recent years. Analysis of data and engagement with stakeholders from industry sectors is underway to inform a 'Market Insights Report'.  This report investigates drivers for economic changes in individual industries and regions, as well as broader trends in the marine estate over the last 5 years, and into the future.  Economic outcome monitoring data collated for MIMP (as described for social, cultural benefits monitoring).

Project	Project icon	Location	Progress
Marine estate economic valuation		Statewide	<p>Discussion paper on new environmental markets for coastal and marine assets and services (including blue carbon) commenced to inform an ocean accounts pilot project.</p> <p>A cost-benefit analysis of Oyster Reef Restoration in Port Stephens (delivered under Initiative 1) commenced to help assess the economic viability and potential benefits of restoration efforts.</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	Location	Anticipated work
Marine Estate Education Strategy		Statewide	Marine Estate Education Hub developed for the marine estate website. The hub will be a place for schools and the community to easily find relevant education material.
Social and cultural benefits monitoring and research		Statewide	<p>NSW Marine Estate Community Wellbeing Framework report publicly released. The report provides the overarching approach for long-term monitoring of social, cultural and economic benefits related to marine estate as required by the MIMP.</p> <p>NSW Marine Estate Community Wellbeing Survey Reports for Coastal Residents, Coastal Visitors and Coastal Youth and associated communications materials publicly released.</p>
Economic benefits monitoring and research		Statewide	The 'Market Insights Report' completed and economic data and associated communication materials updated to inform long-term monitoring of economic benefits of the marine estate.
Marine estate economic valuation		Port Stephens	Cost-benefit analysis report for the Oyster Reef Restoration program in Port Stephens completed.

## More information

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





## Initiative 9

### Delivering effective governance

#### Project summary



During this reporting period, the Initiative 9 projects made progress towards enhancing the planning, management and compliance of marine protected areas in NSW and Greater Sydney. Background research was conducted to inform management planning processes for Lord Howe Island Marine Park, and a report was generated to assist with program planning and management for aquatic reserves. The Greater Sydney region also conducted extensive compliance monitoring, conducting 728 hours of patrols of aquatic reserves.

#### Triannual progress and key highlights

Project	Project icon	Location	Progress
Improved marine protected area planning and management		All aquatic reserves and Bouddi Marine Extension	Final draft report 'Identifying Environmental Assets, Threats and Management Actions for Aquatic Reserves' received to help inform program planning and management for aquatic reserves.
		Shellharbour	A celebration to commemorate over 40 years of Bushrangers Bay Aquatic Reserve was held on World Oceans Day (8 June 2023). The event was jointly organised by the Department of Primary Industries, Fisheries and Shellharbour City Council and featured a presentation on the marine life at Bushrangers Bay and ongoing research activities at the aquatic reserve.
		Lord Howe Island Marine Park	Literature review of social, economic and cultural information for Lord Howe Island Marine Park (LHIMP) endorsed by the Marine Estate Management Authority.  Aerial habitat mapping (orthorectified and LiDAR) over Lord Howe Island and nearshore waters was completed with a priority focus on the lagoon and back reef. This was identified as a key knowledge gap to inform the threat and risk assessment and management planning process for the Lord Howe Island Marine park. Once completed, the results of the mapping will be published on the <a href="#">Six Maps website</a> .
Cape Byron Marine Park	A research team from Southern Cross University was selected to assess the threats and risks to the environmental, economic, social, and cultural values of the marine environment surrounding Julian Rocks (Nguthungulli) in the Cape Byron Marine Park.		
Greater Sydney region compliance focusing on marine protected areas		Hawkesbury bioregion marine protected areas	The mobile compliance squad in Greater Sydney spent 728 hours patrolling aquatic reserves and intertidal protected areas this period. They interacted with 577 fishers and found that 54% of marine recreational fishers were compliant with collection regulations, while 86% were compliant with fishing regulations. The overall compliance rate for all inspected fishers was 82%.

## 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	Location	Anticipated work
Improved Marine Protected Area Planning and Management		Lord Howe Island NSW mainland	Community survey for Lord Howe Island Marine Park underway through targeted interviews with stakeholders, including the Marine Park Advisory Committee.
		Cabbage Tree Bay Aquatic Reserve	Interpretive signage for Cabbage Tree Bay Aquatic Reserve installed in partnership with the Northern Beaches Council.
Greater Sydney region compliance focusing on marine protected areas		Greater Sydney	Drone pilot training for Fisheries Officers to enable officers to use this technology to increase surveillance areas and risk identification and to assist coordination of compliance.

