

Marine Estate Management Strategy

Annual Report 2023–2024

December 2024



Acknowledgement of Country

The Marine Estate Management Strategy acknowledges the Traditional Owners and Custodians of the land on which we live and work, and pays respect to Elders past, present and emerging.

Aboriginal people hold deep cultural and spiritual connections to the land and sea. They have cared for Land and Sea Country for thousands of years, passing on their knowledge and tradition to each new generation. We seek to work collaboratively with Aboriginal people to maintain their social, cultural, economic and spiritual connections to the marine estate, now and into the future.



© Bindarray Maagun (*River Feast*) by Gumbaynggirr artist Lavinnia Inglis

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More information

This report is a supplementary report to the Marine Estate Management Authority Annual Report 2023–24. It covers the period 1 July 2023 to 30 June 2024.

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- NSW Department of Primary Industries and Regional Development – DPIRD Fisheries
- NSW Department of Climate Change, Energy, the Environment and Water – DCCEEW
- NSW Department of Planning, Housing and Infrastructure – DPHI-Planning
- Transport for NSW

Cover image: Free diving with seals at Barunguba / Montague Island, Narooma. Image by R. Richards © Rosie Richards

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Foreword from the Chair of the Marine Estate Management Authority



The NSW marine estate provides NSW residents and visitors with a wonderful array of benefits from the amazing coastline, iconic estuaries, incredible wildlife and their natural habitats. This Sea Country has always been an inseparable part of the cultural wellbeing of First Nations people.

The NSW Marine Estate Management Authority advises the Government through the Marine Estate Management Strategy 2018–2028 (the Strategy) and with the independent advice from the Marine Estate Expert Knowledge Panel.

In this Report we share the achievements of this program in 2023–24, the sixth year of the 10-year Strategy.

The Strategy includes measuring the status of marine estate values, assessing threats and risks to those values, ensuring all uses of the marine estate are sustainable, and advising on actions needed to reduce the high-priority threats. This world leading program invests \$30m per year to support 100 projects that are integrated across the NSW Government. Guided by the Marine Estate Management Act, the Authority strongly encourages cooperation and coordination between Government Departments. I acknowledge the work of staff from the Department of Primary Industries and Regional Development, the Department of Climate Change, Energy, the Environment and Water, Transport for NSW and the Department of Planning, Housing and Infrastructure and the partnerships they have forged with other arms of government. All these Government departments have established strong relationships with local communities, local industry operators, Indigenous Peoples, non-government organisations and private landholders.

In 2023–24, the program engaged with our stakeholders through informative webinars, established working groups and provided key strategies and guidelines to assist local government, including the Coastal Design Guidelines. Discussions with Harvest Strategy and Agricultural industry groups is encouraging adoption of sustainable practices to meet key social, economic, cultural and ecological objectives of the Marine Estate Management Strategy.

The Strategy delivered on substantial commitments to Sea Country engagement by Aboriginal people through training courses, cultural fishing clinics, and employment on key projects like the restoration of the Buckenbowra Fish Trap. The strong cultural connections of Aboriginal people to Sea Country were highlighted through the release of the [Connections to Sea Country – Aboriginal People of Coastal NSW Survey \(Wave 1\)](#) report.

There is now a greater understanding of the value of the marine estate to NSW with the publication of the NSW marine estate economic contribution and market insights report, which will help guide management and investment into the future. The benefits of the marine estate to the NSW community are now captured in the Wave 1 community wellbeing reports. With the deployment of 2 artificial reefs at Foster and the Central Coast, we are supporting increased use and enjoyment of the estate.

In 2023–24, the 5-year Threat and Risk Assessment (TARA) considered potential emerging threats to the marine estate and what monitoring and management responses may be required to continue to

adaptively manage the Strategy. The mid-term evaluation has identified that the Strategy remains appropriate, with improvements to be made on the collection of data to demonstrate progress.

With funding secured for the remaining 4 years of the Strategy, we will continue to collaborate with partners to build a more resilient marine estate that will remain one of our state's key natural assets supporting the wellbeing of the community, now and into the future.

Russell Reichelt AO AFTSE Chair, Marine Estate Management Authority

Contents

Foreword from the Chair of the Marine Estate Management Authority	4
Introduction	7
The Strategy	7
Report structure	7
How we work	8
Adaptive management	8
Strategy evaluation	8
Enhancing and expanding connections	9
Finance	13
Staffing	14
Natural and built environment	15
Initiative 1 – Improving water quality and reducing litter	16
Initiative 2 – Delivering healthy coastal habitats with sustainable use and development	21
Initiative 3 – Planning for climate change	26
Initiative 5 – Reducing impacts on threatened and protected species	30
People, communities and business	33
Initiative 4 – Protecting the Aboriginal cultural values of the marine estate	34
Initiative 6 – Ensuring sustainable fishing and aquaculture	37
Initiative 7 – Enabling safe and sustainable boating	41
Initiative 8 – Enhancing social, cultural and economic benefits	45
Governance and management	48
Initiative 9 – Delivering effective governance	49
Program management, monitoring, reporting, evaluation and engagement	52
Abbreviations and acronyms	55
Appendix A – Communication and engagement	56
Marine estate Instagram – #nsw_marineestate	56
Marine estate newsletter – Connect with us (nsw.gov.au)	57
Marine estate website – marine.nsw.gov.au	58

Introduction

This report describes the annual progress of the 10-year Marine Estate Management Strategy 2018–2028 (the Strategy): it describes the progress of the Strategy projects and initiatives, risk management and finances for the 2023–24 financial year.

It is informed by the public triannual reports that were published in the past 12 months in line with the current Implementation Plan for 2022–2024.

The Strategy

The Strategy provides the overarching framework for coordinated management of the marine estate to deliver the Authority's vision for **'a healthy coast and sea, managed for the greatest wellbeing of the community, now and into the future'**. It is underpinned by the NSW Marine Estate Threat and Risk Assessment (TARA).

The marine estate comprises 1,750 kilometres of coastline, 826 beaches and 185 estuaries. It includes estuaries, the shoreline, submerged lands, offshore islands, and the waters of the NSW coast from the Queensland to the Victorian border and out to 3 nautical miles offshore. It also includes 85% of the NSW population who live along the NSW coastline and the many domestic and international visitors who visit our coast.

The Strategy outlines a series of management actions across 9 initiatives to address the priority threats to environmental assets and social and economic benefits derived from the marine estate. These are highlighted in the 2018–2028 Strategy Snapshot. A final component – program management, communication and education, monitoring, reporting, and evaluation – supports the implementation of the Strategy.

The evaluation of the Strategy's performance is guided by the Marine Integrated Monitoring Program (the Monitoring Program), specifically the Integrated Monitoring and Evaluation Framework. Evaluation is scheduled at strategic points throughout the 10-year life of the Strategy to enable adaptive management. Progress against short-term outcomes was evaluated after the first 2 years (in 2020–21) and short- and intermediate-term outcomes assessed after 5 years (in 2023–24) through the mid-term evaluation. The next and final evaluation will take place in 2027–28.

The Strategy is a genuine commitment from the NSW Government to manage one of our greatest natural assets – the NSW marine estate. More than \$287 million of funding has been allocated for the 10 years of implementation from 2018 to 2028.

Report structure

The report is presented against the 3 overarching areas of change for the Strategy outcomes to deliver on our vision for the NSW marine estate:

- Natural and built environment
- People, communities and businesses
- Governance and management.

The 9 initiatives and 53 actions are reported under those areas of change. The outcomes and initiatives are interrelated: actions in one area of change often support actions in others.

How we work

In 2023–24, the Authority continued to work across multiple agencies and partners during the sixth year of the 10-year Strategy.

We continued to implement nearly 100 projects to improve waterway health, engage and consult with communities, provide First Nations training and employment opportunities, and protect important coastal and marine species.

Key achievements for each of the initiatives this year are presented in this report. Triannual snapshot reports highlight key work delivered for each initiative throughout the year and are available on the [Strategy website](#).

The Strategy's unique governance and program management framework, which includes 4 core agencies and several partners, provides a governance structure that gives the Authority oversight of the Strategy projects while working in close collaboration with advisory bodies, initiative working groups, other government agencies and partners. This approach ensures coordination, consistency and transparency across all Strategy projects and enables the Strategy's progress to be monitored and reported.

The independent Marine Estate Expert Knowledge Panel (the Panel) continues to provide ecological, social, cultural and economic expertise in implementing and evaluating the Strategy.

Adaptive management

Changing government priorities and the need for program resources to support state emergency responses, including the flood recovery program, have reduced our capacity for some initiatives. This includes a reduced capacity to perform on-ground work, engage with communities in person, and conduct field research, education and training.

Despite these challenges, we were able to deliver key elements of the Strategy on time through adaptive management approaches with regular reviews. We manage risk carefully to help reduce the impact of unplanned events on implementation of the Strategy.

Strategy evaluation

After 5 years of the Strategy implementation, the mid-term evaluation was conducted in 2023–24. It involved:

- a context and basis assessment to identify any changes in the broader management context or understanding of issues that may affect program delivery or success
- process evaluation to look at how the program is delivered, the program's current operating conditions and identifying processes that may hinder success
- outcomes evaluation to consider whether the program has achieved, or is on track to achieving, its intended outcomes.

The evaluation found that the Strategy is as relevant today as ever. We are making continuous progress towards the Strategy outcomes, including a substantial improvement in the collection of baseline data. Although the governance framework and updated processes have enabled cross-agency collaboration and improved aspects of Strategy delivery, more is needed to make our

processes more efficient. More consistent collection and reporting of outcome data would also help us show what the Strategy is achieving for the NSW marine estate.

The Statewide TARA 5-year review has now been completed. It was an update rather than a full review of all the threats and risks contained in the 2017 Statewide TARA. The review identified potential changes in known or emerging threats that may require monitoring and/or management responses in the final years of Strategy implementation. This process has kept the Statewide TARA relevant, maintains transparency, and directly informs evidence-based adaptive management via the Strategy.

A 5-year health check of the Strategy has responded to the recommendations from the 5-year TARA review and mid-term evaluation. This has confirmed the priorities and direction of the final 4 years of implementation and will ensure a strong program to meet outcomes and help secure the future of the Strategy beyond 2027–28.

Enhancing and expanding connections

We have continued to work with our partners and stakeholders – the NSW community, Aboriginal peoples, local government, industry and the research community.

NSW community

Highlights included:

- publishing 3 snapshot reports for 2023–24 on the [NSW Marine Estate website](#), communicating key deliverables every 4 months, and showcasing the benefits of the Strategy
- deploying 2 artificial reefs at Forster and Central Coast, which provide recreational fishers with new productive fishing locations. Artificial reefs increase biodiversity in the marine environment, providing a new habitat for a range of species, such as kingfish, mulloway and snapper
- publishing the results of the Marine Estate community wellbeing surveys: [NSW Coastal Residents of NSW Summary Report \(Wave 1\)](#), the [Coastal Visitors to NSW Summary Report \(Wave 1\)](#), and the [Coastal Youth of NSW Summary Report \(Wave 1\)](#). These reports provide valuable insight into our coastline from coastal residents, youth and visitors. Wave 2 will commence in late 2024
- publishing [videos and fact sheets](#) showcasing 6 different careers in the marine estate aimed at high school students
- launching the [Marine Estate Agents](#) program providing resources for primary schools to assist teaching students about the NSW marine estate
- launching a travelling exhibition – [Bidhiinja: Restoring our Oyster Reefs exhibition](#) – a collaboration between DPIRD Fisheries and the Australian National Maritime Museum. Bidhiinja will visit regional centres throughout 2024 and 2025
- distributing 11 [marine estate newsletters](#) with nearly 100 articles to more than 1,408 people.

Our work is published on the marine estate website, and we also engage with the community through media releases and social media. We posted 178 times on Instagram and shared 11 Instagram stories, reaching 2,245 followers. Traffic to the marine estate website increased by 260% compared to the 2022–23 annual report.

We successfully completed the Website Navigation and Optimisation Project. It made the website easier to use by organising content into audience-specific categories and improving site navigation.

Since the refreshed website launched in April, we have seen overall users up 140%, homepage views up 94.4% and project page views up 309%.

You can [connect with us](#) to receive our newsletters and see our Instagram posts. Refer to Appendix A for examples of our communication and engagement activities in 2023–24.

First Nations people

Coastal First Nations people have been managing Land and Sea Country for tens of thousands of years. We are grateful to our First Nations partners for sharing their cultural knowledge and practices, and we are working to embed First Nations people in the management of Sea Country in NSW, such as:

- employing Aboriginal people in Strategy implementation
- providing training and skills development in marine industries and natural resource management
- providing support for Aboriginal economic development to work on Sea Country in marine and tourism industries
- facilitating a range of actions to improve the management of Sea Country in consultation with Aboriginal communities.

