

**RECOMMENDED NATIONAL  
ASSETS AND INDICATORS  
FOR NATURAL RESOURCE  
MANAGEMENT**

# RECOMMENDED NATIONAL ASSETS AND INDICATORS FOR NATURAL RESOURCE MANAGEMENT<sup>1</sup>

## Introduction and purpose

The National Assets and Indicators for Natural Resource Management (NRM) provided in this document at Table 1 are for use by those organisations, groups and individuals who are implementing national NRM programs. This document should be used in conjunction with the *National Natural Resource Management MERI Framework*.

This *Recommended National Assets and Indicators* document, along with the National Natural Resource Management MERI Framework, replaces the *National Standards and Targets Framework*, 2003.<sup>2</sup> This is a living document with indicative rather than static social and biophysical asset classes, assets and indicators that will change over time as new indicators are developed and as different indicators are required for different contexts. The National Land and Water Resources Audit (NLWRA) has continued the on-going development of the indicators, originally developed by the Monitoring and Evaluation Working Group. Protocols have also been developed for some of the indicators as outlined on the NLWRA website at [http://nlwra.gov.au/Natural\\_Resource\\_Topics/](http://nlwra.gov.au/Natural_Resource_Topics/)

National indicators for asset condition will assist in setting targets in program plans and provide standard approaches to measurement. Indicators should be selected according to the principles of cost, simplicity, consistency and practicality as well as their capacity to deliver information across the full jurisdictional scale. Indicators at the area of investment are necessary for monitoring the results of a specific activity. Indicators can be a combination of agreed national indicators and surrogate indicators. 'Surrogate indicators' are measures developed to monitor the performance of an activity where asset condition monitoring is non-existent or not appropriate.

## Definitions

In line with the glossary used in the *National Natural Resource Management MERI Framework*, assets, indicators and targets are defined as follows:

- Asset:** A useful thing or quality; something that has a **value**. In the NRM context, assets can be classified as follows:
- **human capital**—labour and influences on the productivity of labour, including education, skills and health
  - **social capital**—claims on others by virtue of a social relationship
  - **natural capital**—land, water, atmosphere and biological resources
  - **physical capital**—value produced by economic activity, including infrastructure, equipment and technology
  - **financial capital**—savings and credit.
- Indicator:** A quantitative or qualitative factor or variable that provides a simple and reliable basis for assessing achievement, change or performance. It is a unit of information measured over time that can help show changes in a specific condition. A given goal or objective can have multiple indicators (IFAD nd).

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<sup>1</sup> NLWRA Status Report - Indicator and Agreement Schedule September 2007

<sup>2</sup> [www.nrm.gov.au/publications/frameworks/standards-targets-framework.html](http://www.nrm.gov.au/publications/frameworks/standards-targets-framework.html)

**target:** A specified objective that indicates the number, timing and location of that which is to be realised for a policy, program or activity (IFAD nd).

**surrogate indicator:** Measures developed to monitor the performance of an activity where asset condition monitoring is non-existent or not appropriate

## Setting outcomes and targets

Setting targets at all levels of the program logic, using agreed indicators and associated protocols<sup>3</sup> for monitoring and reporting on progress, will:

- promote consistency in setting and measuring progress towards targets within and across regions
- facilitate reporting on progress towards outcomes at all jurisdictional levels
- allow national assessments of condition or trends in NRM assets
- facilitate a learning environment in which program managers and participants adapt practices, strategies and investment plans for continuous improvement.

Setting outcomes and targets for NRM asset condition are essential components of the *National Natural Resource Management MERI Framework* and can be challenging. It requires baseline condition information, but such information is often limited. Quantitative and qualitative social and biophysical information needs to be considered when making investment prioritisation decisions. However, in many instances, changes as a result of investment are only apparent in the long term, and will be influenced by factors that go beyond program funding cycles.

The assumptions made about the likely effects of management actions will, of necessity, be influenced by temporal and spatial issues. In response, NRM plans will need to be refined over time as information about ecological and supporting social and economic processes improves. Governments will take these uncertainties into account in assessing progress towards targets for immediate–intermediate outcomes (previously called MATs or management action targets) and targets for longer-term outcomes (previously called RCTs or resource condition targets).

