



Office of  
Environment  
& Heritage



## Knowledge Strategy 2013–17



The NSW Office of Environment and Heritage (OEH) is focused on ensuring that the people of NSW have a healthy environment and are supported to access, protect and enjoy their natural and cultural heritage. The Knowledge Strategy sets priorities for knowledge that help OEH and its cluster partners to achieve this.

OEH develops, manages and shares knowledge to meet legislative requirements, as well as goals and targets in *NSW 2021* (the NSW Government's 10-year plan). The knowledge is also needed to meet corporate objectives.

OEH is also the main provider of research, expert advice and technical services to the NSW Environment Protection Authority (EPA).

### **Developing 'priority knowledge needs'**

The Knowledge Strategy lists 'priority knowledge needs' for OEH to continue to deliver knowledge to inform policies and programs, and to meet the needs of customers.

There are six 'knowledge themes' (see the table below), each with a Steering Committee. The Steering Committees work together to identify and review existing and emerging knowledge needs. Steering Committees include managers, scientific experts and planners from across OEH (and the EPA for the *Pollution* knowledge theme) who assess the data, information and knowledge that are already available and identify knowledge needs. Steering Committees develop, prioritise and evaluate actions to meet the priority knowledge needs. Environmental monitoring, and biophysical, social, cultural and economic knowledge, are fundamental needs for each theme.

### **Working with OEH for mutual benefit**

Major OEH programs and existing resources can meet some of the priority knowledge needs. The table on the following pages provides a snapshot of these programs. Other priorities are aspirational and best achieved through collaboration. Opportunities for research partners and other organisations to work with OEH are also outlined in the table.

More information about each of the knowledge themes is available in the information sheets.

### **More information**

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**Visit:** [www.environment.nsw.gov.au/knowledgestrategy](http://www.environment.nsw.gov.au/knowledgestrategy)

## Snapshot of major OEH programs to address priority knowledge needs

Knowledge themes					
Biodiversity	Climate change impacts & adaptation	Coastal, estuarine & marine environments	Landscape management	Pollution	Water & wetlands
Knowledge goals					
Conserve biological diversity, ecological processes and systems	Understand and adapt to the impacts of climate change	Protect and enhance the values of the coast, estuaries and marine environments	Promote integrated landscape management for long-term ecological, cultural, social and economic sustainability	Reduce the risks of harm from pollution to human health and the environment while protecting, restoring and enhancing the quality of the environment	Maintain and improve the extent and condition of wetland, riverine and groundwater systems
Major OEH programs to address priority knowledge needs					
<b>Manage native vegetation more effectively:</b> Upgrade the Vegetation Information System and continue mapping NSW plant community types, to assist landholders, planning authorities and regulators to manage native vegetation	<b>Understand climate systems:</b> Deliver fine-scale climate projections for NSW, and information on the likely impacts of climate change on regional communities to help communities adapt	<b>Share coastal knowledge to improve decision-making:</b> Deliver the Coastal Information System for easy online access to coastal information, including digital elevation models, hazard assessments and management plans	<b>Enable better management decisions:</b> Increase access to natural resource data and information to agencies, communities and landholders	<b>Monitor air quality and analyse particle emissions:</b> Continue to monitor air quality in NSW. Establish new monitoring stations as needed for the NSW air quality monitoring network	<b>Ensure targeted and effective allocation of environmental water:</b> Improve monitoring techniques and predictive models to support the management of environmental water
<b>Improve ecosystem management through adaptive management science:</b> Conduct scientific trials in river red gum reserves in the Riverina to improve adaptive management of ecosystems	<b>Understand the impacts of climate change on our systems:</b> OEH is developing information on the likely impacts of climate change at regional scales which will be provided to regional decision makers through an online portal	<b>Manage risks and build prosperous communities:</b> Help coastal planners and communities understand the risks of erosion and inundation, to assist in land-use planning, asset protection and emergency response	<b>Build resilient, connected landscapes:</b> Progress the <i>Great Eastern Ranges Initiative</i> to restore landscape connectivity and resilience, by managing invasive species, rehabilitating habitat, and developing private land conservation agreements	<b>Minimise pollutant emissions and develop cleaner technologies:</b> Study the long-term impacts of alternative waste treatment technologies on the environment and human health to increase recycling of waste products	<b>Support management actions by tracking the health of water and wetlands:</b> Provide frameworks, data and assessment services to monitor the health of rivers and wetlands