Our engagement and connections with our Aboriginal communities in 2023–24 included:

- delivering training and work experience in signage asset maintenance for local First Nations-owned businesses and community members in Batemans Bay. This project highlighted the importance of working on Country, healthy Sea Country, healthy living, and social and cultural emotional wellbeing and its connections to Land and Sea Country
- establishing a plastic recycling station at [Bowraville](#) in partnership with The Plastic Collective and MiiMi Aboriginal Corporation. This facility will service the Nambucca Valley and will train and employ Aboriginal staff in all aspects of recycling
- publishing the [Connection to Sea Country – Aboriginal Peoples of Coastal NSW \(Wave 1\)](#) report. This survey was aimed at improving our understanding of Aboriginal peoples' cultural connections to Sea Country and the impacts on these connections
- publishing the connections to Sea Country Survey animation playlist. This playlist showcases 3 animations that help communicate the key findings of the surveys:
 - [Sea Country for cultural connections and wellbeing](#)
 - [Protecting Sea Country](#)
 - [Working together to care for Sea Country](#)
- publishing a video on [Bringing Back the Buckenbowra Fish Trap](#). The video told the story of the Batemans Bay Local Aboriginal Land Council (LALC) – Walbunja Rangers and how they safely reconstructed the fish trap wall with the existing stones, providing employment for the Walbunja Rangers and other Aboriginal-owned businesses. It also revitalised Aboriginal cultural heritage and created a safe space to facilitate cultural fishing practices
- publishing a video with [testimonials](#) from participants from across NSW who attended the 2024 Sea Country Summit on Heron Island
- hosting multiple cultural fishing clinics for Aboriginal children, promoting sustainable fishing and connecting young people with Sea Country as they engaged with local Elders

- employing the Joonga Aboriginal Dive Team at Narooma to assist with surveys on the subtidal oyster reefs as part of the Wagonga Inlet Living Shoreline and worked with the broader community to weave cultural elements into the project, including language, art and culture
- delivering a completed Coxswain Grade 3 qualification for local First Nations people certifying the operation of a commercial vessel less than 12 metres. This qualification assists First Nations people to be employed on Sea Country management projects
- publishing a teaching aid of a virtual excursion to learn how Aboriginal people have lived and cared for Sea Country on the NSW south coast. The aim was to encourage teachers to look for alternative ideas for the classroom for students to learn how Aboriginal people lived on and care for Sea Country
- supporting 220 Aboriginal community members to complete their general boat licence, in partnership with TfNSW, who facilitated 18 training courses across the NSW coast.

To find out more about cultural heritage and learn about the connection Aboriginal communities have with Sea Country, read about our work with Aboriginal communities in the Initiative 4 section in this report.

Local government

Local councils along the coast of NSW are critical Strategy partners. Through a threat and risk based approach, they help identify coastal and marine areas that are under threat at a local scale. They are key to addressing these threats, including through programs such as coastal management programs. They provide a necessary link to the community and facilitate actions that enhance the community benefits we all derive from the marine estate.

Our engagement and connections with our local councils in 2023–24 included the following:

- supporting ongoing liaison between project leads and local government staff
- hosting 3 initiative-led informative webinars, with 218 registrations in total (36% NSW State Government representatives, 60% local government and 4% from other sectors). The webinars were on:
 - Initiative 1: Improving water quality and reducing litter
 - Initiative 2: Healthy coastal habitats and sustainable development
 - Initiative 3: Planning for climate change
- establishing a Marine Estate Education Working Group with the majority of the 18 members consisting of NSW coastal council's education and engagement staff. The initial working group meeting is scheduled for July 2024
- attending regular council meetings to discuss projects and explore opportunities for collaboration to advance these key projects
- publishing the Coastal Crown Land Guidelines, NSW Coastal Design Guidelines and the Domestic Waterfront Structure Strategies to help Councils deliver more effective and efficient planning decisions that enhance the benefits of the marine estate while minimising threats to public assets and resources

- collaborating with councils on planning and delivery of on-ground works, including fish passage, sealed roads, riparian and wetland rehabilitation, bank stabilisation, and oyster reef restoration. Several projects received acclaim through the:
 - International Erosion Control Association (ICEA) Australasia Environmental Excellence Award (Roads/Bank Stabilisation/Riparian Restoration, Emigrant Creek)
 - NSW Coastal Management Award for Innovation (Oyster Reef Restoration, Wagonga Inlet)
- providing advice to several councils on management responsibility for legacy breakwaters
- in partnership with Rous, Ballina, Lismore, Richmond Valley and Kyogle councils, delivering forums on improving communication and coordination to reduce diffuse source water pollution and improve waterway health for the Richmond River.

This work has allowed us to observe the benefits of the Strategy. In particular, council-led coastal management programs (CMPs) align with initiatives 1 and 2 and their focus on water quality, marine litter, the health of estuarine and marine habitats and coastal management. Participation in CMP development and implementation provides an opportunity to channel Strategy project outputs directly into coastal management.

Industry

Economic benefits are a vital focus of the Strategy. Projects contribute to improved viability and sustainability of coastal and marine industries, providing new economic opportunities and supporting industry innovation. Industries involved in Strategy projects include tourism, fishing, aquaculture, agriculture and emerging horticulture industries.

Our engagement and connections with our industry partners in 2023–24 included the following:

- publishing the NSW Marine Estate Economic Contribution and Market Insights Report, a key output of the Marine Estate Economic Valuation project, which will inform ongoing management and investment in the marine estate. In 2021-22, the marine estate contributed \$16.2 billion in value added and approximately 103,800 jobs, with 27 dependent industries. 63% of income generated by the industries depends on the health of the marine estate
- presenting on careers on fisheries, aquatic habitat rehabilitation case studies in NSW and the Strategy oyster reef restoration program to marine restoration students
- holding Harvest Strategy Working Group meetings throughout the year. Harvest strategies are designed to achieve agreed ecological, economic, cultural and social management objectives. The working groups explore how to respond to various fishery conditions before they occur
- releasing advisory and educational imagery and videos for the Responsible Crab Fishing Campaign
- presenting Clean Coastal Catchments research results to 129 advisors and farmers from the blueberry, dairy and macadamia industries through 3 grower-focused field days
- publishing and distributing monthly newsletters to more than 10,100 subscribers from government, industry advisors, suppliers and farmers. The newsletters highlight research and development under the Clean Coastal Catchments program and other Strategy-related initiatives
- supporting the dairy industry to build greater nutrient management capacity by implementing the industry-recognised Fert\$mart program and on-ground work actions

- assisting horticultural growers to use computerised automation to deliver more precise irrigation schedules, saving money and reducing the amount of nutrient rich wastewater flowing into the broader environment
- starting an ongoing engagement program with NSW whale watch operators to facilitate better industry compliance, encourage best practice and involvement in citizen science. Operators have been given the opportunity to upload data on unusual or infrequent marine mammal sightings that can then be used to help with conservation management of the species
- delivering training on landscape hydration to members of the Casino Co-op, which is Australia's largest farmer-owned world-class meat processing co-operative, and supporting implementation of on-farm works to implement learnings from the training.

Research community

We partnered with CSIRO and universities to better understand the natural assets and systems in the marine estate. To share the results of this work, we published 19 peer-reviewed scientific papers this year. The papers are listed under each initiative and include:

- 5 papers related to improving water quality and reducing litter
- 1 paper related to delivering healthy coastal habitats with sustainable use and development
- 9 papers related to planning for climate change
- 4 papers related to reducing impact to threatened species.

NSW Parks and Wildlife Service Marine Wildlife Team hosted a Turtle Summit in Coffs Harbour. The summit provided a platform for researchers across NSW to collaborate and share research and agree on best practice relating to turtle management across the state. This was an inaugural event, and it will become a biannual event.

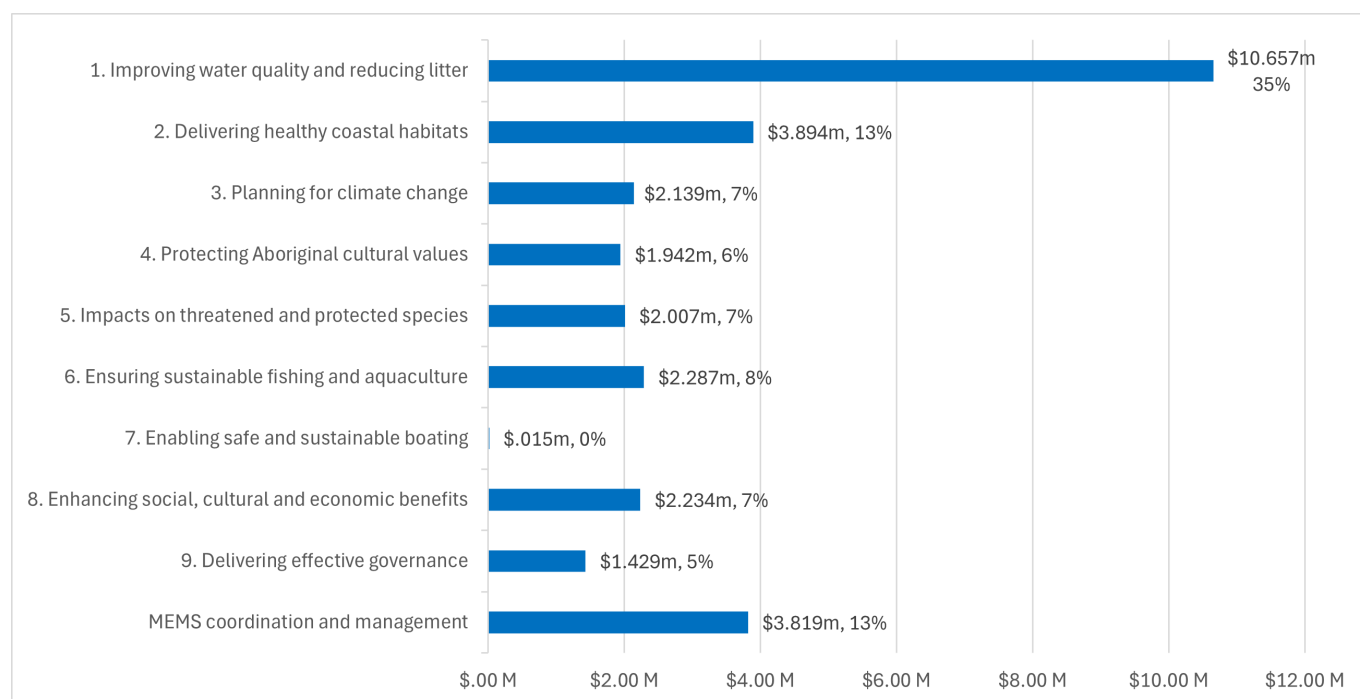
Finance

The NSW Government has invested substantial funding to manage one of our greatest natural assets – the NSW marine estate. More than \$287 million of funding has been allocated to the Strategy over the 10 years of implementation from 2018 to 2028:

- \$45.7 million for Stage 1 – the 2 years from August 2018 to June 2020
- \$58.9 million for Stage 2 – years 3 and 4 of the Strategy from July 2020 to June 2022
- more than \$184 million for Stage 3 – the final 6 years from July 2022 to June 2028, which is equivalent to about \$30 million each year. It should be acknowledged that there is a large in-kind contribution by industry partners and stakeholders in the delivery of the Strategy.

Figure 1 shows the Treasury budget allocation per initiative for 2023–24 and the percentage of the Strategy's overall budget.

Figure 1. Budget allocations for the Strategy initiatives for 2023–24
 Note: Initiative 7 is funded by Transport for NSW except for \$.015m Strategy funding.



Staffing

The Strategy directly employs people in 8 NSW State Government agencies and indirectly through local government and industry. It also engages consultants and researchers through contract arrangements to assist with research projects, on-ground works and community engagement.

The Strategy funds 137 staff in 123 full-time equivalent (FTE) positions. More than 70% of these roles are in regional NSW and 8 of the roles are Aboriginal Identified positions.

Year 6 Strategy-funded positions are as follows:

- DPIRD Fisheries: 77 roles (72.8 FTE)
- DCCEEW: 38 roles (34.1 FTE)
- Local Land Services: 11 roles (7.5 FTE)
- DPHI-Planning: 3 roles (3 FTE)
- DPIRD Agriculture: 3 roles (3 FTE)
- DCCEEW-Water: 3 roles (2.2 FTE)
- DCCEEW-Crown Lands: 2 roles (2 FTE).

This collaboration by agencies and partners enables the holistic and coordinated management of the marine estate and facilitates broad benefits to the community. Other ongoing staff from across the government agencies also provide substantial support on an in-kind basis.

