Marine Estate Management Strategy
Marine Integrated Monitoring Program

Environmental Condition Framework

Summary | 2023

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Environmental Condition Framework

Marine Integrated Monitoring Program

The New South Wales marine estate is highly valued for its natural beauty and environmental assets. Its diverse habitats and abundant marine life benefit the community by sustaining healthy estuaries, shorelines and oceans. They also provide social, cultural and economic benefits. Preserving these assets and benefits requires understanding and managing threats to the marine environment.

The Marine Estate Management Authority released the 10-year Marine Estate Management Strategy in 2018. The Strategy underpins adaptive management of the New South Wales marine estate.

To track the progress of the Strategy, the Marine Integrated Monitoring Program collects information on the environmental, social, cultural and economic benefits of the marine estate. It has three main purposes (see box).

Under the Monitoring Program, the Environment Condition Framework guides how progress towards meeting the environmental goals of the Strategy will be evaluated. A companion framework, the Community Wellbeing Framework, will address social, cultural, and economic benefits.

The Framework provides an overview of the monitoring and reporting approach. This includes the details of 33 projects that collect data on environmental assets ranging from estuary and coastal systems to threatened species. These core projects are selected because they best address purposes 1 and 3 of the Monitoring Program. A separate framework addresses purpose 2.

Purposes of the Marine Integrated Monitoring Program

1. Monitor environmental assets[a] and community benefits[b].

2. Assess how well management actions have reduced threats to the environment.

3. Conduct research prioritised in the statewide Threat and Risk Assessment.

[a] *natural attributes, components and living resources of the marine estate, such as beaches, rocky shores or threatened species.*

[b] *anything that contributes to the wellbeing of the community derived from the NSW marine estate.*

Selected projects

Coastal, marine and estuarine environments vary over time and from place to place. Monitoring typically focuses on aspects of the environment, or indicators, that can be reliably measured. Indicators act as beacons of change for important organisms and habitats, as well as gauges to assess conservation, restoration, regulation and other management actions.

Under the Environmental Condition Framework, indicators are tracked in both broad-scale and smaller-scale projects that contribute to monitoring and management assessment. These and other projects will also build knowledge in areas such as protected species, climate change and pollution.

Broad-scale environmental monitoring will occur throughout the life of the Strategy. It will focus on water quality, biodiversity and habitats, and threatened and protected species indicators.

NSW marine estate management

Marine Estate Management Authority (MEMA): oversees and advises on NSW marine estate management.

Statewide Threat and Risk Assessment (TARA): provides a focus for management by identifying threats and risks to natural attributes of the marine estate, and to the social, cultural and economic benefits derived from these natural attributes.

Marine Estate Management Strategy (MEMS – the Strategy): outlines the goals, initiatives and actions designed to address the priority threats to the marine estate.

Marine Integrated Monitoring Program (MIMP – the Monitoring Program): measures how the Strategy is progressing towards achieving its goals and reports the results.

Environment Condition Framework (ECF – the Framework): guides the implementation of the MIMP for the environmental component.

> ***"A five-yearly health check of the strategy will review its performance and consider new threats and research and monitoring needs."***

Techniques such as remote sensing via satellites, aircraft, drones, underwater cameras and remotely operated vehicles, vessel-based sampling and diver surveys are used to collect data on:

- estuarine water quality (Example project 1 highlights indicators used in monitoring the ecological health of estuaries);
- seagrasses, mangroves and saltmarshes (Example project 2 features research monitoring estuarine habitats and disturbances);
- rocky reef communities;
- fish assemblages; and
- threatened and protected species including seabirds, turtles and penguins (Example project 3 showcases research about monitoring impacts on protected species).

Collecting contextual data such as weather, climate, sea surface temperature, tidal information, and demographics is also important.

Some smaller-scale projects will measure the environmental benefits of management actions. These include remediation (stormwater, agriculture, riparian zones, oyster reefs), improved jetties and anchorage, marine forest restoration, assessing threatened wildlife deaths, and fisheries management strategies.

Addressing cumulative impacts

The Statewide Threat and Risk Assessment recognised that threats may interact or accumulate. Research addresses this by compiling available data, developing case studies and monitoring environmental assets and associated threats levels.

Data management and reporting

Data collected under the Monitoring Program will be stored in a dedicated database, and made available through existing data portals.

Report cards will be used to summarise and share monitoring results with the community, responsible agencies and decision makers. They will present project-level insights, aggregated overviews, and newly acquired knowledge.

A five-year health check of the Strategy will review its performance and consider new evidence and emerging threats, as well as research and monitoring needs. It will also review the 2017 Statewide Threat and Risk Assessment (TARA).

Example project 1: Monitoring the ecological health of estuaries

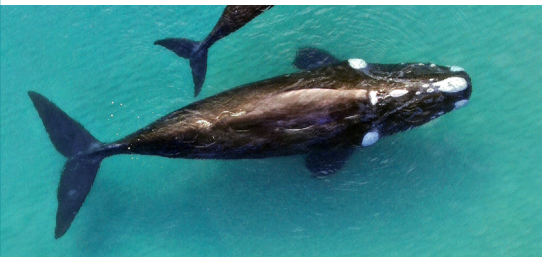
Threats addressed	Monitoring/Research
Agricultural runoff Urban stormwater, sewage and septic discharge Foreshore development Clearing and grazing of riparian and marine habitat including wetland drainage Modified estuary entrances, breakwaters and freshwater flows	This statewide monitoring program is designed to detect long-term changes in waterway health resulting from management actions such as the control of runoff. It monitors indicators such as water quality, algal abundance, and vegetation and bird diversity.

Example project 2: Estuarine habitat monitoring and threat assessment

Threats addressed	Monitoring/Research
Agricultural runoff Thermal, urban stormwater, sewage and septic discharge Foreshore development Clearing and grazing of riparian and marine habitat including wetland drainage Modified estuary entrances, breakwaters and freshwater flows Four-wheel driving Altered storm/cyclone activity Climate, sea temperature rise and sea level rise flooding, storm surge, inundation from extreme events oyster aquaculture Pipelines, cables, trenching and boring Boating and boating infrastructure	This research program uses aerial imagery (drone, aircraft and satellite) and field surveys to map changing estuarine macrophyte habitats including saltmarshes. The effectiveness of some local-scale management initiatives will be assessed in terms of habitat response. Indicators monitored include changes in habitat extent and species composition, and the condition of the mangrove canopy.

Example project 3: Cetaceans project

Threats addressed	Monitoring/Research
Shipping Commercial fishing Recreational fishing Boating and boating infrastructure Recreation and tourism Foreshore/urban development Water pollution and sediment contamination Clearing, dredging and excavation Estuary openings and modified freshwater flows Climate change	Impacts on protected species are monitored using a range of data sources collated annually. These include incidents from the National Ship strike database, the licensed Rescue and Rehabilitation Sector, Saving Our Species report cards and data (Bionet), and published whale count data for species such as Humpback whales.



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Acknowledgment of Country: We stand on Country that always was and always will be Aboriginal land. We acknowledge the Traditional Custodians of the land and waters, and we show our respect for Elders past, present and emerging. We are committed to providing places in which Aboriginal people are included socially, culturally and economically through thoughtful and collaborative approaches to our work.

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