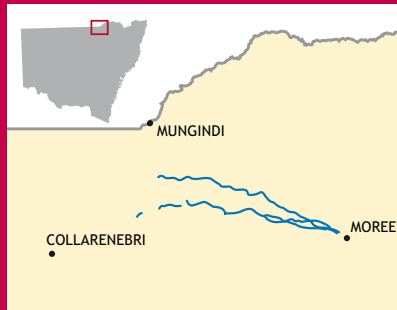


An overview of the NSW Wetland Recovery Program and a summary of projects being undertaken in the Macquarie Marshes is provided in two separate brochures. To obtain copies of the brochures and find out more information:

Call 131 555, Fax 02 9995 5999

Email: info@environment.nsw.gov.au

or visit www.wetlandrecovery.nsw.gov.au



LOCATION OF GWYDIR WETLANDS



Australian Government Water Fund

Water Smart Australia



Central West
catchment
management authority



Australian Government
Department of the Environment
and Water Resources



NSW Government
Department of Water & Energy

GWYDIR WETLANDS



Working together
to save our
inland wetlands

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Call 131 555
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What is the NSW Wetland Recovery Program?

The NSW Wetland Recovery Program is a suite of projects that aim to restore the ecological health of the Gwydir Wetlands (including the Lower Gwydir and the Gingham Wetlands) and the Macquarie Marshes. It targets the urgent needs of two of Australia's most iconic inland wetlands. The land managers, scientists and engineers who are working on these projects are researching the factors that contribute to the future health of these important wetlands. The areas being investigated in the Gwydir Wetlands are located within private landholdings whereas the Macquarie Marshes are a mix of private and public lands.

The NSW Wetland Recovery Program aims to develop better land and water infrastructure and management practices in consultation with local landholders, key stakeholders and government organisations. By focusing on these two wetlands, which include areas of international importance, the program will develop a blueprint for recovery procedures for inland wetlands and river systems across Australia.

Where is the money coming from?

The NSW and Australian Governments have jointly funded the NSW Wetland Recovery Program. A total of \$26.8 million has been committed. In 2005 the NSW Government announced funding of \$13.4 million, which was matched by a grant from the Australian Government in 2006 through its Water Smart Australia Programme.

What will the NSW Wetland Recovery Program provide?

- Better knowledge and decision-making
- Environmental improvements to rivers and wetlands
- More water and improved flow regimes for rivers and wetlands
- Biophysical improvements to rivers and wetlands
- Greater direction for the management of wetlands

Who is managing the NSW Wetland Recovery Program projects?

The NSW Wetland Recovery Program projects are being delivered in partnership by the NSW Department of Environment and Climate Change, NSW Department of Water and Energy, the Border Rivers-Gwydir Catchment Management Authority and the Central West Catchment Management Authority.



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Why save inland wetlands?

Inland wetlands are complex systems of plant and animal communities that have adapted to wet and dry conditions over thousands of years. Large dams and the diversion of water for agriculture and other purposes have reduced the extent of wetland area and altered the natural cycles the wetland ecosystems rely on for their survival. The ongoing drought has also impacted on all our inland wetlands and river systems and the rural communities that rely on them.

Wetlands play an important role in maintaining water quality, providing habitat for native wildlife and drought relief for wildlife and stock, providing breeding grounds for migratory birds, recharging groundwater systems, and supporting grazing, tourism and other industries.

Stakeholder engagement

The NSW Wetland Recovery Program aims to involve a broad range of participants including landholders, interest groups and other non-government organisations that are interested in or affected by the health of the Gwydir Wetlands and the Macquarie Marshes. The Border Rivers-Gwydir and Central West Catchment Management Authorities are supporting community and stakeholder consultation.

What projects are being funded?

DEVELOPING THE FUTURE WETLAND MANAGEMENT FRAMEWORK

Gwydir Wetlands Environmental Management Plan

The key to ensuring wetlands are managed in an effective way is through the development of an Environmental Management Plan. The Plan will be a comprehensive guide for everyone involved in the management of the Gwydir Wetlands. All the Plan's recommendations will be developed in terms of their environmental, social and economic impacts.

