

The Knowledge Strategy sets priorities for the knowledge needed by the Office of Environment and Heritage (OEH) to support NSW Government and corporate objectives. *Coastal, Estuarine & Marine Environments* is one of six 'knowledge themes' in the Knowledge Strategy.



Knowledge goal: Protect and enhance the values of the coast, estuaries and marine environments

OEH undertakes coastal and marine research and monitoring to better understand coastal hazards, the underwater environment, and the impacts of land use on coastal catchments, estuaries and lakes. This work enables OEH to support local planning authorities to manage and protect these environments.

Outcomes

The *Coastal, Estuarine & Marine Environments* knowledge theme aims to provide knowledge to:

- meet the needs of regional communities by helping to balance the multiple uses of the coast and by sustaining coastal values
- assist coastal planners to understand coastal hazards and adapt to current and future sea level variability
- assess the extent and condition of natural resource assets to inform decision-making
- improve management outcomes by predicting the future condition of estuaries and other natural resource assets, with and without management intervention.

Major OEH programs to address priority knowledge needs

Share coastal knowledge to improve decision-making

- OEH's Coastal Information System will support local and regional planners, communities and organisations by providing easy access to coastal information. An online interface will host interactive content and multimedia to provide information on coastal topography and bathymetry, hazard assessments, coastal zone management plans, and information on habitats and shoreline characteristics.

Manage risks and build prosperous communities

- OEH is improving knowledge of the risks of coastal erosion and inundation to help coastal planners and communities make better decisions for land-use planning, asset protection and emergency response. The work includes analysis and modelling to deliver better understanding of the risks associated with sea level rise and extreme events, assessing how climate variability alters the risk of erosion, and determining how risks to infrastructure and habitat differ between estuaries.

Build healthy communities through healthy estuaries

- OEH models estuary condition and collects information about ecosystem thresholds, tipping points and biological responses, to predict how human activity in catchments affects estuary health. The work helps to improve management outcomes by informing local targets for estuary condition.
- OEH conducts ongoing monitoring and modelling of the condition of estuaries as part of the *NSW Natural Resources Monitoring, Evaluation and Reporting Strategy 2010–2015*.

Respond to NSW Government coastal and marine management reforms

- NSW Government reforms to the management of coastal, estuarine and marine environments may affect OEH's role in managing these environments.

Opportunities to collaborate with OEH

OEH seeks collaborators and/or funding to address the following priority knowledge needs.

Understand coastal values to balance multiple uses

- Develop a deeper understanding of coastal values (social, economic and environmental) at state and regional levels, the threats to these values, and how they change over time. This knowledge will help determine how to measure the 'worth' of natural assets such as beaches.

Understand coastal erosion to develop management responses

- Refine and promote tools that predict the risk of coastal erosion under current and possible future conditions, to support coastal planners and inform management actions.
- Visually represent the probable risk of short- to long-term erosion. This will help coastal planners respond to hazards by predicting the extent of coastal erosion and how it may be affected by climate change.

Understand estuarine foreshore inundation and sea level rise

- Develop better models that integrate geomorphic and hydrodynamic responses to changing environmental conditions and sea levels, focusing on the range of estuary types found in NSW.
- Improve knowledge of how flood risk varies within and between estuaries, under current and possible future conditions, to tailor planning responses.
- Undertake monitoring, mapping and analyses of historic trends and extreme events to inform planning responses.
- Study how climate change may affect extreme rainfall and storms, to help protect communities and coastal infrastructure.
- Investigate potential links between river flooding and elevated levels in tailwaters, and which rivers are more sensitive to changes in water level.

Understand and predict estuarine responses to management actions

- Deliver regional models that link catchments with estuary responses to support regional planning.
- Develop process-based indicators of estuary condition, the influence of groundwater on different types of estuaries, and the impacts of pollutants on ecosystem processes. This will help refine risk-assessment tools that support coastal planners in local decision-making.

Understand conservation needs for better regulation

- Assess the extent and condition of marine habitats, natural resource assets and heritage assets. This will support better management, regulation and conservation actions.

More information

Email: knowledge.strategy@environment.nsw.gov.au

Visit: www.environment.nsw.gov.au/knowledgestrategy

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Office of Environment and Heritage
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