A separate guide to target-setting will be completed in 2008.

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<sup>3</sup> The National Land & Water Resources Audit has developed protocols to guide standardised use of the nationally agreed indicators. The protocols can be accessed via National Land & Water Resources Audit at [http://nlwra.gov.au/Natural\\_Resource\\_Topics/](http://nlwra.gov.au/Natural_Resource_Topics/)

**Table 1 List of Recommended National Assets and Indicators for NRM.**

Asset Class	Asset	Indicator Heading	Recommended Indicators
<b>LAND</b>	Soil	Area of land threatened by shallow or rising water tables	<ul style="list-style-type: none"> <li>• Depth to groundwater</li> <li>• Groundwater salinity</li> <li>• Baseflow salinity</li> <li>• Location, size and intensity of salt affected areas</li> </ul>
		Soil condition	<ul style="list-style-type: none"> <li>• Soil acidification</li> <li>• Soil erosion - water</li> <li>• Soil erosion - wind</li> <li>• Soil carbon content</li> </ul>
	Native Vegetation	Native vegetation extent and distribution	<ul style="list-style-type: none"> <li>• The extent of each priority native vegetation type by IBRA subregion measured in hectares</li> <li>• The extent of each present native vegetation type by IBRA subregion measured in hectares</li> <li>• The proportion remaining of each native vegetation type by IBRA subregion measured as a percentage of the pre-European extent</li> </ul>
		Native vegetation condition	<ul style="list-style-type: none"> <li>• The proportion of each native vegetation type in each IBRA subregion that is estimated to be in specified condition classes based on a selected set of attributes</li> </ul>
<b>BIODIVERSITY</b>	Significant native species and ecological communities	Selected significant native species and ecological communities extent and conservation status	<ul style="list-style-type: none"> <li>• An interim approach to monitoring significant native species and ecological communities</li> </ul>
		Selected ecologically significant invasive species extent and impact	<ul style="list-style-type: none"> <li>• Distribution and abundance of significant invasive vertebrate pests</li> <li>• Impact of significant invasive vertebrate pests</li> </ul>
		Selected ecologically significant invasive vegetation species extent and impact	<ul style="list-style-type: none"> <li>• Extent, density and distribution of weeds</li> <li>• Impact on assets</li> <li>• Extent of active management</li> </ul>
<b>INLAND &amp; MARINE WATERS</b>	Inland Aquatic Ecosystems	River condition	<p><b>Critical indicators</b></p> <ul style="list-style-type: none"> <li>• Benthic macroinvertebrates;</li> <li>• Fish</li> <li>• Riverine vegetation.</li> </ul> <p><b>Contextual indicators</b></p> <ul style="list-style-type: none"> <li>• Hydrology</li> <li>• Water quality</li> <li>• Physical form</li> <li>• Drivers (eg catchment condition)</li> </ul> <p><b>Useful</b> (to be developed and tested)</p> <ul style="list-style-type: none"> <li>• Biological processes</li> </ul>