Natural and built environment

The marine estate is one of the most significant natural resources in NSW. It includes around one million hectares of estuary and ocean, as well as thousands of kilometres of ocean coastline, beaches, estuaries and coastal lake foreshores.

The estate's natural beauty and the clean waters support a variety of unique and abundant Australian marine life. This is highly valued by the community. These values are under threat. For example, much of the water runoff from cities, industries and agriculture in our catchments flows downstream through our waterways and can lead to reduced water quality in rivers, estuaries, wetlands and the marine environment. Structures such as jetties, breakwaters and bridges can impact the condition of the marine estate. Other threats, including rising sea temperatures, ocean acidification and invasive species present longer-term concerns.

The Strategy is working towards achieving the following outcomes for the Natural and built environment:

- Enhanced condition of the marine estate, including its habitats, wildlife and natural beauty, in identified regions and maintained elsewhere
- Improved incorporation of the likely impacts of climate change in planning for and managing the marine estate
- Increased appropriateness of the built environment with reduced risk to the marine estate

The Strategy is designed so that initiatives contribute to multiple program outcomes across the Strategy. The key initiatives contributing to the outcomes above are:

- Initiative 1 – Improving water quality and reducing litter
- Initiative 2 – Delivering healthy coastal habitats with sustainable use and development
- Initiative 3 – Planning for climate change
- Initiative 5 – Reducing impacts on threatened and protected species



Photo 1. Hare Point Track estuarine wetlands including saltmarsh and mangroves Carama Inlet northern shores of Jervis Bay, image by Michael Van Ewijk DCCEEW

Initiative 1 – Improving water quality and reducing litter



Photo 2. A macadamia orchard at the Centre for Tropical Horticulture (CTH) - Alstonville during the Clean Coastal Catchments Macadamia Research Update event held on Friday 14 June 2024. CTH is a DPIRD research site.
Photo: Meg Strang, DPIRD CCC Research project

Initiative objective

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

Initiative long-term outcomes

Waterway health in the marine estate in aligns with community values

Reduction in input of litter to the marine estate in alignment with community values

Maintained or improved biodiversity and marine habitats

Improved adoption of best-practice land management and compliance with rules and regulations for managing water pollution and litter

Frameworks, policies and processes for managing water quality are increasingly embedded in agencies' business-as-usual operations

Planned budget 2023–24

\$10,655,510

Management challenges and opportunities

Healthy marine and estuarine environments with clean water are highly valued by the NSW community. The statewide TARA identified diffuse source water pollution as the number one threat to marine habitats and wildlife and the many social, cultural and economic benefits provided by the marine estate. Litter is a significant component of water pollution.

The first 5 years of the Strategy have focused on improving water quality through habitat improvements, addressing litter and reducing land-based runoff.

This investment reflects the impact of water quality and pollution on other initiatives and the wider marine estate.

Highlights - Water quality & litter



1,318 tonnes of sediments kept out of waterways by rehabilitating gravel roads

Water quality in **37 of 41 estuaries** was rated good to moderate



1,654 draft water quality objectives assigned to **228 coastal catchments**

Draft of the **Guidelines for Erosion and Sediment Control** on Building Sites exhibited for public consultation

2,000 people took part in **22 events** about oyster reef restoration and research, including workshops, conferences, Citizen Science information sessions and technical working groups



57 hectares of oyster reefs mapped in **7 estuaries**

Maps are on the Fisheries Spatial Data Portal

36 hectares of riparian zone rehabilitated over **22km** to improve water quality

Maintenance works completed over **40km** covering **123 hectares**



Riparian habitat protected by planting **10,935 native plants**, and installing **6 alternative water points** and **3.4km fencing**

Improved farming practice at **17 farms**, **12** with improved irrigation including **8** fitted with sytem upgrades

Held **8 workshops** with **170 participants**

Signed **28 new land management deeds**

1,210m of streambed and bank stabilised, preventing **2,176 tonnes** of sediment from entering waterways

7 Coastal Floodplain Prioritisation reports published with supporting data via an online GIS tool

Floodplain data accessed more than **600 times** since the launch



Research updates delivered to the **blueberry, macadamia and dairy** industries for better fertiliser, soil and nutrient management

3km unsealed roads at **14 separate sites** with improved drainage and sealing



Putting the Strategy into action

In this sixth year of the Strategy, we have continued to improve water quality and reduce marine litter for the benefit of marine habitats, wildlife and the community.

In this reporting period, we progressed the statewide review of the NSW Water Quality Objectives. All coastal catchments now have draft NSW Water Quality Objectives assigned to them. A quality assurance / quality control process ensures that these objectives incorporate community, government and industry localised knowledge.

Statewide water quality monitoring for 2023–24 has been completed for 41 estuaries. **This year's focus was on the south-east region as well as sentinel estuaries. Sentinel estuaries are estuaries that are monitored every year, instead of every 3 years.** Water quality for these systems was graded as follows:

- 27% were graded as very good
- 51% were graded as fair
- 12% were graded as good
- 7% were graded as poor and 2% as very poor.

This is an essential component of the Marine Integrated Monitoring Program. It aims to provide a long-term monitoring dataset of NSW estuaries. It will enable the assessment of cumulative impacts of management initiatives and global and regional pressures across the marine estate.

Other water quality monitoring activities included finishing the:

- sampling for in-water optical properties for the Richmond, Manning and Clyde rivers
- fieldwork for the Sydney Harbour water quality monitoring project – we have started analysing the data collected
- sampling component of the statewide microplastics assessment project, which will enable ongoing research of the abundance and distribution of microplastics, identified as a priority threat in the [Marine Debris TARA Summary Report](#)
- set-up of a marine debris and litter database so we can record data across NSW catchments over time.

Key research findings on 7 coastal floodplains have been released. These include water pollution risk, vulnerability to sea level rise, and potential management interventions. Map-based tools that assist local councils and land managers make evidence-based land-management decisions have also been released. A key finding from an analysis of ocean data collected by robot gliders and moorings was that plumes arising from the Hawkesbury River after extreme wet weather events can extend tens of kilometres offshore and influence salinity for weeks to months after the event.

On-ground works coordinated by Local Land Services have continued to reduce the amount of sediment and nutrients entering into waterways. Works included upgrades to dirt roads and tracks, and rehabilitation of riparian vegetation and eroding riverbanks. In total, these works have remediated almost 200 hectares of riparian zone across the NSW marine estate.

Monitoring programs are showing positive results with reductions in pollutants including nitrogen and phosphorous in waterways adjacent to these on-ground works. Similar positive results are being realised through monitoring of the DPIRD-Ag Clean Coastal Catchments' application and trial of integrated orchard management techniques, where farmers are having great success improving techniques to keep nutrients and sediment on farm and out of waterways. In addition, the Joonga

revegetation crew planted 16,000 saltmarsh plants at the Wagonga Inlet Living Shoreline, which will stabilise the shoreline, reduce erosion, and enhance the habitat utilised by important recreational and commercial fisheries.

Several project teams actively engaged with the community throughout the year through workshops, conferences, citizen science information sessions, and technical working groups to highlight project progress, share knowledge, build capacity and relationships. For example:

- the oyster reef restoration and research team connected with over 2,000 members of the community
- the Clean Coastal Catchments teams hosted live industry workshops and updates to blueberry and macadamia growers and livestock farmers which maximised the reach and impact of both team's efforts.

Many more people were reached through social media posts, e-newsletters articles and mainstream media. We also engaged with First Nations groups to address impacts of marine debris on Aboriginal communities, significant spaces and stewardship of Sea Country.

An exciting achievement was the launch of the [Bidhiinja: Restoring our Oyster Reefs](#) exhibition. Developed by the Australian National Maritime Museum in collaboration with DPIRD Fisheries, this travelling exhibition tells the forgotten history of oyster reefs in NSW and the work to restore these important ecosystems. Bidhiinja will visit regional centres throughout 2024 and 2025.

DPHI-Planning exhibited updated [Guidelines for Erosion and Sediment Control on Building Sites](#) from September to October 2023. The guidelines will help builders, certifiers, stormwater specialists and anyone working on small-scale sites (less than 2,500m²) understand how to control erosion and sediment runoff using modern practices so they can avoid polluting our waterways

The Diffuse Source Water Pollution Oversight Committee was established during the 2023–24 year. Its first meeting will be in 2024–25.

What people say

Feedback about improving roads and tracks included:

“This is an example of a partnership between local government and management of natural resources that has led to whole-of-community benefits and works have not only assisted the health of the river but improved the safety of all road users in the area.”

Mr Paul Crozier, Engineering Works Manager at Ballina Shire Council

More information

[Triannual snapshot reports](#) – see actions under Initiative 1

[2022–24 Marine Estate Management Strategy Implementation Plan](#)

Reports, guidelines and study papers

Coastal Floodplain prioritisation Study (dataset) metadata (September 2023)

[Coastal Floodplain Prioritisation Study](#) (June 2024)

Draft erosion and sediment control on building sites guidelines (September 2023)

Monitoring nutrient and microbial export from a dairy farming catchment – baseline report (April 2023)

Monitoring nutrient export from a grazing agricultural catchment – Final report (June 2024)

Conference papers

Edwina Foulsham (DCCEE Senior Marine Scientist) presented ‘Conceptual model of marine debris risk and components in NSW’ (poster) at the 2023 Annual Australian Marine Science Association Conference in the Gold Coast, Queensland.

Jeremy Bright (DPIRD Macadamia Development Officer) delivered a research presentation, ‘Optimising nutrition through updated crop removal values for the macadamia industry’ at the 2023 International Macadamia Symposium in Durban, South Africa.

Mitchell Call (Industry Research Fellow, Southern Cross University) delivered a presentation to the 2023 NSW Coastal Conference ‘Healthy profits and healthy waterways, can macadamias achieve both?’

Peer-reviewed papers

Benthotage C, Cole V, Schulz KG, Benkendorff K (2023) Bioaccumulation of estuarine pollutants in leaf oysters (*Isognomon ehippium*) on the mid-north coast, New South Wales, Australia. *Marine Environmental Research* 189:106065.

Bishop MJ, Lanham BS, Esquivel-Muelbert JR, Cole VJ, Faelnar KM, Jenkins C, Keating J, Martinez-Baena F, O’Connor WA (2023) Oyster reef restoration-aquaculture interactions: maximizing positive synergies. *Frontiers in Marine Science* 10:1162487.

Jenkins C, Go J, Rampano B, Dove M, Cole V, Spiers Z (2023) Understanding of spatial extent, infection window and potential alternative hosts for the oyster disease QX in Port Stephens. Fisheries Research and Development Report.

Malan N, Roughan M, Hemming M and Ingleton T (2024) Quantifying coastal freshwater extremes during unprecedented rainfall using long timeseries multi-platform salinity observations, *Nat Commun* 15:424.

Parks SE, Jarvis J, Unsworth D, Simpson M and Sun D (2023) Better management of soilless potting media for southern highbush blueberry, an Australian case study. *Acta Hortic.* 1357:79–84.

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



Photo 3. Drone imagery of mixed mangrove and saltmarsh habitats in Richmond River catchment (North Creek). Photo: Kate Buckley DPIRD Fisheries

Initiative objective	
To protect coastal and marine habitats and associated species and enhance the health of the marine estate by improving the design, quality and ongoing management of foreshore development, use and waterway infrastructure	
Initiative long-term outcomes	
Improved design and management of foreshore and coastal land use and development, balancing social and economic benefits of development with enhanced coastal and marine habitats	
Maintained or improved biodiversity and marine habitats	
Planned budget 2023–24	\$3,348,972

Management challenges and opportunities

Coastal development and infrastructure provide important social and economic benefits for NSW, provided they are well planned and managed.

Properly planned foreshore development, land-use changes and marine infrastructure provide economic and social opportunities and reduce risks to marine estate habitats and species. For example, properly planned and maintained wharves, boat ramps and breakwalls improve community access and minimise impacts on marine and estuarine plants and animals.

Sustainable use and development require coordination of investment planning, decision-making and management. Our aim is to continue to improve how we collectively manage activities that pose the greatest risks to coastal habitats and species in the marine estate, so they align with community values.

