

Case Study: De Moleyns Lagoon rehabilitation and monitoring project

The Queensland Wetlands Program (QWP) and the Department of Agriculture, Fisheries and Forestry (DAFF) undertook a project on wetlands in agricultural production areas within the Mackay-Whitsunday region. De Moleyns Lagoon was chosen for the project after consulting with local stakeholders, including the natural resource management group, Reef Catchments.

Project objectives

The project had three main objectives:

- to plan and implement a range of rehabilitation works to improve the role of the wetland in improving water quality, and other important values such as biodiversity
- monitor any improvement
- promote the outcomes to the surrounding community and land owners.



Regional satellite image showing Mirani and De Moleyns lagoon Photo: Reef Catchments

The site

De Moleyns Lagoon is located in an existing reserve of approximately 60ha, near the township of Mirani and is part of the Sandy Creek sub-catchment (see maps).

The Sandy Creek sub-catchment hosts an existing Paddock to Reef program water quality monitoring project which has the support and involvement of the local cane industry.

Although the wetland is now a modified natural system due to development activities within the landscape, the site remains an important nature refuge within the broader catchment.

The catchment area above the wetland is dominated by sugar cane production and contains some existing urban areas including an old landfill (now a transfer station) and a number of proposed housing developments.

The wetland comprises three open water areas (with small ones along the channel) and is just over 1.1km in length from the inflow point to the outflow.



De Moleyns Lagoon aerial photo. Photo: Reef Catchments

What has happened at the site?

Originally the area was used as a camp along the old stock route to move cattle down to the coast. The surrounding area has become overgrown with para grass, guinea grass, lantana and in some sections, giant rats tail grass.

The wetland lagoon is regularly covered with weeds including water hyacinth and water lettuce which is probably exacerbated by nutrients entering the system. The site has also been used to dump rubbish, although there is now a transfer station located next to the reserve which has curbed illegal dumping.

Rehabilitation work

During 2012-13, key issues and management priorities were identified by project stakeholders¹. During the planning stage it was confirmed that the planned works did not require state planning approvals². Planning also involved talking with adjacent landholders about proposed activities at the site over the next few years.

Rehabilitation works to be carried out include:

- weed control and sediment removal
- revegetation
- water quality monitoring
- fire break management.



Water hyacinth covering the main pool of De Moleyns Lagoon Photo: DAFF

Weed control

One of the most visual impacts on the wetland is the water weeds covering the majority of the open water section of the wetland. A range of methods are being

¹ The management plan will be consistent with the Queensland Wetlands Program 'Guidelines and template for preparing a wetland management plan' refer <http://wetlandinfo.ehp.qld.gov.au/resources/static/pdf/resources/reports/guidelines-template-for-preparing-wetland-management-plan-21-1-13.pdf>

² The State Development Assessment Provisions seeks to ensure that development is planned, designed, constructed and operated so as to not cause harm to the hydrology of wetlands in wetland protection areas (WPA wetland [http://www.ehp.qld.gov.au/ecosystems/wetlands/wetlandsfaq.html#how_have_wpa_wetlands_been]) that protect matters of national and state environmental significance including the outstanding universal values of the Great Barrier Reef.

used to reduce the infestation, such as biological controls, mechanical removal and increased shading along the edges of the wetland from revegetation work.



A significant quantity of water hyacinth was removed from the wetland. Photo: DAFF

Over the last five years farmers in the catchment area have also utilised programs such as the Reef Rescue³ program and extension activities provided under the Reef Water Quality Protection Plan (Reef Plan)⁴ to improve farming practices that reduce sediment and nutrient run-off from farms into local waterways and wetlands. These on-farm activities will continue over the next five years under Reef Rescue 2 and Reef Plan 2013.

As access improved, spraying has been used to control weeds such as lantana and giant rats tail grass. The Mackay Regional Council and landholders will participate in a weed maintenance program to reduce the risk of weeds recolonising the site after control.

Other areas dominated by para grass and guinea grass were slashed first and will be the focus of improved fire management to encourage increased regeneration of native vegetation species that will reduce the light and reduce weed infestation.



Sprayed giant rats tail grass. Photo: DAFF

³ Reef Rescue is an ongoing and key component of the Federal Government's Caring for our Country.

⁴ The Reef Water Quality Protection Plan (Reef Plan) (<http://www.reefplan.qld.gov.au/resources/assets/reef-plan-2013.pdf>) is a collaborative program of coordinated projects and partnerships designed to improve the quality of water in the Great Barrier Reef through improved land management in reef catchments.

Revegetation

Some of the areas slashed and sprayed have been revegetated with local native species grown from seed and sourced from the region.

As the area is a wetland, species planted must be able to tolerate 'wet feet' for extended periods during the year. Species used have included *Melaleuca viridiflora*, *Lophostemon sauveolens* and *Nauclea orientalis*.



Newly planted trees. Photo: DAFF



Revegetation at De Moleyns Lagoon. Photo: DAFF

Communication

In June 2013, DAFF visited De Moleyns Lagoon as part of a training workshop aimed at providing information on the benefits and management of wetlands within farming systems. The values and functions of the wetland were discussed along with maintenance and revegetation.

Significant time was spent discussing initiatives farmers could implement to reduce impacts on wetlands. Farmers learnt that wetlands such as De Moleyns Lagoon played an important role in improving water quality captured from many farms across the catchment and played a vital role in water quality improvement.



Participants at the wetland training workshop De Moleyns Lagoon. Photo: DAFF

Water quality monitoring

The water quality monitoring program will establish the quality of water entering the wetland from the upper catchment and determine the degree to which the wetland, in its current state, provides water quality improvement benefits.



Autosampler ready to capture first event to flow through the lagoon. Photo: DAFF

What's next?

Key activities to be completed during 2014 include:

- finalising the De Moleyns Lagoon management plan supported by Mackay Regional Council and Reef Catchments
- continuing weed management around the wetland and maintaining the 2012-13 revegetation work with the possibility of future revegetation work in key areas
- promoting project outcomes such as water quality results and weed removal to community and industry
- installing automatic water sampling equipment at the inlet and outlet of the wetland to monitor the degree to which the wetland reduces the loads of nutrients, pesticides and sediments

- continuing extension and support for catchment landholders to learn about and adopt best management practices on farm. This will be provided through initiatives such as Reef Rescue 2, Reef Plan, Smartcane BMP⁵ and general extension from the local Mackay Area Productivity Service.



Trees showing significant growth four months after planting. Photo: DAFF



Main lagoon after water hyacinth removal. Photo: DAFF

Partners

A number of partners are involved in the project:

- DAFF provided technical advice for on-ground activities, management plan support and promotion of project outcomes to the cane industry and surrounding farmers and land managers.
- Reef Catchments provided project administration, communication, water quality monitoring and development of the 2013-14 De Moleyns Lagoon management plan.
- Mackay Regional Council provided clean up, weed control/maintenance and support for the development of the 2013-14 De Moleyns Lagoon management plan.

⁵ An industry led, government supported best practice system for cane growing across Queensland.

Further information

Wetland Management in Agricultural Production Systems resources as listed below and further wetland management tools and guides are available at <http://wetlandinfo.ehp.qld.gov.au/wetlands/management/wetland-management/>

The Queensland Wetlands Program supports projects and activities that result in long-term benefits to the sustainable management, wise use and protection of wetlands in Queensland. The tools developed by the Program help wetlands landholders, managers and decision makers in government and industry. The Program is a joint initiative of the Australian and Queensland governments.

Contact wetlands@ehp.qld.gov.au or visit www.wetlandinfo.ehp.qld.gov.au

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