## More information

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

# Part C: Additional program requirements




## Program management, monitoring, reporting, evaluation and education


### Project summary

At a strategic level several objectives support the implementation of the Strategy, including continuous improvement of governance structures and the program management framework to ensure collaboration and coordination across all agencies, as well as planned monitoring, reporting and evaluation projects in place to measure success. Communication, engagement, and Geographical Information Systems (GIS) support is also facilitated at this strategic level.

The [previous triannual report](#) and [Marine Strategy Implementation Annual Report](#) is available on the marine estate website.




### Triannual progress and key highlights

Project	Project icon	Location	Progress
<a href="#">Strategy program management</a>		Statewide	<a href="#">Strategy achievements infographic</a> updated and published to showcase the outcomes achieved during the first four years (2018-2022) of the implementation of the Strategy.  <a href="#">Strategy Snapshot Report (November 2022-February 2023)</a> published. This provides a regular update to stakeholders and the community on the implementation of the Strategy.  Workshop held for Strategy initiative leads in March 2023. This allowed new staff to gain insight into their roles and responsibilities, understand synergies across the program, and become familiar with the MIMP and their reporting obligations. The workshop also focused on planning for the 5-year health check.
<a href="#">Strategy education, communication, and stakeholder liaison</a>		Statewide	Publication of two targeted stakeholder <a href="#">newsletters</a> with a readership of 1,221.
<a href="#">Better geographic information systems (GIS) for the marine estate</a>		Statewide	Updated <a href="#">webmaps</a> for all Aquatic Reserves associated with NSW on the DPI website. These maps use embedded mapbox technology that is optimised for mobile devices. They allow users to locate themselves in relation to the reserve and provide information about permitted activities through a text popup and standard symbols.

Project	Project icon	Location	Progress
Monitoring Program – program management		Statewide	<p>Development and user testing of internal MIMP database and support systems. This includes data entry, data repositories, data architecture, and data workflows to support reporting through the MIMP.</p> <p>Data for outcome monitoring, in accordance with the <a href="#">Integrated Monitoring and Evaluation Framework</a> collated for the MIMP. This information will be used to inform the mid-term evaluation of Strategy.</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	Location	Anticipated work
Strategy program management		Statewide	<p>Year 6 Trimester 1 Snapshot Report published.</p> <p>Internal EHG Marine Estate Management Strategy conference organised. The conference aims to enhance communication and the exchange of knowledge among project staff, leading to improved project delivery.</p>
Strategy education, communication, and stakeholder liaison		Statewide	<p>Marine Estate Website Content and Navigation Improvement Project to improve the stakeholder experience of the marine estate website continued. It involves delivering new content and enhancing the existing navigation.</p>
Monitoring Program – program management		Statewide	<p>Delivery of final report, communications, and engagement plan for the five-year Threat and Risk Assessment review.</p> <p>Mid-term evaluation of the Strategy guided by the <a href="#">Integrated Monitoring and Evaluation Framework</a> and supported by data from Strategy Outcome Monitoring.</p>

## More information

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

## Appendix A – List of abbreviations


Abbreviation	Definition
Authority	Marine Estate Management Authority
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DPI-Ag	Department of Primary Industries – Agriculture
DPI-F	Department of Primary Industries – Fisheries
DPE-EHG	Department of Planning and Environment – Environment & Heritage Group
DPE-Lands	Department of Planning and Environment – Crown Lands
DPE-PA	Department of Planning and Environment – Planning and Assessment
DPE-Water	Department of Planning and Environment – Water
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
MIMP	Marine Integrated Monitoring Program
MoU	Memorandum of Understanding
NPWS	DPE-EHG: National Parks and Wildlife Service
NSW	New South Wales
SEED	Sharing and Enabling Environmental Data
Strategy	Marine Estate Management Strategy
TARA	threat and risk assessment
TfNSW	Transport for NSW
UNSW	University of New South Wales

## Appendix B – Communication and engagement

\* Election caretaker period March / April communication shutdown impacted the data for this reporting period.