Highlights - Delivering healthy coastal habitats with sustainable use and development

39 priority areas identified from threat and risk assessments of intertidal marine vegetation over **945 km²** in **2 estuaries**



Assisted in the planning and development of Seaham Weir fishway built, opening up **250km** of habitat for **migratory native fish** in the Williams and Hunter River



957km of estuary foreshore mapped in **22 estuaries** to identify sustainable jetties and pontoon sites



Published **7 domestic waterfront strategies**



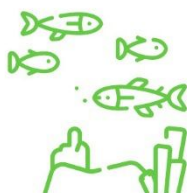
covering **22** rivers, estuaries and bays in the Southern Region

Launched the Coastal Design Guidelines with **2 assessment templates** and **3 case studies** to assist Councils and Industry

Subtidal reefs surveyed at **160 sites** in the Greater Sydney region with **6,983** fish counted and **4,072** fish measured



33,269 rocky reef fish sampled at **520 sites** along the NSW coastline



Released the Coastal Floodplain Drainage Project – Options Report, with feedback from 8 Councils, 24 organisations, including 4 Aboriginal organisations, 197 survey responses, 12 written submissions and 1 pictorial submission

Coastal Crown Land Guidelines finalised, integrating Crown land management into the NSW Coastal Management Framework. Presentations given to **5 regional forums** of local councils that manage coastal Crown land

2 engineering assessments completed to inform management actions to optimise benefits and reduce risks at priority breakwater sites

Preliminary responsibility assigned to **95** breakwater structures identified in the Stage 1 audit and **46 additional structures** identified by councils



Coordinated multi-agency development of draft **policy statement and operational guidelines** on Offsetting Aquatic Ecosystems

Detailed **design for refurbishment** of Stroud Weir fishway on the Karuah River and 2 animated fishway explainers completed

6 coastal councils and **2** multi-council groups supported to include breakwaters in their **Coastal Management Programs**

Putting the Strategy into action

Initiative 2 seeks to improve coastal and marine habitats and the management of foreshore and waterways. This year, initiative staff worked tirelessly and collaborated across agencies to progress and deliver new policy, fill knowledge gaps, and complete on-ground works.

A highlight for the year was the launch of the Coastal Design Guidelines 2023. These guidelines give best-practice advice to support the preparation of planning proposals, place strategies and local planning controls. They also aim to shape good urban design outcomes in coastal settlements. Supporting materials include case studies and worked examples to demonstrate how the guidelines can be applied in practice.

The Coastal Crown Land Guidelines were also finalised and released. These guidelines help councils and other Crown land managers in managing coastal Crown land in an integrated and strategic way. They make it easier for everyone to understand how decisions are made by:

- explaining how management of coastal Crown land aligns with existing NSW legislation
- clarifying planning and approval requirements
- formalising current processes and procedures
- integrating coastal Crown land management with CMPs and plans of management prepared by local councils in consultation with communities.

The Coastal Floodplain Drainage Project – Option Report was released for consultation. Local community members, Aboriginal organisations, environmental organisations, local government, farmers, fishers and industry and interest groups gave feedback through surveys, written submissions and meetings. A ‘What We Heard report’ summarising feedback on the Options Report and views on coastal floodplains in general will be published in 2024–2025.

Work to manage the impact of commercial dredging and extraction on coastal estuaries, water pollution, wildlife disturbance and sedimentation continued. We have started to develop an assessment and compliance framework in response to recommendations from the Audit of Commercial Dredging and Extraction on Coastal Crown Land. We also reviewed 6 licences, and have recommended terminating or not renewing 3 of them.

Seven strategies for managing domestic waterfront structure were released, covering 22 locations on the NSW south coast:

1. Batemans Bay Marine Park North (Durras Lake, Clyde River, Batemans Bay, Tomaga River, Moruya River)
2. Batemans Bay Marine Park South (Coila Lake, Tuross River, Wagonga Inlet, Corunna Lake, Tilba Tilba Lake, Wallaga Lake)
3. Bermagui River, Cuttagee Lake and Murrah River estuaries
4. Curralo Lagoon, Nullica River and Towamba River estuaries
5. Merimbula Lake and Back Lagoon estuaries
6. Pambula River
7. Bega River and Wallagoot Lake estuaries.

These 7 strategies inform the decision-making processes and provide confidence to property owners, marine estate users and permitting agencies. The outcome is a streamlined decision-making process.

Work continued to improve the resilience of saltmarsh and mangrove communities to ongoing stressors, particularly in response to sea level rise. A total of 21 ‘hotspots’ of high-priority intertidal habitats were identified in the Tweed River estuary and 18 hotspots identified in the Richmond River estuary. Recommendations for on-ground actions at these sites are being developed. We are also developing key guidance documents to ensure actions will be effective to maintain delivery of crucial ecosystem services while considering any potential impacts on adjacent land uses and endangered ecological communities.

Other achievements include:

- an assessment of the condition of the breakwall across Jack Evans Boat Harbour, Tweed Heads as part of the Tweed River Estuary coastal management program
- construction of a fishway at Seaham Weir and another designed at Stroud Weir (Karuah River). Some 250 kilometres of fish habitat in the Hunter and Williams rivers have now been reconnected thanks to project partners Hunter Water
- active engagement with a broad range of stakeholders through newsletters and a webinar with more than 80 participants.

To increase public understanding of the value of fishways, we released 2 educational products explaining the secret life of fishways:

- [The secret life of fish\(ways\) - Vertical Slot Fishways \(Youtube\)](#)
- [The secret life of fish\(ways\) - Rock Ramp Fishways \(Youtube\)](#).

These animations are also available through the Strategy’s [Reconnecting Fish Habitats project webpage](#).

To better understand the impact of boating and other activities on fish assemblages, we investigated the use of baited underwater video and eDNA in surveying estuarine fishes in the Greater Sydney Region as well as baited remote underwater stations. The fieldwork and analysis for these projects has been completed.

Another research project in collaboration with the University of Sydney and University of NSW has been awarded an Australian Research Council grant to assess whether there have been disruptions to fish connectivity as a result of large-scale infrastructure, shoreline modification and habitat loss in Gamay (Botany Bay).

What people say

Feedback about the Coastal Design Guidelines review included:

“We have already been able to make use of the Coastal Design Guidelines when looking at planning proposals in the coastal zone, and they have helped us clarify requirements for proponents in tricky areas where overlapping pieces of legislation apply.

We’re also looking at how to include the urban design guidance from the Guidelines in our Coastal Management Program to help achieve better outcomes for lot scale development and for Council’s own projects along the coast.”

Local government Coast & Estuary Manager from regional NSW

More information

Triannual snapshot reports – see actions under Initiative 2

2022–24 Marine Estate Management Strategy Implementation Plan

Reports, guidelines and study papers

Coastal Crown Land Guidelines (October 2023)

NSW Coastal Design Guidelines 2023 (October 2023)

Coastal Floodplain Drainage Project – Option Report (December 2023)

Conference papers

Dwyer P, Dengate C, Mamo L, Coleman M, Kelaher B (2023) Guidelines for installing multi-use and eco-features during breakwater upgrades, *Coastal Engineering Proceedings*, 86. 10.9753/icce.v37.structures.86.

Peer-reviewed papers

Rees MJ, Knott NA, Astles KL, Swadling DS, West GJ, Ferguson AM, Delamont J, Gibson PT, Neilson J, Birch GF, Glasby TM (2023) Cumulative effects of multiple stressors impact an endangered seagrass population and fish communities. *Science of The Total Environment*, 904:166706

Initiative 3 – Planning for climate change



Photo 4. Coastal erosion at Coffs Harbour Jetty after an East Coast Low. Photo: Tom Davis, DPIRD Fisheries

Initiative objective

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

Initiative long-term outcomes

- Adaptation planning strategies and decision-making across the marine estate incorporates the likely future impacts of climate change
- Improved capacity of coastal and marine managers and communities to anticipate climate impacts and identify adaptation pathways

Planned budget 2023–24

\$2,139,242

Management challenges and opportunities

Understanding the effects of climate change on the marine estate is critical to enable informed planning and management. Climate change stressors are complex, and understanding the likelihood and consequence of climate change is important to support evidence-informed decision-making and prioritisation.

There are many knowledge gaps that need to be filled so that we can build resilience and find solutions to mitigate the impacts of climate change on the NSW marine estate while urgent action to reduce emissions and limit global warming comes into effect. This year, we continued to fill key knowledge gaps about responses and resilience to climate change and collaborated with partners on climate change adaptation. This work will ensure that the likely future effects of climate change are better understood, anticipated and planned for in policy and management.

Highlights - Planning for climate change

Mangrove and saltmarsh in 4 estuaries monitored for 20 variables over **600 field hours**



Blue carbon restoration assessments almost complete at **19 sites**



Mapping in **10 estuaries**, found **2,648 ha of macrophytes** and **1,041** artificial structures. Maps are on the NSW Estuarine Habitat Dashboard

Published **9 scientific papers** about climate change impacts, including 4 papers on threats to seagrasses



Delivered a **climate risk and adaptation report** for the NSW marine park network and Solitary Islands Marine Park, with **risk registers and adaption action toolkits**



Total kelp biomass production estimated to be **1.5 megatonnes/year**

Marine heatwave response plan developed, guiding on early warning, incident response, and management



'Species-on-the-move' signage designed for **4 bioregions** to assist citizen scientists detect climate-driven changes to marine species distributions

Water Quality monitoring at Everlasting Swamp blue carbon demonstration site to inform a restoration options assessment

Putting the Strategy into action

Initiative 3 is working to improve our knowledge of climate change impacts, incorporating this knowledge into adaptation planning, and increasing resilience to help mitigate these impacts on the NSW marine estate. This year, monitoring, research and [citizen science](#) continued to research the effects of climate change on the marine estate.

The year started with the Bureau of Meteorology predictions of above-average ocean temperatures and marine heatwaves in the 2023–24 summer; some regions experienced temperatures up to 2.5°C above normal at times. In response to this forecast, we developed the [Marine Heatwave Response Plan](#), which includes an early warning system, an incident response plan, management actions, and a communications strategy. This was a world-first example of a marine heatwave response plan for temperate marine systems. Rapid monitoring of kelp health and growth surveys were completed between Coffs Harbour and Eden under the monitoring component of this plan to detect marine heatwave impacts.

Other activities at the start of this reporting period were centred around communications and engagement. This included a presentation at the National Adaptation Conference, a site tour for 2023 World Mangrove Day at Duck Creek, a webinar for local government, a blue carbon workshop for marine managers, and a series of community workshops, social media posts, and Strategy newsletter articles.

We made significant progress in blue carbon projects, with a focus on project planning, scoping studies and reviewing the NSW planning system:

- Work is progressing to develop restoration options for the Everlasting Swamp demonstration site.
- The Duck Creek demonstration site made good progress towards demonstrating the suitability of the site for registration with the Clean Energy Regulator.
- A partnership with Jali LALC involved employment of Jali Rangers to assist with installation of cameras and water logger equipment, monitoring of mosquito traps and acid sulfate soil testing. Their work was showcased to their community during an On Country Day at the site.

The Duck Creek Blue Carbon demonstration site is now on hold due to an Aboriginal Land Claim lodged over the site made in July 2024. Across NSW, another 19 sites have been assessed for blue carbon restoration with potential for registration.

Risk assessments have been completed for key NSW Marine Parks, and technical working groups have been established. Phase 1 “Facilitating Climate Adaptation in NSW Marine Parks” as part of Informing Climate Change Adaptation Strategy is now complete. The second-pass, statewide assessment of risks to mangrove and saltmarsh from sea level rise and climate change is on track.

What people say

Technical working groups met to assess marine park values, risks and adaptation actions for individual NSW Marine Parks. One participant noted:

“The enthusiasm and energy of the participants in the workshops was very positive. It was great to connect with diverse local stakeholders and be a part of insightful group discussions.”

Technical Working Group participant

More information

Triannual snapshot reports – see actions under Initiative 3

2022–24 Marine Estate Management Strategy Implementation Plan

Reports, guidelines and study papers

Blue Carbon Feasibility Assessment at the Duck Creek DPI Research Station (July 2023)

Blue Carbon Project Duck Creek Research Station Farm Business Analysis (October 2023)

Peer-reviewed papers

Champion C, Lawson JR, Whiteway T, Coleman MA (2024) Exposure of marine protected areas to future ocean warming: indices for prioritising climate change adaptation planning, *Ocean and Coastal Management*. Accepted 5/4/24.

Coleman MA and Glasby TM (2024) Breakthrough innovation will be essential for scaling up marine macrophyte restoration and achieving targets. *Journal of Phycology* 60:781–784.

Nimbs MJ, Champion C, Lobos SE, Malcolm HA, Miller AD, Seinor K, Smith SDA, Knott N, Wheeler D, Coleman MA (2023) Genomic analyses indicate resilience of a commercially and culturally important marine gastropod snail to climate change. *PeerJ* 11:e16498.

Swadling DS, West GJ, Gibson PT et al. (2023) Multi-scale assessments reveal changes in the distribution of the endangered seagrass *Posidonia australis* and the role of disturbances. *Mar. Biol.* 170:147.

Hobday AJ, Spillman CM, Allnutt J, Coleman MA, Bailleul F, Blamey LK, Brodie S, et al. (2024) Forecasting a summer of extremes: Building stakeholder response capacity to marine heatwaves. *Oceanography* 37(3).