The Environmental Management Plan will:

- define specific ecological assets for protection;
- define desired ecological outcomes;
- identify environmental water requirements;
- establish benchmarks for the condition of resources;
- determine other land and water management practices required to achieve the best adaptive management and ecological outcomes; and
- identify water purchase and efficiency projects.

Ecological characterisation

Management practices implemented to rehabilitate a wetland need to be underpinned by sound understanding of its ecological function (characterisation). The ecological characterisation project aims to identify the natural variability of the wetland and outline sustainable changes in the wetland's condition by considering its condition in both wet and dry phases.

Ecological character is the combination of the ecosystem components, process and benefits/ services that characterise the wetland at a given point in time (Ramsar 2005 Res IX.1a, para 15.)

The ecological characterisation study will provide valuable guidance for the Environmental Management Plan, and guide delivery of water to the wetland.

Decision support framework

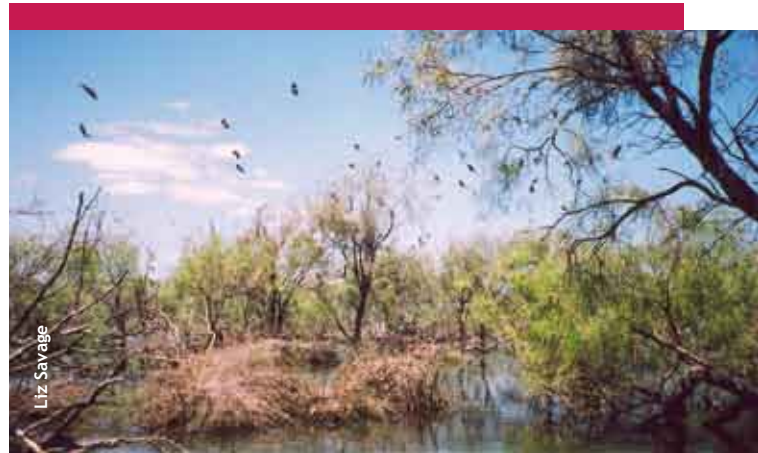
The decision support project aims to develop a framework to support project assessment and decision-making. It will evaluate a range of water purchase, water saving, research and environmental projects on social, economic and environmental grounds and ensure that projects meet the objectives of the National Water Initiative and have broad community acceptance.

This will support decision-making for:

- assessment of the benefits and disadvantages of water purchase and water savings;
- identification of water savings projects and or land management practices; and
- considering community acceptance of project options.

Further projects will also be investigated during the life of the Program.

Whilst this decision support framework is being developed under the NSW Wetland Recovery Program, it is envisaged that it will also be used for a range of funding sources well into the future.



INFORMING THE NEW ENVIRONMENTAL MANAGEMENT PLAN

Aboriginal values

The Gwydir Wetlands and the Macquarie Marshes are places of special significance for the local Aboriginal people. Aboriginal heritage studies will be carried out in consultation with Aboriginal communities, as well as landholders who have identified Aboriginal sites on their land. The aim of these projects is to ensure traditional knowledge informs future management practices of the wetlands.

Land-use/grazing project

The project will review all the published literature and studies on the effects of grazing and other agricultural land-uses on the Gwydir Wetlands. The conditions of established exclusion plots, with a range of flooding frequencies, will be compared with grazed areas. The project aims to assess compatibility between agricultural land-use and wetland condition targets to inform the Environmental Management Plan.

Vegetation mapping

The aim of the project is to interpret changes to the condition and extent of key vegetation communities in relation to alterations in hydrology and land-use. Maps of the distribution of wetland vegetation communities in the Gwydir Wetlands will be created with the use of aerial photographs. Vegetation plots in key vegetation communities will be subjected to detailed flora surveys to provide benchmarks for trend analysis.