### Marine Estate Instagram - #nsw\_marineestate

#### TOP POSTS VIA LIKES: 1 March – 30 June 2023

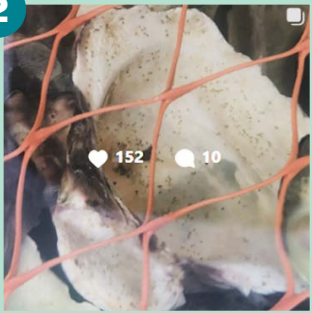
- 

**1**

**Bass are back at Kyogle Weir Fishway!**

154 likes

[View post](#)

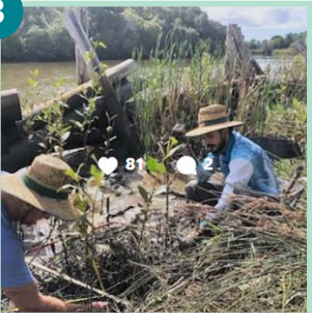
Recent monitoring at Kyogle Weir fishway found 12 native fish species travelling upstream through the fishway, including the iconic Australian bass and freshwater Eel-tailed catfish species.
- 

**2**

**Oyster reef restoration harvesting**

152 likes

[View post](#)

DPI's Aquaculture Researchers harvested larvae from adult Native Flat Oysters, the baby oysters, called spat, were reared in a hatchery, transported to the site, and then settled onto recycled oyster shells generously donated by local oyster farmers and cleaned by enthusiastic volunteers.
- 

**3**

**Riverbank stabilisation project**

81 likes

[View post](#)

It's official! Bank protection works can result in more carbon storage as well trapping sediment to keep waterways healthier.

#### TOP SHARES: March – June 2023



**The Long-spined Sea Urchin is moving south!**

**30** shares **37** likes

[View post](#)

This prominent NSW sea urchin has been moving south to Vic and Tassie waters in response to climate change.

## TOP VIDEO VIEWS: March – June 2023

**1**



Sea Country video: scuba diving certificate for Aboriginal participants

**1,171** views

[Watch video](#)

**2**



Oyster reef restoration project

**1,121** views

[Watch video](#)

## STATISTICS

**1,900** followers increased by **9.2%** compared to previous reporting period.

**21** Instagram posts and **3** Instagram stories were posted during this period, reaching **10,434** accounts.

## KEY THEMES

(some themes are interrelated)

Improving water quality and litter – **4**

Improving coastal and marine habitat – **2**

Responding to climate change – **2**

Working with Aboriginal communities – **5**

Threatened and protected species – **4**

Sustainable fishing and aquaculture – **4**

Enabling safe and sustainable boating – **2**

Promoting social, cultural and economic benefits – **4**

Increasing stakeholder and community engagement/education – **8**

Delivering effective governance – **3**

## Marine estate newsletter - [Connect with us \(nsw.gov.au\)](https://nsw.gov.au)

Two newsletters were published during the reporting period.

No newsletters were published during the caretaker period (March, April)

## STATISTICS

**1,221** contacts increased by **11%** compared with the previous reporting period.

## TOP 3 STORIES: March – May 2023 Newsletter



Bass are back

**364** views

[View story](#)



Wetlands under fire: How did the black summer bushfires impact estuarine wetlands

**190** views

[View story](#)

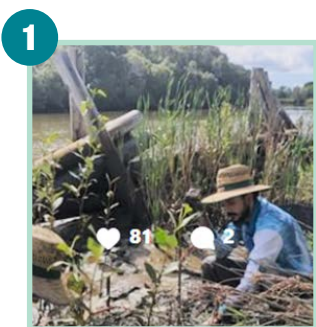


Helping blueberry farmers save water

**86** views

[View story](#)

## JUNE - TOP 3 STORIES: June 2023 Newsletter



New research shows bank protection works reduce erosion and store carbon

**222** views

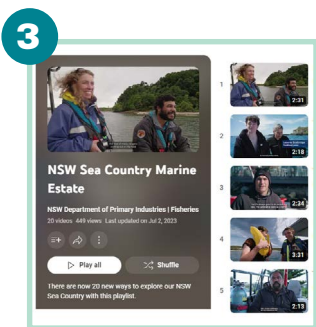
[View story](#)



New videos highlight opportunities for Aboriginal people on Sea Country

**208** views

[View story](#)



Youtube playlist

**208** views

[View story](#)



## Marine Estate Website - [marine.nsw.gov.au](https://marine.nsw.gov.au)

### Top pages visited: March – June 2023

1. [Marine estate management strategy \(nsw.gov.au\)](#)
2. [Strategy implementation](#)
3. [New South Wales Marine Estate Threat and Risk Assessment Report](#)
4. [Knowledge centre and news section](#)

### Top 3 visited Project Pages

1. [Domestic waterfront structure strategies \(nsw.gov.au\)](#)
2. [Investing in a blue carbon demonstration site on primary production land](#)
3. [Coastal wetland rehabilitation \(nsw.gov.au\)](#)

## STATISTICS

**19,654** pageviews, an increase of **16.6 %** compared to previous reporting period.

**15,637** unique pageviews an increase of **24.2 %** compared to previous reporting period.