Veenhof RJ, Coleman MA, Champion C, Dworjanyn S (2023) Urchin grazing of kelp gametophytes in warming oceans. *Journal of Phycology*. doi: 10.1111/jpy.13364.

Veenhof RJ, Champion C, Dworjanyn SA, Shalders TC and Coleman MA (2023) Reproductive phenology of the kelp *Ecklonia radiata* at its Australian warm range edge and the influence of environmental factors. *Marine and Freshwater Research*. doi: 10.1071/MF22259.

Wernberg T, Thomsen MS, Baum JK, Bishop MJ, Bruno JF, Coleman MA, Filbee-Dexter K, et al. (2024) Impacts of climate change on marine foundation species, Invited review to the *Annual Review of Marine Science*. doi: 10.1146/annurev-marine-042023-093037.

Wood G, Filbee-Dexter K, Coleman MA, Valckenaere J, Aguirre JD, Bentley PM, Carnell PE, Dawkins PD, et al. (2024) Upscaling marine forest restoration: challenges, solutions and recommendations from the Green Gravel Action Group. *Frontiers in Marine Science*, Vol 11, doi:10.3389/fmars.2024.1364263.

Initiative 5 – Reducing impacts on threatened and protected species



Photo 5. Loggerhead hatchling from the Diamond Beach nests in 2024. Photo: David Lavicka, local volunteer

Initiative objective	
To understand and mitigate threats to threatened and protected species in NSW	
Initiative long-term outcomes	
Reduced threats to threatened and protected marine species in NSW	
Increased NSW contribution to national conservation of targeted threatened and protected species	
Planned budget 2023–24	\$2,006,986

Management challenges and opportunities

NSW is home to many threatened and protected species. The cumulative impacts of climate change, fishing, litter, recreational activities such as boating, as well as land-based and industrial activities, pose a cumulative threat to threatened and protected species in the marine estate.

This management initiative seeks to reduce the cumulative risks to wildlife and to enable the continued social, cultural and economic benefits from the biodiversity of the marine estate by:

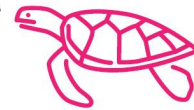
- improving partnerships between government agencies and non-government organisations
- improving existing wildlife conservation programs
- expanding community and industry education on the impacts of human activities.

Highlights - Reducing impacts on threatened and protected species

Water quality in **4 estuaries** was monitored for over **32 pollutants** commonly found in stranded sea turtles



21 sea turtles tagged to track their habitat use



91 delegates from 11 organisations attended the **NSW Turtle Summit**



Pictorial seabird identification guide published to support environmental rehabilitation groups has had **1,115+ views**

12 sea turtle nests monitored for **800 hours**, leading to **196 green** and **675 loggerhead hatchlings**

45 NPWS staff attended nationally accredited training sessions on large whale disentanglement



Supported Australia's contribution to the **Minamata Convention** by measuring mercury levels in **16** stranded cetaceans

Putting the Strategy into action

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

A focus this year has been to build partnerships with government and non-government organisations to address gaps in our knowledge of the health and habitat of threatened species. Activities include:

- training NSW National Parks officers to form a rapid response team in large whale disentanglement
- holding commercial and community events, such as the NSW Turtle Summit
- developing educational resources, including seabird guides, seal sampling kits and the turtle nesting protocols
- working with Traditional Owners to investigate the health of waterways and resident dolphins on the north coast

Work continued with stakeholders across all fishing sectors to develop operational procedures and physical mitigation measures to reduce interactions and increase reporting of non-target species. We engaged with whale watch operators to improve industry compliance, encourage best practice, and build involvement in citizen science by uploading data on unusual or infrequent marine mammal sightings. We use this information to help with conservation management of the species.

The year has seen an increased effort into research projects designed to improve species health and habitat. Examples include examining the impacts of climate-driven weather events on atypic marine fauna events, measurement of mercury levels in whales, and research into the sustainability of leatherback turtle populations in Australasian waters.

We also assessed the water quality in estuaries near known sea turtle habitat: 4 estuaries were monitored for over 32 pollutants commonly found in stranded sea turtles.

To better understand sea turtle movements and habitat use, sea turtle movements are being monitored with a mix of acoustic pingers and satellite tags. These efforts were augmented by NPWS and NSW TurtleWatch contributing more than 800 hours to monitor 12 sea turtle nests, resulting in 196 green and 675 loggerhead hatchlings.

What people say

Feedback from Turtle Summit participants included:

“The NSW Turtle Summit was an inspiring day, starting with a beautiful Welcome to Country and the release of a rehabilitated green sea turtle. It was a fantastic opportunity to connect with passionate researchers, share knowledge, and plan collaborations to enhance conservation efforts for these amazing creatures.”

Professor Kirsten Benkendorff, National Marine Science Centre Southern Cross University

More information

Triannual snapshot reports – see actions under Initiative 5

2022–24 Marine Estate Management Strategy Implementation Plan

Peer-reviewed papers

Barnes TC and Johnson DD (2023) Characteristics of east Australian demersal trawl elasmobranch bycatch as revealed by short-term latitudinal monitoring, *Endang Species Res* 52:149–161.

Day J, Hall J, Rose K, Vinette Herrin K, March D, Pitt O et al. (2024) Mixed stock analysis identifies natal origins of green turtles at foraging grounds in southeastern Australia. *Frontiers in Marine Science* 11:1346932.

Kelaher BP, Monteforte KI, Morris SG, Schlacher TA, March DT, Tucker JP and Butcher P A (2023) Drone-based assessment of marine megafauna off wave-exposed sandy beaches, *Remote Sensing* 15(16):4018.

Palmer N, Reichelt-Brushett A, Hall J, Cagnazzi D, Rose K and March D (2024) Contaminant assessment of stranded and deceased beaked whales (Ziphiidae) on the New South Wales coast of Australia, *Marine Pollution Bulletin* 204:116520.

People, communities and business

The marine estate is a central part of Australia's heritage and culture. Almost 6 million people live within 50 kilometres of the NSW coastline, including the people of 11 coastal Aboriginal nations who are intimately connected to their Land and Sea Country.

Experiences in, and associations with, the marine estate through the generations have established a contemporary coastal and marine culture that crosses many sectors. It offers the opportunity for activities such as diving, swimming and fishing while providing a livelihood for many, particularly as a hub for international and domestic trade and tourism through its ports, nature-based tourism, and seafood related industries.

The Strategy is working towards achieving the following outcomes for People, communities and business:

- Sea Country supports improved wellbeing for Aboriginal communities
- Greater community appreciation and enhanced sustainable experiences of the marine estate in identified regions, and maintained elsewhere
- Enhanced coastal and marine opportunities

The Strategy is designed so that initiatives contribute to multiple program outcomes across the Strategy. The key initiatives contributing to the outcomes above are:

- Initiative 4 – Protecting the Aboriginal cultural values of the marine estate
- Initiative 6 – Ensuring sustainable fishing and aquaculture
- Initiative 7 – Enabling safe and sustainable boating
- Initiative 8 – Enhancing social, cultural and economic benefits



Photo 6. Recreational fishing is enjoyed by more than one million people in NSW

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



Photo 7. Yuin rangers from South Coast from Merrimans, Eden, Wagonga & Bodalla LALC completing the practical component of the NSW General Boat licence training and certification. Photo: Ian Kerr DPIRD Fisheries

Initiative objective

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

Initiative long-term outcomes

Improved Aboriginal satisfaction with Sea Country management

Reduced threats to Aboriginal cultural heritage and use in the marine estate

Aboriginal people derive greater economic benefit from the marine estate

The broader NSW community has a greater appreciation of the significance of Sea Country for Aboriginal people

Planned budget 2023–24

\$1,942,297

Management challenges and opportunities

Sea Country is central to the overall health and wellbeing of Aboriginal people, their cultural practices and their traditions. Aboriginal people and their cultural values are not yet appropriately represented in the management of the marine estate, and there are still significant knowledge gaps relating to Aboriginal cultural values.

There are also many high-risk threats that cumulatively affect Aboriginal cultural heritage associated with Sea Country. Involving Aboriginal people will help identify cultural values and improve how we manage Sea Country and address threats.

Highlights - Protecting Aboriginal cultural values of the marine estate

10 Cultural Fishing Day clinics from Hastings to Tweed/Byron and inland to Coraki



4 videos created to promote the Sea Country Heron Island experience

Batemans Marine Park asset maintenance project provided **training and work experience** for Joonga Aboriginal Land and Water Corporation

Sea Country Rangers engaged in **restoration and monitoring works** along the NSW coast from Nambucca Valley to Shark Island (Kempsey) to Batemans Bay



More than **30 Aboriginal youth** attended **cultural fishing clinics** held in collaboration with Kinchela Boys Home Aboriginal Corporation and Strong Spirit Aboriginal Consultancy

Supporting entrepreneurial Aboriginal females in business across NSW east coast to educate Aboriginal and non-Aboriginal communities about the importance of Sea Country and its connection to local Aboriginal cultural values



15 Aboriginal community members from the Mid North Coast received their AMSA Coxswains Certificate Grade 3



Community Cultural Fishing Workshop attended by over **50 Aboriginal youths and Elders**

The workshop was held at Boambee Creek in Toormina in partnership with Nyam Gabarri

8 out of 23 applications were approved by **Aboriginal Fishing Trust Fund (AFTF)**, which supports Aboriginal communities to develop businesses associated with fisheries resources throughout NSW

Runnyford/Buckenbowra fish trap project employed **5 Walbunja Rangers** from the Batemans Bay Local Aboriginal Land Council to safely restore and reconstruct the fish trap using the existing stones

Putting the Strategy into action

Initiative 4 aims to work with Aboriginal communities in the management of Sea Country 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. In this reporting period, the focus has been to expand marine skills projects in both the southern and northern regions.

This year, members of the Bunya and Biripi LALCs participated in and completed a Coxswain Grade 3 course in the Hastings area. This qualification will help the LALCs achieve their economic goals of using a commercial vessel for cultural fishing events, river restoration works, and research and monitoring projects for their developing Ranger team.

In coordination with Green Heroes, 4 Sea Country rangers/divers had a wonderful opportunity to take part in the Sea Country Summit project held at Heron Island. This project highlighted the importance

of working on Country, healthy Sea Country, healthy living, and social and cultural emotional wellbeing and its connections to Land and Sea Country.

The Joonga Aboriginal Land & Water Corporation was supported with training and work in asset maintenance under the Batemans Marine Park signage project. Importantly, this project provided participants with an opportunity to work on Country.

Support was also provided to the MiiMi Mothers Land and Sea Rangers for the first round of resource assessments for highly valued marine bush tucker items in the Nambucca Valley. These assessments are an extension to the previously supported plastic collective and marine litter ranger project. There is considerable interest in further developing these assessments in the future.

The Buckenbowra Fish Trap Restoration project employed the Walbunja Rangers from the Batemans Bay Local Aboriginal Land Council to safely restore and reconstruct the fish trap using the existing stones. This project revitalised Aboriginal cultural heritage and created a safe space to facilitate cultural fishing practices into the future.

Ten fishing clinics were held from the Hastings area to Tweed Byron area and inland to Coraki. The days involved local Aboriginal Elders attending and talking to the young people about fishing and the importance it plays in Aboriginal culture. In the Hastings area, support was provided for a fishing clinic held in collaboration with Kinchela Boys Home Aboriginal Corporation. On the South Coast, support was provided to the Bermagui Survival Day held on the 26th January 2024, with more than 500 people experiencing the strength and resilience of small Aboriginal communities' after COVID-19 and the 2020 bushfires. The day included cultural dance, choir in cultural language, a dance performance, a smoking ceremony and a spear-making workshop. This was the first Bermagui Survival Day event held in the past 3 years; it had almost double the attendance of the previous event in 2019.

What people say

A key highlight of the year was the development of several [engagement videos](#). These videos showcase several projects and include testimonials from people engaged in the projects:

“It’s always rewarding working on our ancient culture, trying to maintain that balance with nature and strengthen our people and reconnect with Country.”

[Adam Nye, Ranger with Batemans Bay LALC](#)

More information

[Triannual snapshot reports](#) – see actions under Initiative 4

[2022–24 Marine Estate Management Strategy Implementation Plan](#)

Initiative 6 – Ensuring sustainable fishing and aquaculture



Photo 8. Deployment of artificial reef about 4 kilometres east-north-east of the Coolongolook River mouth at a depth of 34 metres, deployed in October 2023. Photo taken by drone, by Chris Weire, DPIRD Fisheries

Initiative objective	
To ensure fishing and aquaculture is managed in a way that is consistent with ecologically sustainable use while providing for the health, heritage and social benefits of fishing and seafood consumption	
Initiative long-term outcomes	
Improved ecological sustainability, economic viability and community wellbeing of fishing and aquaculture in the marine estate	
Planned budget 2023-24	\$2,287,006

Management challenges and opportunities

Sustainable fishing and aquaculture bring many benefits for the NSW community. It also generates billions of dollars and creates thousands of jobs across coastal NSW.