Trophic dynamics and ecological function

The trophic level is the position that an organism occupies in a food chain – what it eats and what eats it. By using gut content and stable isotope analyses, it is possible to clarify trophic interactions following the flooding of a wetland. This project aims to examine the timing of the arrival of key members of the animal and plant communities in the Gwydir Wetlands (following flooding) and their interactions in the food chain.

The project will also determine the diet of predators in floodplain wetlands, including nesting waterbirds and large predator fish.

Elevation and hydraulic modelling

The aim of the project is to be able to predict the extent of floods in the wetland for a range of flow scenarios. The project team is developing a detailed computer-generated elevation model of the Gwydir Wetlands that it can use for hydraulic modelling.

Inundation mapping of the Gwydir Wetlands

Using Landsat satellite imagery sampled over a 20-year period, the project team will determine the distributional patterns and duration of inundation within the wetland system at different sized flow events. The frequency of inundation and changes in distributional patterns over a 20-year period will be mapped and analysed to determine any trends. The results and maps will be included in the Environmental Management Plan.

Gwydir bird and fish habitat study

The main aim of the study is to determine breeding success and recruitment of birds and fish in relation to hydrological conditions. Data will be collected on the variability in bird and fish populations in the Gwydir Wetlands and surveys will be carried out on bird roosting sites and fish assemblages.



Tara Schalk

WEED CONTROL

Lippia mapping

The spread of lippia throughout the Gwydir Wetlands not only threatens the wetland, it is also having a significant impact on the economic viability of grazing and cropping enterprises in the area.

By mapping the current extent of lippia, then repeating the process in 12 months time and comparing the data to anecdotal and historical information, researchers hope to establish the rate and area of spread of the weed in the wetland. The project seeks to value-add to work by the University of New England and CSIRO to develop best management techniques for controlling lippia infestations.



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Lippia research - grazing management

Lippia, now a widespread weed in wetland areas, is currently out-competing native species. Research is required to determine the most appropriate methods to manage the weed.

The aim of this project is to test whether resting wetland areas from grazing reduces the spread, distribution and abundance of lippia by encouraging the establishment of and competition from native species.

Lippia research - biological control

Traditional weed control measures using herbicides or mechanical means are impractical and unsuitable for lippia in certain habitats, particularly wetlands and riparian zones. Consequently, alternative measures need to be devised to control and manage the weed's invasion and spread. Although biological control is a long-term prospect, it has the biggest potential return in terms of effective control for the initial expenditure.

The CSIRO has contracted staff at a United States Department of Agriculture laboratory in Argentina to undertake the natural range research on potential bio-control agents. It also has staff in Australia determining the necessary ecological information and planning for trials of potential biological agents.

Gingham Wetlands water hyacinth control

The impacts of water hyacinth on the ecology and hydrology of the Gingham Wetlands are well documented. In response, a water hyacinth control project was recently commenced in the Gingham Wetlands. The program incorporates chemical application, mechanical removal and releases and monitoring of biological controls. Landholders and the Moree Plains Shire Council will assist with the ongoing implementation of the control program.



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WATER SAVINGS

Gingham pipeline

Since the construction of Copeton Dam and its associated irrigation infrastructure in the Gwydir Valley, a stock and domestic allowance of six gigalitres per year has been provided to landholders in the Gingham Watercourse area west of Moree. Delivery of this water is via a channel that was constructed in the late 1970s. In addition to creating environmental problems such as wetland erosion, sedimentation and shallow aquifer disturbance, this method of water delivery is inefficient.

It is envisaged that by piping the Gingham Channel, good quality water will be delivered to stock and domestic users with the added benefit of increased environmental flows to the Gingham Watercourse due to water savings. The project will be modelled on the successful 'Cap and Pipe the Bores' program. Feasibility of the pipeline, its location, environmental impacts and stakeholder input are currently being investigated.

WATER PURCHASE

Border Rivers-Gwydir CMA land/water purchase

The project aims to invest in land/water purchase to improve the health of the Gwydir Wetlands. Investment will consider socio-economic impacts and aim to enhance water management flexibility. Water licences purchased will be managed for the benefit of the Gwydir Wetlands.