## Snapshot of major OEH programs to address priority knowledge needs (continued)

Knowledge themes					
Biodiversity	Climate change impacts & adaptation	Coastal, estuarine & marine environments	Landscape management	Pollution	Water & wetlands
<p><b>Conserve species:</b> Undertake research to develop management priorities for threatened species. Continue the <i>WildCount</i> program to detect fauna trends and changes over time</p>	<p><b>Understand risks across regions and service providers:</b> Study the potential impacts of climate change to help various sectors improve service delivery. Develop potential adaptation responses for communities and industries which are most vulnerable to climate change</p>	<p><b>Build healthy communities through healthy estuaries:</b> Model estuary condition and undertake research to help communities and stakeholders protect estuaries for a sustainable future</p>	<p><b>Apply traditional Aboriginal knowledge to manage landscapes:</b> Work with Aboriginal communities to understand Aboriginal land management and further integrate Aboriginal knowledge into current practices</p>	<p><b>Improve tools and resources to minimise pollution:</b> Provide expert input and advice to revise national guidelines for pollutants and polluting activities. Assess the risks to human health and the environment from pollutants, contaminated sites and polluting processes</p>	<p><b>Improve floodplain management:</b> Develop Floodplain Management Plans for inland catchments. Identify aquatic ecological assets and their water requirements</p>
<p><b>Manage fire and invasive species:</b> Undertake research in OEH's <i>Living with Fire</i> strategy to inform fire management in national parks. Determine the impacts of invasive species on biodiversity, national parks and local communities</p>	<p><b>Understand and build adaptive capacity:</b> Studying cost-effective options to enable communities to adapt to the impacts of climate change</p>	<p><b>Respond to NSW Government marine management reforms:</b> Update the priority knowledge needs and actions for the Knowledge Strategy in line with NSW Government reforms for the management of the marine estate</p>	<p><b>Support healthy and sustainable landscapes:</b> Provide scientific input to support NSW Government strategic planning initiatives. Assess burned areas, hydrogeological landscapes, and map groundcover</p>		



