Aiding decision-making in the delivery of environmental water

A key outcome of the NSW Rivers Environmental Restoration Program (RERP) objective to improve the use of environmental water is the development of models and decision support tools to improve the management of environmental flows for wetlands. As a result, RERP has commissioned the development of Decision Support Systems for use in key NSW wetlands.

Decision Support Systems (DSS) are models or analytical frameworks with a user friendly interface that are designed to assist decision-makers analyse complex problems.

A DSS can assist managers of environmental water to relate various scenarios on the volume and timing of water delivery to ecological outcomes. The DSS provides a transparent and scientifically rigorous decision-making process to optimise the use of environmental water. The DSS developed by RERP integrates ecosystem response models with hydrological models.

Project objectives

This project developed a DSS for the following key wetlands: Gwydir and lower Murrumbidgee (Lowbidgee) wetlands, Narran Lakes and the Macquarie Marshes. These decision support tools relate hydrological inputs to ecological response and:

- increase the capacity to model the ecological implications of water sharing plans
- facilitate adaptive management by providing a context for monitoring and improving model performance
- increase the efficiency of water use in attaining the ecological objectives of the wetland.
New South Wales Rivers Environmental Restoration Program

Water for our wetlands

The characteristics of a wetland and knowledge about the interactions between its components (geomorphology, water and ecological character) help determine the optimal timing, quantity and duration of the flows required to maintain ecosystem health and function.

The purpose of each DSS is to improve the capacity of the NSW Department of Environment, Climate Change and Water to plan and manage environmental flows at the valley and wetland scale over different time frames. Each DSS allows the comparison of scenarios which relate water delivery to ecological outcomes.

A DSS is not developed to assume the role of a decision-maker, but to assist and inform. It allows decision-makers – in this case environmental water managers – to explore potential management or policy alternatives and their possible outcomes, and increase the efficiency, repeatability and quality of their decisions. A DSS facilitates this by being easy to use, timely and adaptable to improved knowledge and understanding of problems.

The key functions of a DSS are to:

- determine the environmental water requirements of key wetlands
- support effective management of environmental water
- strengthen the role of adaptive management of environmental water
- inform the revision of water management plans and support their implementation
- provide structure and transparency to the decision-making process
- enable navigation and ready access to information to report or investigate environmental issues within a wetland.