These activities need to be managed to reduce threats to the environmental assets of the marine estate.

This initiative will support significant social and economic benefits for the people of NSW and, specifically, cultural benefits to Aboriginal people.

Highlights - Sustainable fishing & aquaculture

New harvest strategies

Implemented: Trawl Whiting, Lobster and Spanner Crab
Developing: Mulloway, Snapper and Yellowtail Kingfish



8 crab trap swap events promoted responsible crab fishing, with 500+ old witches hats and rectangle traps exchanged for environmentally friendly round crab traps and lift nets

More than 21 clean-up events removed 2 tonnes of rubbish from across NSW



50+ waterproof marine pest ID cards distributed with posters to key stakeholders



21,400 dusky flathead fingerlings stocked in St Georges Basin and Burrill Lake

'Keep it Clean' marine debris campaign reached 1.37 million users with 2.7 million impressions on social media and thousands of website visits



Putting the Strategy into action

Initiative 6 aims to deliver programs supporting the ongoing sustainable management of fisheries resources; healthy recreational, Aboriginal and commercial fisheries; and a strong aquaculture industry now and into the future. Despite significantly reduced capacity towards the end of the financial year, we were still able to deliver key activities and milestones.

Harvest strategies are a best-practice fishery management tool that is widely used in Australia and around the world. They ensure NSW fisheries are being sustainably managed by:

- enhancing our assessment of stock health
- providing a basis for transparent and evidence-based management decisions.

Harvest strategies for the Trawl Whiting, Lobster and Spanner Crab fisheries have been implemented. They provide defined objectives and a transparent management framework to support management decisions for each species. These harvest strategies are being used to set total allowable catch determinations for each species, and in the case of the Lobster Harvest Strategy, to also guide changes to recreational bag limits.

Another 3 harvest strategies are being developed in consultation with stakeholders: the Mulloway, Snapper and Kingfish harvest strategies. All of these strategies will be included into a searchable database of Australian fishery harvest strategies being developed as an extension of a research project. The searchable harvest strategy database is expected to be launched in early 2025.

Research into fish populations continues to ensure these harvest strategies are designed around the best available evidence. Current and future possible data sources include:

- log books and observer data from the recreational fishing industry, which were used to develop case studies and underpin the design for a recreational performance indicator dashboard that may be developed in the future

- non-invasive methods for estimating mullet populations, such as tagging and hydroacoustic surveys. If successful, these surveys could be run regularly to detect changes in the mullet population and respond with management controls.

Improving access to fishing for NSW residents and visitors is an important part of this initiative. The Fisheries enhancement project has deployed both the Forster and Terrigal artificial reefs. Consultation has been completed and planning is now underway for new artificial reefs off Ballina and Coffs coasts. More than 21,000 dusky flathead fingerlings were stocked into south coast systems (St Georges Basin, Lake Conjola and Burrill Lake).

We received excellent feedback on a series of waterproof species identification cards that provide key information about marine pests. The cards include QR codes, making it easy to report sightings of these pests. They were distributed to key stakeholders at important events.

Efforts to reduce the amount of litter in the marine estate include the 'Keep it Clean' marine debris project, part supported by the Strategy, and in collaboration with the Recreational Fishing Trust funded 'Fish for Life' program and OzFish. The project held 18 community events across NSW, which resulted **in the collection, recording** and removal of more than 8 tonnes of litter. The project also included developing and distributing advisory material to encourage recreational fishers to dispose of litter appropriately and learn to use techniques to prevent gear loss.

The engagement campaign reached hundreds of thousands of people through social media and other channels. With high-quality videos and images, the campaign had a combined reach of 1.37 million (across both Instagram and Facebook) and a total of 2.7 million impressions in this reporting period alone. The project not only removed rubbish from fishing hotspots but also helped strengthen the social licence of recreational fishers more generally by demonstrating environmental stewardship.

The responsible crab fishing program promotes ways to minimise the environmental impact of crab fishing gear. A social media campaign provided tips for using environmentally friendly gear and how to modify equipment to reduce the environmental impact. Crab trap swap events encouraged fishers to exchange less eco-friendly crab gear for environmentally safer alternatives and promoted responsible fishing practices. Over 1,500 crab nets and traps have been exchanged since the project began, with approximately 500 swapped over 2023–24.

Research into the impact of oyster farms on estuaries is in its second year as a partnership between DPIRD Fisheries and Southern Cross University. The project aims to develop best practices for the oyster industry and will contribute to a growing body of knowledge around the oyster industry and its impact on the environment – through the beneficial impacts of water filtration and provision of habitat for fish, and through impacts from deposited matter from the oyster farms on sediments. This research will benefit regulators in assessing new aquaculture activities and will benefit industry in terms of understanding the impacts of oyster farms on the environment.

What people say

Feedback from the [Marine biosecurity awareness](#) project included:

“The Marine Biosecurity team's information has made people more aware of potential pests and diseases in the water, what to watch for and how to reduce the risk of spreading.

Now, our boat owners and anglers know what's expected of them and can share this knowledge with other stakeholders. It's all about working together to keep our waters healthy.”

Maris Dumburs, President of the Bermagui Big Game Anglers Club”

More information

[Triannual snapshot reports](#) – see actions under Initiative 6

[2022-24 Marine Estate Management Strategy Implementation Plan](#)

Harvest strategies

[Harvest Strategies in NSW](#)

[NSW Harvest Strategy Policy and Guidelines](#) (August 2021)

Trawl Whiting:

- [NSW Trawl Whiting Harvest Strategy](#) (February 2022)
- [NSW Trawl Whiting Harvest Strategy – Fact Sheet](#)

Lobster

- [NSW Lobster Fishery Harvest Strategy](#) (May 2022)
- [NSW Lobster Fishery Harvest Strategy – Fact Sheet](#)
- [Video – NSW Lobster Fishery Harvest Strategy](#) (YouTube video)
- [Video – NSW Lobster Fishery – A Journey to Recovery](#) YouTube video)

Spanner Crab

- [NSW Spanner Crab Harvest Strategy](#) (August 2023)
- [NSW Spanner Crab Harvest Strategy – Fact Sheet](#)

Reports, guidelines and study papers

[Economic Contribution of Aquaculture to NSW](#) – A report for the Department of Primary Industries, by BDO EconSearch – published July 2023

Fowler AM, Dowling NA, Lyle JM, Alós J, Anderson LE et al. (2023) [Toward sustainable harvest strategies for marine fisheries that include recreational fishing](#), *Fish and Fisheries* 24(6):1003–1019, doi:10.1111/faf.12781.

Initiative 7 – Enabling safe and sustainable boating

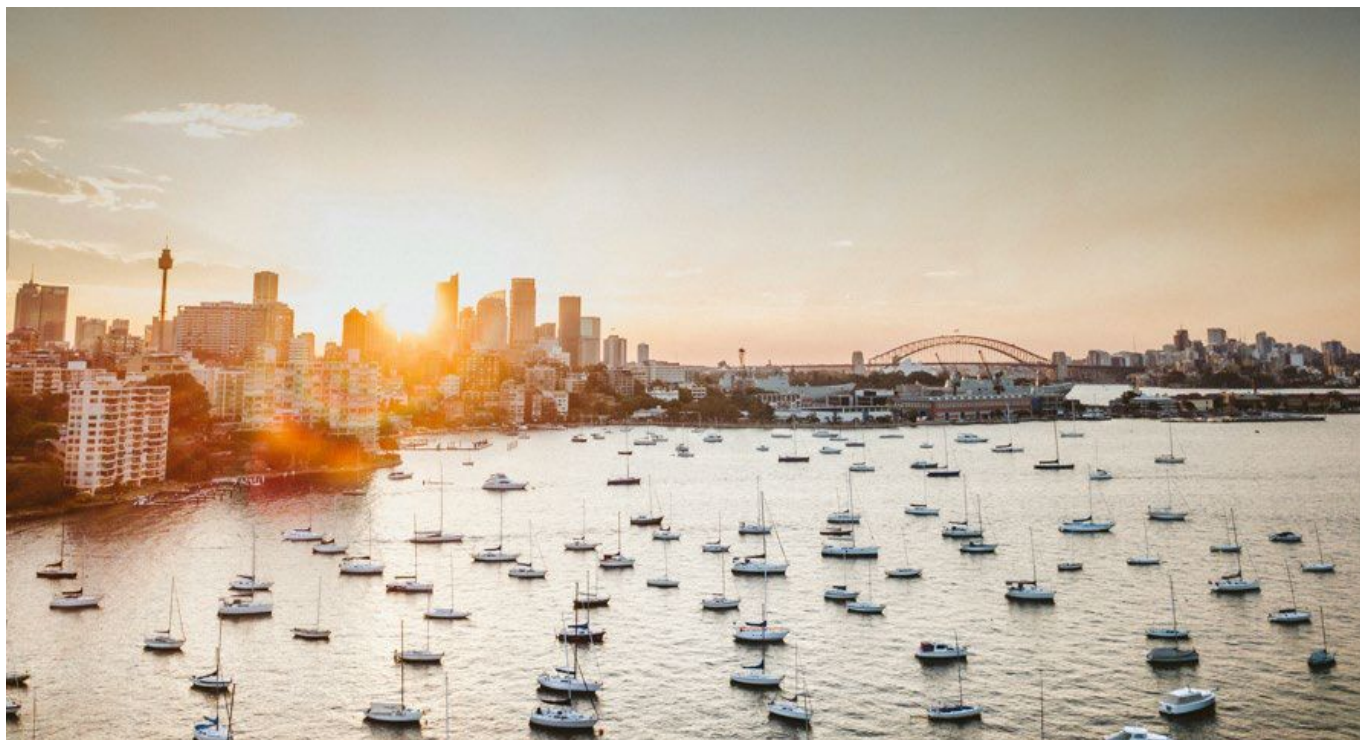


Photo 9. Sydney Harbour in the afternoon. Photo: Josh Withers, Unsplash

Initiative objective

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

Initiative long-term outcomes

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

Planned budget 2023–24

Initiative 7 is funded by Transport for NSW with the addition of \$15,000 of Strategy funding

Management challenges and opportunities

Recreational and commercial boating brings significant economic and social benefits to the NSW community, but those benefits rely on adequate infrastructure such as boat launching ramps, moorings and marinas.

Boating activity will increase as vessel ownership continues to grow. We need to accommodate this increase while maintaining the social, economic and environmental benefits of the marine estate.

This initiative is largely funded by Transport for NSW. The Strategy contributes an additional \$15,000 to this initiative (less than 1% of the total funding for the Strategy).

Highlights - Enabling safe & sustainable boating

80% of Boating Now projects completed



Mooring numbers available at **100% of mooring fields** in NSW

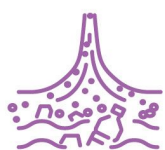


World-first Literature Review of Environmentally Friendly Moorings – Environmental and Engineering Performance published

3 new videos to help boaters understand and use weather and wave condition information



Published **2 reports** contributing valuable data:
Recreational Boater Survey
Lifejacket Wear on Recreational Vessels



Commenced the **Marine Pollution Regulation 2024** and Sewage Pollution Prevention Certificate scheme

Reviews of
Maritime Infrastructure Plan 2019-2024
Mooring Reform Program

>95% compliance of large ships using anchorages offshore at Port Kembla,
reducing the anchoring footprint by ~66%

Putting the Strategy into action

Projects delivered as part of Initiative 7 continue to improve the safety and sustainability of boating, improving infrastructure (including boat ramps and navigational aids), and delivering compliance enforcement and education campaigns. Much of the work in this initiative is delivered under the Maritime Infrastructure Plan, which is currently being reviewed to inform a new plan in 2025.

In this reporting period, 53 of 67 projects in the Boating Now Round 3 Program were completed. These projects aim to improve maritime infrastructure and facilities across NSW to support the needs of boaters to access to the marine estate. Other infrastructure improvements delivered under the Boating Now program include:

- maintaining existing infrastructure through all 21 of the Boating Asset Maintenance Scheme projects
- repairing storm and weather damage to existing boating infrastructure at 36 projects as part of the Boating Infrastructure Emergency Repair Scheme. Only one project is ongoing.

Investment continues to improve access to NSW waterways through improved boating access infrastructure, such as boat ramps, jetties and pontoons, regional harbour improvements, navigational dredging and ferry wharf upgrades. Nine maritime stimulus projects have been completed so far, including the Coffs Harbour Regional Boat Ramp upgrade.