## OEH seeks collaborators and/or funding to address these priority knowledge needs

Knowledge themes					
Biodiversity	Climate change impacts & adaptation	Coastal, estuarine & marine environments	Landscape management	Pollution	Water & wetlands
<p><b>Abundance and distribution of biodiversity:</b> Inform management actions and priorities by, for example, mapping threatened ecological communities at a fine-scale in priority areas</p>	<p><b>NSW Adaptation Research Hub:</b> OEH has established the NSW Adaptation Research Hub which has three nodes. Research institutions host each node and collaborate with OEH to study the impacts of climate change in NSW and develop potential adaptation responses. The three nodes are:</p>	<p><b>Coastal values to balance multiple uses:</b> Better understand coastal values (social, economic and environmental) held by coastal communities</p>	<p><b>Landscape processes and ecosystem services:</b> Understand spatial landscape processes, connectivity, function and threats to human and environmental health, to promote productive and sustainable landscapes</p>	<p><b>Activities that cause pollution and types of pollutants from activities:</b> Deliver new or improved tools to measure and identify pollutant sources and concentrations. Study potential sources and impacts of non-traditional or emerging pollutants. Investigate cost-effective technologies for pollution control and mitigation</p>	<p><b>Extent and condition of wetlands and groundwater-dependent ecosystems:</b> Complete a comprehensive inventory of significant NSW wetlands. Identify the groundwater-dependent ecosystems of most socio-economic value, to inform management decisions</p>
<p><b>Ecosystem services to better manage species:</b> Identify species that provide critical ecosystem services or hold major cultural or economic significance to inform management</p>	<ul style="list-style-type: none"> <li>• <b>Adaptive Communities</b> – hosted by the Institute for Sustainable Futures (University of Technology Sydney) and the CSIRO</li> <li>• <b>Biodiversity</b> – hosted by Macquarie University and the CSIRO</li> <li>• <b>Coastal Processes and Responses</b> – hosted by the Sydney Institute of Marine Science and the Australian Climate Change Adaptation Research Network for Settlements and Infrastructure.</li> </ul>	<p><b>Coastal erosion to develop management responses:</b> Refine and promote tools to help coastal planners predict the risk of erosion under current and possible future conditions</p>	<p><b>Social drivers of landscape change:</b> Improve methods to communicate with landholders, institutions and Aboriginal communities, about landscape management. Build knowledge of the impacts of socio-cultural values and behaviours on landscapes</p>	<p><b>How to determine the risk of unacceptable impacts to human and environmental health:</b> Understand how to predict the future impacts of pollutants and polluting processes. Use this knowledge to develop resources to prioritise management options</p>	<p><b>The best management tools for aquatic resources:</b> Assess the potential risks to aquatic ecosystems from existing and proposed developments, including mining</p>
<p><b>Appropriate management actions and how to prioritise them:</b> Develop techniques to restore ecosystems and build their resilience. Identify ways to improve the recovery of threatened species. Integrate spatial information from multiple sources to prioritise conservation actions</p>	<p>Future collaborations and priority knowledge needs will be identified by the NSW Adaptation Research Hub</p>	<p><b>Estuarine foreshore inundation and sea level rise:</b> Understand how the risk of flooding varies within and between estuaries, to tailor planning responses. Build this knowledge through monitoring, mapping and modelling, and by analysing historic trends and extreme events</p>	<p><b>Biophysical drivers of landscape change:</b> Study the impacts of pressures and threats on landscape function, to inform regional planning</p>	<p><b>What drives and influences behaviour:</b> Study the factors that influence the behaviour and expectations of the regulated community, to reduce red tape, manage expectations and increase uptake of policies</p>	<p><b>Acceptable target conditions for aquatic ecosystems:</b> Build knowledge of the natural and cultural values of wetlands, rivers and groundwater-dependent ecosystems, to support communities and agencies to manage these systems, determine targets for sustainable use, and protect cultural heritage</p>

**OEH seeks collaborators and/or funding to address these priority knowledge needs** (continued)

Knowledge themes					
Biodiversity	Climate change impacts & adaptation	Coastal, estuarine & marine environments	Landscape management	Pollution	Water & wetlands
<p><b>Effectiveness of existing processes and tools to conserve biodiversity:</b> Improve the capacity of protected areas to conserve biodiversity over the long-term. Gather ecological data to inform impact assessments. Better understand conservation values at different scales to inform decision-making processes</p>		<p><b>How to predict estuarine responses to management actions:</b> Develop regional models that link catchments with estuary responses, to support regional planning</p>	<p><b>Landscape monitoring and data collection:</b> Build knowledge of how landscape function and ecosystems services change over time and space. Enable better management decisions by determining the essential attributes of healthy, productive and resilient landscapes</p>		<p><b>How wetlands and floodplains function:</b> Monitor and model aquatic ecosystems and deliver decision-support systems to support water planners and communities, and inform the allocation of environmental water</p>
		<p><b>Conservation needs for better regulation:</b> Assess the extent and condition of marine habitats, natural resource assets and heritage objects, to improve management, regulation and conservation outcomes</p>	<p><b>How to assess and manage landscapes by using decision-support systems:</b> Develop and promote decision-support systems that assess pressures and threats to landscapes. Support capacity-building for local and regional planning authorities to help communities adapt to change</p>		<p><b>How to measure progress:</b> Undertake monitoring, evaluation and reporting, and survey wetland condition, to ground-truth remote-sensing and predictive models</p>



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