**INLAND & MARINE  
WATERS**

Asset Class	Asset	Indicator Heading	Recommended Indicators
	Inland Aquatic Ecosystems	Wetland ecosystem condition	<p><b>Catchment disturbance</b></p> <ul style="list-style-type: none"> <li>• Disturbance in the catchment</li> </ul> <p><b>Physical form and processes</b></p> <ul style="list-style-type: none"> <li>• Area of wetland – change in area</li> <li>• Wetland topography</li> <li>• Soil disturbance</li> </ul> <p><b>Hydrological disturbance</b></p> <ul style="list-style-type: none"> <li>• Physical modification to hydrology</li> <li>• Changes to water regime</li> </ul> <p><b>Water and soil quality</b></p> <ul style="list-style-type: none"> <li>• Turbidity (light climate) regime</li> <li>• Salinity regime</li> <li>• Change in pH</li> <li>• Soil properties</li> </ul> <p><b>Fringing zone</b></p> <ul style="list-style-type: none"> <li>• Change in fringing zone</li> </ul> <p><b>Biota</b></p> <ul style="list-style-type: none"> <li>• Change in wetland vegetation</li> <li>• Change in invertebrates</li> <li>• Change in vertebrates</li> <li>• Change in introduced species</li> <li>• Change in algae</li> </ul>
		Estuarine, coastal and marine habitat extent and distribution	<ul style="list-style-type: none"> <li>• Beaches</li> <li>• Dune vegetation</li> <li>• Wetlands</li> <li>• Estuaries</li> <li>• Mangroves</li> <li>• Saltmarsh</li> <li>• Seagrass</li> <li>• Sediment dominated</li> <li>• Rocky reefs</li> <li>• Coral reefs</li> </ul>
	Estuarine, coastal and marine habitat	Estuarine, coastal and marine habitat condition	<p><b>Biological condition</b></p> <ul style="list-style-type: none"> <li>• Algal blooms</li> <li>• Animal or plant species abundance</li> <li>• Chlorophyll a</li> <li>• Coral bleaching</li> <li>• Mass mortality events</li> <li>• Pest species (number, density, distribution)</li> <li>• Targeted pathogen counts</li> <li>• Vertebrates impacted by human activities</li> </ul> <p><b>Physical/chemical condition</b></p> <ul style="list-style-type: none"> <li>• Dissolved oxygen</li> <li>• Nutrients</li> <li>• pH</li> <li>• Presence / extent of litter</li> <li>• Salinity (EC)</li> <li>• Sedimentation/erosion rates</li> <li>• Shoreline position</li> <li>• Temperature</li> <li>• Toxicants (in water / sediments / biota)</li> <li>• Turbidity / water clarity</li> </ul>

Asset Class	Asset	Indicator Heading	Recommended Indicators
<b>INLAND &amp; MARINE WATERS</b>	Aquatic Environments	Nutrients in Aquatic Environments	<ul style="list-style-type: none"> <li>▪ Total Nitrogen + flow leaving sub-catchment or whole catchment</li> </ul>
			<ul style="list-style-type: none"> <li>▪ Total Phosphorus + flow leaving sub-catchment or whole catchment</li> </ul>
	Turbidity / suspended particulate matter in aquatic environments	<ul style="list-style-type: none"> <li>▪ Turbidity OR</li> <li>▪ Total Suspended Solids (TSS) + Flow</li> </ul>	
	Salinity in freshwater aquatic environments	<ul style="list-style-type: none"> <li>▪ Total dissolved solids (TDS) + Flow OR</li> <li>▪ Electrical conductivity (EC) + Flow</li> </ul>	
<b>RESOURCE MANAGERS</b>	NRM capacity in individuals and communities	Capacity of individuals and communities to change & adopt sustainable management practices	<ul style="list-style-type: none"> <li>▪ Type of change in aspirations of resource managers</li> <li>▪ Capacity of rural decision makers</li> <li>▪ Attributes of management practices</li> <li>▪ Rural livelihood context</li> <li>▪ Extent and type of enhanced capacity of resource managers to undertake sustainable resource management practices.</li> <li>▪ Level of resource manager's skills, &amp; knowledge, to promote sustainable NRM</li> <li>▪ Extent of adoption of recommended sustainable NRM practices by resource managers</li> </ul>
<b>NRM ORGANISATIONS &amp; INSTITUTIONS</b>	NRM capacity in institutions and organisations	NRM capacity in institutions and organisations to change & adopt sustainable management practices	<ul style="list-style-type: none"> <li>• Best practice business management (capacity)</li> <li>• No. of partnerships (engagement)</li> <li>• Extent of leverage (partnerships/recognition)</li> <li>• Quality of partnerships between parties to NRM program agreements.</li> <li>• No. of resource managers accessing NRM programs (reach)</li> <li>• Effectiveness of knowledge distribution systems</li> <li>• No. of Indigenous Australians accessing NRM</li> </ul>
<b>INDUSTRY CONTRIBUTION</b>	Sustainable industries	<ul style="list-style-type: none"> <li>• Industry awareness of NRM issues and sustainable practices</li> <li>• Extent of adoption of sustainable NRM practices</li> <li>• Level of productivity of resource industries</li> </ul>	