Twelve environmentally friendly moorings (EFMs) were deployed at Port Stephens, Sydney Harbour and Jervis Bay. We are now collecting data on their performance and the impact on the surrounding marine environment through sea-floor monitoring, including biodiversity and carbon sampling. CSIRO researchers presented a paper on these and other EFM projects to the Australian Coastal Restoration Network 2024 Symposium at Sydney University in May 2024.

Transport for NSW continues to educate recreational boaters to ensure they follow environmental regulations. This education effort involves targeted social media posts, information in the Maritime newsletter, and education sessions with local councils. Boating education officers also address environmental queries from boaters at boat ramps and participate in community events and presentations. Educational materials on pollution prevention, anti-fouling, and safe whale viewing distances are available physically and online. Boating safety officers monitor compliance with whale visit rules in state waters. This year also saw the release of 3 'Check the Weather' videos that were made in collaboration with the Australia Bureau of Meteorology.

We continued to enforce environmental standards and regulations among domestic commercial vessels and recreational vessels. NSW waterways will receive improved protection from vessel pollution through significant regulatory changes this year:

- Marine Pollution Regulation 2024 (commenced on 25 March 2024), which updates requirements for reporting marine pollution incidents, expands requirements for oil pollution insurance, and integrates requirements from the International Convention for the Prevention of Pollution from Ship (MARPOL) into NSW legislation
- Sewage Pollution Prevention Certificate Scheme (staged introduction from April 2024).

What people say

Feedback on a recently completed Boating Now Project included:

“ [the upgrade was] a real game changer for Tea Gardens and Hawks Nest. The brand new pontoon will improve access and safety for boat users, just in time for the upcoming boating season.”

Member for Port Stephens Kate Washington

More information

Triannual snapshot reports – see actions under Initiative 7

2022–24 Marine Estate Management Strategy Implementation Plan

Reports, guidelines, study papers and peer-reviewed publications

Australian Coastal Restoration Network 2024 Symposium, May 2024 – CSIRO paper and presentation on EFM projects, including NSW trials (Initiative 7).

Broad A, Rees M, Knott N, Swadling D, Hammond M, Ingleton T, Morris B and Davis A (2023) 'Anchor scour from shipping and the defaunation of rocky reefs: A quantitative assessment'. *Science of The Total Environment*, vol 863, March 2023.

Trigwell M (2023) Lifejacket Wear on Recreational Vessels – An observational study of skippers and passengers onboard vessels across NSW, Report prepared by Taverner research Group for Transport for NSW.

Martini A, Langley M, Wong L and Lynch T (2023) *Literature Review of Environmentally Friendly Moorings - Environmental and Engineering Performance*, encompassing environmentally friendly mooring assessment science, evaluation of the performance and market availability of different systems, and identification of environmentally friendly mooring designs for in-water trial.

MEMS Newsletter January 2024 – ‘New research to make boating “moor” seagrass safe’. This article on the EFM trial (also published on social media) received considerable interest and was republished in ‘Marine Business News’.

MEMS Newsletter June 2024 – ‘Anchors ahoy: New Port Kembla anchorages will protect seafloor life’

Parker J and Stuchbury C (2023) NSW Recreational Boater Survey, Report prepared by Taverner research Group for Transport for NSW.

Initiative 8 – Enhancing social, cultural and economic benefits



Photo 10. Young people at coffee van on NSW Coast. Photo: ©DPIRD

Initiative objective

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

Initiative long-term outcomes

Improved or maintained social, cultural and economic benefits of the marine estate that contribute to the wellbeing of the NSW community

Increased community adoption of safe and sustainable use of the marine estate

Planned budget 2023–24

\$2,233,936

Management challenges and opportunities

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

Highlights - Enhancing social, cultural & economic benefits

Developed dashboard for Economic benefits monitoring



Published the NSW Marine Estate Community Wellbeing Framework



Launched the **Marine Estate Agents Program** for NSW primary schools

Completed **5 year analysis** of economic trends for marine industries

High school **Careers Week** advice with **6 videos and fact sheets** about marine estate careers



Shared findings of Wave 1 surveys with **55 coastal councils** and **11 LALCS**



Published **8 reports** and **7 regional fact sheets** on results of Wave 1 of the community wellbeing surveys

Estimated the **Market-based value** of the marine estate to the NSW economy

Putting the Strategy into action

Initiative 8 has a major education, research and monitoring component. It involves working with institutions and government agencies to increase understanding of how we all use and value the marine estate to maximise community benefits.

A highlight of the year was the NSW Marine Estate Community Wellbeing Framework, which was published in late 2023. This framework guides statewide monitoring of the social, cultural and economic benefits of the marine estate as part of the Monitoring Program.

Community wellbeing survey reports (Wave 1) for coastal residents, visitors, youth, and Aboriginal peoples, were publicly released in early 2024. The reports summarise the views of over 4,700 people. The reports:

- provide important baseline data for social and cultural monitoring
- foster a shared understanding of the NSW community's attitudes, values, perceptions, experiences, and aspirations
- support inclusive and evidence-based decision-making.

The data was also used in the mid-term evaluation of the Strategy. We have now started to implement Wave 2 of community wellbeing surveys for coastal residents, visitors and youth.

We continued to monitor the economic benefits of the marine estate through completion of a 5-year analysis of economic trends for marine estate industries. The report estimates the market-based value of the marine estate to the NSW economy and 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. The analysis was used to develop an economic contribution and market insights report and dashboard, which will be publicly released on 12 July 2024.

Under the Marine Estate Education Strategy, we launched the Marine Estate Agents program for primary school students. It includes videos and fact sheets promoting careers in the marine estate.

Resources are now available on the marine estate website, and school engagement has started. This program aims to empower and encourage young people to become stewards of the marine estate.

The Marine Estate Education Working Group was established after assessment of expressions of interest. There are 18 members in total, and most members are representatives from NSW coastal council's education and engagement teams. The group will provide advice on the implementation of the Education Strategy.

What people say

The community wellbeing surveys provided valuable insight into our coastline from coastal residents, youth and visitors.

“The beach and sea are my connection to the natural environment so clean beaches and water are very important.”

“I live fairly close to local beaches. I love to walk & swim at the beach. It is a wonderful way to exercise & be in nature. An excellent de-stressor.”

These quotes relate to quality of life and are provided by the NSW Coastal Residents survey.

More information

Triannual snapshot reports – see actions under Initiative 8

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

2022–24 Marine Estate Management Strategy Implementation Plan

Reports, guidelines and study papers

Gollan N and Curley B (2023) NSW Marine Estate Community Wellbeing Framework, NSW Marine Integrated Monitoring Program, 40 pp.

Community wellbeing survey reports (Wave 1) for:

- Coastal Residents of NSW Summary Report
- Coastal Visitors of NSW Summary Report
- Coastal Youth of NSW Summary Report

Connections to Sea Country survey reports

Connections to Sea Country – Aboriginal People of Coastal NSW – Summary Report (Wave 1)

Fact Sheet – Connections to Sea Country – Aboriginal People of Coastal NSW Survey Report

Governance and management

Management of the marine estate is shared across all levels of government: local, state and Commonwealth. Government departments and agencies have diverse interests and responsibilities. They also have some overlap in jurisdictional boundaries.

As a result, all levels of government need to work together closely so that legislation, policy and programs are efficient and effective and support management of the marine estate in its entirety. In particular, improving the governance of marine protected areas is a focus of this initiative.

Good governance and management are essential for the Strategy to achieve its vision for 'a healthy coast and sea, managed for the greatest wellbeing of the community, now and into the future'.

The Strategy is working towards achieving the following outcomes in Governance and management:

- Improved coordination, transparency, inclusiveness and evidence-based decision-making in managing the marine estate
- Improved efficiency and effectiveness in managing the marine estate

The Strategy is designed so that initiatives contribute to multiple program outcomes across the Strategy. The key initiatives contributing to the outcomes above are:

- Initiative 9 – Delivering effective governance
- Program management, monitoring, reporting, evaluation and engagement

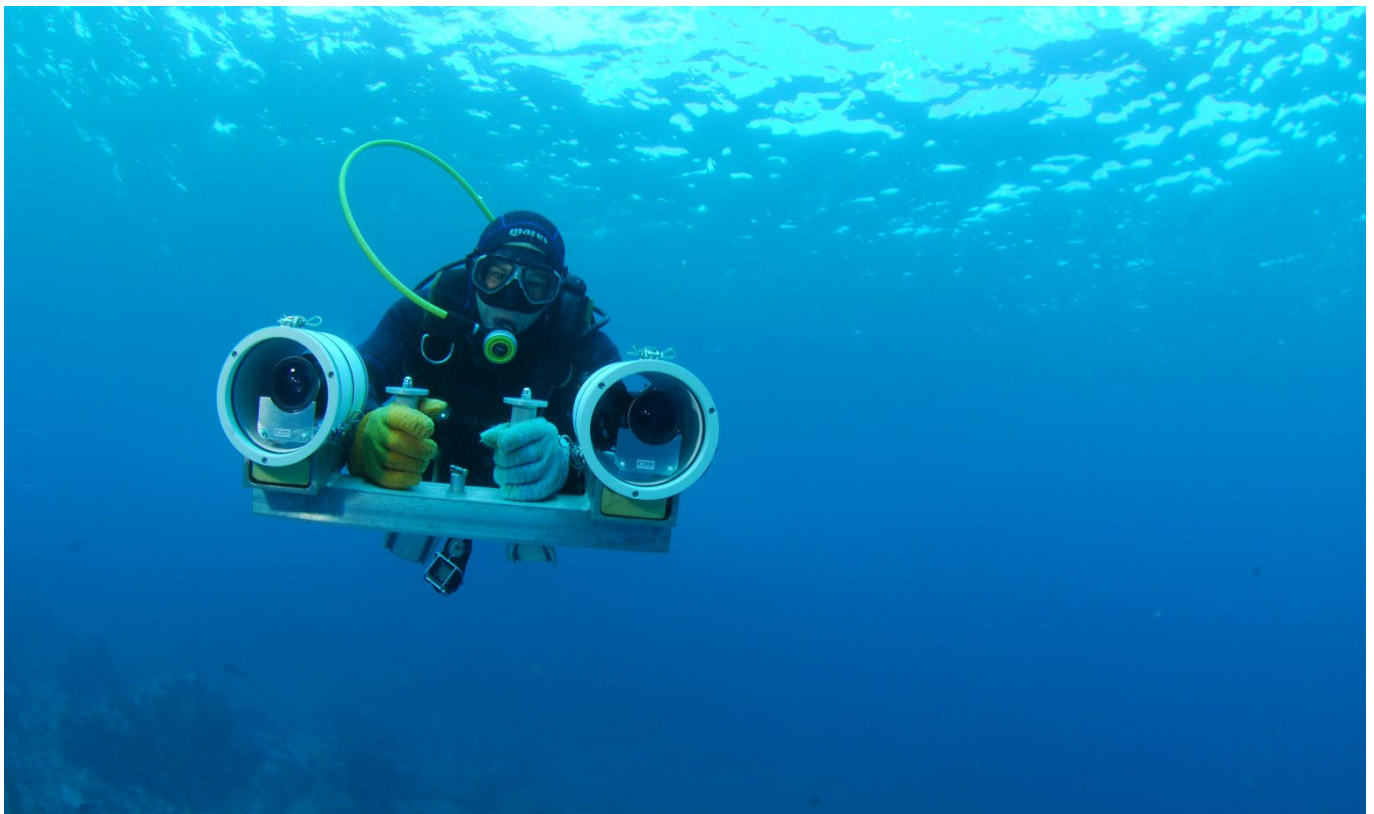


Photo 11. Underwater diver. Photo: ©Brett Vercoe

Initiative 9 – Delivering effective governance



Photo 12. Rock fishing compliance in difficult to access locations, Cape Banks Aquatic Reserve on the north side of Botany Bay NSW. Photo: Cara Van Der Wal DPIRD Fisheries

Initiative objective	
To improve governance arrangements across the marine estate to support coordinated, transparent, inclusive and effective decision-making	
Initiative long-term outcomes	
Improved coordination, transparency, consistency and inclusiveness of managing the marine estate	
Improved efficiency and effectiveness in managing the marine estate	
Planned budget 2023–24	\$1,429,211

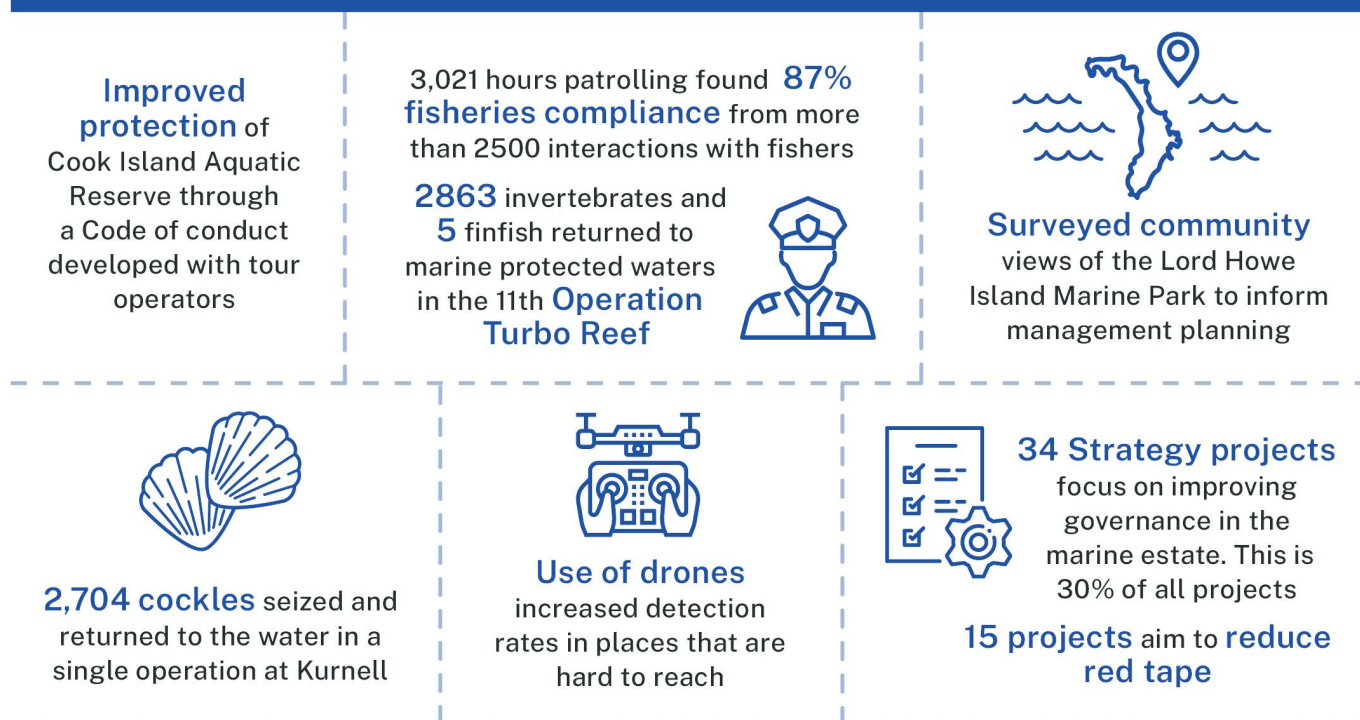
Management challenges and opportunities

There is a need for governance that supports improved integrated management of the marine estate over the life of the Strategy.

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

The Strategy enhances interagency coordination and streamlining of agency effort, especially at the NSW State Government level. It also tests contemporary approaches to regulation and compliance and seeks to actively involve stakeholders and communities in managing the marine estate.

Highlights - Delivering effective governance



Putting the Strategy into action

Initiative 9 includes a range of projects that are critical to the delivery of NSW Government commitments and community expectations for the delivery of holistic governance for the NSW marine estate.

In this reporting period, we made clear progress in improving governance. An assessment of current marine estate projects across the Strategy revealed that more than 30% of them are focused on improving governance in the marine estate, and about 15% of projects aimed to reduce red tape.

The initiative includes protected area planning and management for the 6 marine parks and 12 aquatic reserves in NSW, as well as improved fisheries compliance for marine protected areas in the Greater Sydney Region.

Fisheries compliance in marine protected areas has also increased. The Greater Sydney compliance squad conducted more than 2500 inspections, interactions and education with fishers in Greater Sydney's marine protected areas. Officers reported an increased compliance rate of 87% among the fishers inspected during 2023–24.

New drone technology has supported these efforts as the Greater Metropolitan Mobile Fisheries Squad can now monitor places that were otherwise hard to reach. The 11th annual Operation Turbo Reef detected 235 offences between Newcastle and Wollongong, seizing and returning 3,863 invertebrates and 5 finfish to the water over the 2024 Australia Day long weekend.

Other key reports have been published on the marine estate website, including the results of a community survey to support management planning for the Lord Howe Island Marine Park. A draft code of conduct for Cook Island Aquatic Reserve was developed with local tour operators. It will be finalised in the 2024–25 year. Participants report that they are already implementing it.

New Cabbage Tree Bay Aquatic Reserve webpages were launched, and signage for the reserve have been completed. These are supported by a social media campaign to help inform people about the habitats and species found in this popular aquatic reserve and how to help protect the aquatic reserve.

What people say

Feedback includes:

“The signage at Cabbage Tree Bay Aquatic Reserve is crucial for environmental protection and awareness. It engages the public by highlighting what they might encounter and the rules to follow, enhancing overall awareness and reporting.

Our clients and staff have gained valuable knowledge about local wildlife and habitats through this signage. From our perspective, the project has been very successful in educating our clients”

Damien McClellan, Experience Designer ECOTREASURES PTY LTD

More information

Triannual snapshot reports – see actions under Initiative 9

2022–24 Marine Estate Management Strategy Implementation Plan



Photo 13. A group of teenagers chasing a ball on a beach in Northern NSW. Photo © State of New South Wales

Objective	
To improve governance, monitoring, evaluation and reporting across the marine estate to support coordinated, transparent, inclusive and effective decision-making (related to Initiative 9)	
Long-term outcomes	
Improved coordination, transparency, consistency and inclusiveness of managing the marine estate (contributes to Initiative 9 outcomes)	
Improved efficiency and effectiveness in managing the marine estate (contributes to Initiative 9 outcomes)	
Improved coordination and implementation of the Marine Integrated Monitoring Program for the marine estate	
Planned budget 2023–24	\$3,819,162

Management challenges and opportunities

To ensure coordinated management of the Strategy, a governance structure and program management framework have been implemented to support the Strategy’s delivery across agencies and across NSW. For more information about the Strategy’s governance, please refer to the [Agency’s annual report](#).

The framework provides the community and stakeholders assurance that the Strategy is being implemented in a coordinated, integrated and transparent way.

Highlights – Program management, monitoring, reporting, evaluation and engagement



Nearly **100 projects** implemented
8 MOUs between DPI and partner agencies

Delivered **3** public triannual **snapshot reports** and the annual report



Delivered project updates over **4 webinars** for local councils with **120 council representatives** and **90 state government representatives**

Delivered the MEMS **Communication and Stakeholder Engagement Framework**, and supporting documents

Published the **Environmental Condition Framework** Report

Distributed 11 marine estate newsletters with nearly **100 articles** to more than **1,408 people**



Published the MEMS **Implementation annual report for 2022–23**

Mid-term evaluation was undertaken to assess our achievement of outcomes, identify and highlight program successes and areas for improvement

Developed and published new **mobile friendly marine park and aquatic reserve maps** on DPIRD website. These maps attract an average of **6,000+ views per month**



Putting the Strategy into action

This component of the Strategy is related to Initiative 9 to support the Strategy's delivery across agencies and across NSW. At a strategic level, we are delivering:

- continuous improvement of governance structures and the program management framework to ensure collaboration and coordination across all agencies
- monitoring, reporting and evaluation projects to measure success.

A comprehensive range of programs and activities including website updates, newsletters and webinars have established meaningful stakeholder relationships and promoted education about our marine estate. A refresh of the marine estate website has made it easier to use and introduced new functionality, including updated interactive webmaps to support management of NSW aquatic reserves.

The Environmental Condition Framework Report was published in late 2023. This report provides a comprehensive summary of the selected monitoring projects and approaches to evaluate, monitor and report on the condition and trends of environmental assets of the NSW marine estate.

Program management staff have collaborated with key marine estate agency staff to develop the response to the mid-term evaluation of the Strategy and the 5-year TARA, as part of the 5-year health check.

What people say

Comments from the Authority Chair include:

[Strategy triannual snapshot reports] tell a very positive story of hard work and achievement on the MEMS.

Chair, Dr Russell Reichelt – Marine Estate Management Authority

More information

[Triannual snapshot reports](#) – see actions under Program Management

[2022–24 Marine Estate Management Strategy Implementation Plan](#)

[2022–23 Marine Estate Management Strategy Implementation Annual Report](#)

Reports, guidelines and study papers

Environmental Condition Framework report (October 2023) is available on the [Marine Integrated Monitoring Program webpage](#).

- [Environmental Condition Framework – Full report \(158 pages\)](#)
- [Environmental Condition Framework – Summary \(4 pages\)](#)

Abbreviations and acronyms

Abbreviation	Full name
Authority	Marine Estate Management Authority
CMP	Coastal management programs
CSIRO	Commonwealth Science and Industrial Research Organisation
CTH	Centre for Tropical Horticulture
DPIRD Fisheries	NSW Department of Primary Industries and Regional Development – Fisheries
DCCEEW	NSW Department of Climate Change, Energy, the Environment and Water
DPHI-Planning	NSW Department of Planning, Housing and Infrastructure
DPIRD	Department of Primary Industries and Regional Development
EFM	Environmentally friendly moorings
FTE	Full-time equivalent
ICEA	International Erosion Control Association
LALC	Local Aboriginal Land Councils
Strategy	Marine Estate Management Strategy
MARPOL	International Convention for the Prevention of Pollution from Ship
Monitoring Program	Marine Integrated Monitoring Program
NPWS	National Parks and Wildlife Service
NSW	New South Wales
PFAS	perfluoroalkyl and polyfluoroalkyl substances (PFAS)
TARA	Threat and Risk Assessment
TfNSW	Transport for NSW

Appendix A – Communication and engagement




Marine estate Instagram: #nsw_marineestate

2,245 followers, increased by 18.1% compared to 2022–23

178 Instagram posts




11 Instagram stories

Top posts by engagement (likes): 1 July 2023 to 30 June 2024

Image	Caption and likes	Description
	<p>Rock ramp fishway – POV the fish.</p> <p>What is a rock ramp fishway and how does it work?</p> <hr/> <p>178 likes</p>	<p>Our Reconnecting Fish Passage team have just released 2 new animations explaining how 2 commonly used fishway types (vertical slot fishways and rock ramp fishways) work.</p> <p>Instagram post</p>
	<p>Marine heatwave conditions have returned to our shores.</p> <hr/> <p>154 likes</p>	<p>We currently have moderate marine heatwave conditions off northern NSW with some small areas of strong conditions off Sydney.</p> <p>Instagram post</p>
	<p>Imagine taking your class on a virtual excursion to learn how Aboriginal people have lived and cared for Sea Country on the NSW south coast for thousands of years?</p> <hr/> <p>110 likes</p>	<p>Teachers looking for some ideas for the classroom this year read on.</p> <p>Check out the Welcome to Sea Country webpage to embark on a virtual excursion exploring Aboriginal culture on the NSW coast (link in bio).</p> <p>Instagram post</p>

Subscribers increased by 15.3% during the year
from 1,221 subscribers at 1 July 2023
to **1,408 subscribers** at 30 June 30, 2024

Top stories: based on how many times readers clicked to the story

Image	Caption and likes	Description
<div>1</div> 	<p>NSW sea floor images now available!</p> <hr/> <p>1,264 opens</p>	<p>Have you ever wondered what the sea floor looks like off the NSW coastline? Thousands of images of the NSW sea floor have just been made publicly available online.</p> <p><u>NSW sea floor images now available!</u></p>
<div>2</div> 	<p>Underwater robots reveal record breaking ocean event from 2022 floods</p> <hr/> <p>180 opens</p>	<p>We all know that 2022 was a wet year, and that all rivers lead to the sea. But to what extent do floodwaters from extreme rainfall events impact the ocean?</p> <p><u>Underwater robots reveal record breaking ocean event from 2022 floods</u></p>
<div>3</div> 	<p>Cause of death for young sea turtles investigated</p> <hr/> <p>119 opens</p>	<p>What caused the death of 11 young sea turtles on the NSW North Coast?</p> <p><u>Cause of death for young sea turtles investigated</u></p>

Marine estate website: marine.nsw.gov.au

Visitor traffic to the website is increasing

70,783 page views (260% increase from last year)

Homepage views up **94.4%**

project page views up **309%**

In April 2024, we completed a project to improve the marine estate website. We organised content into categories for different audiences and enhanced site navigation. These changes made it easier to communicate marine estate information. They also boosted site traffic.

Most viewed pages:

1. [Marine estate management strategy](#)
2. [Our projects](#)
3. [Newsroom](#)

Most viewed Project pages:

1. [Domestic waterfront structure strategies](#)
2. [Coastal floodplain prioritisation study](#)
3. [Connections to Sea Country – Aboriginal People of coastal NSW](#)
4. [Oyster reef restoration](#)

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