Constructed Wetland for the Burdekin River Irrigation Area

The effectiveness of a constructed (artificial) wetland treatment system will be trialled in a project currently underway in the Burdekin River Irrigation Area. It is anticipated the wetland will intercept and reduce loads of dissolved inorganic nitrogen (DIN), phosphorus, sediment and selected pesticides, found in sugar cane irrigation tail-water before entering Barratta Creek and ultimately the Great Barrier Reef.

Location

Figure 1: Project location.

The project site is located approximately 80 kilometres southeast of Townsville in the Burdekin River Irrigation Area of the Lower Burdekin.

Figure 2: Project site, an old borrow pit adjacent to irrigated cane lands will be converted into a wetland treatment system.

This proof of concept project provides an opportunity to showcase an innovative working example wetland treatment system.

Background

Funded by the Queensland Government's Great Barrier Reef Innovation Fund, in response to the ongoing water quality impacts affecting the health of the Great Barrier Reef (GBR), the two year project will convert an abandoned borrow pit located on SunWater owned land, into a functioning constructed wetland treatment system. The system will improve the quality of irrigation tail-water leaving from adjacent sugar cane paddocks.

Although constructed wetlands have been in use overseas for many years, this approach in dealing with agricultural waste water is still very much in its infancy in North Queensland, with many individuals and stakeholders skeptical about the potential benefits of constructed treatment wetlands in an irrigated landscape.

Project Governance

The project is managed by the local community Natural Resource Management group BBIFMAC, with technical design advice provided by Australian Wetland Consulting (AWC) and representatives from SunWater, Burdekin Shire Council, Greening Australia, NQ Dry Tropics, Wilmar Sugar, Lower Burdekin Landcare, the Department of Agriculture and Fisheries and adjacent landholders.

Project Activities

1. Design

As constructed wetland treatment systems mimic the conditions found in natural wetlands, the wetland design will incorporate simple hydrological features and appropriate water detention/holding periods. The design phase will incorporate the following steps:

- Site visits
- Catchment delineation
- Ecological context
- Hydrological assessment
- Soil testing and mapping

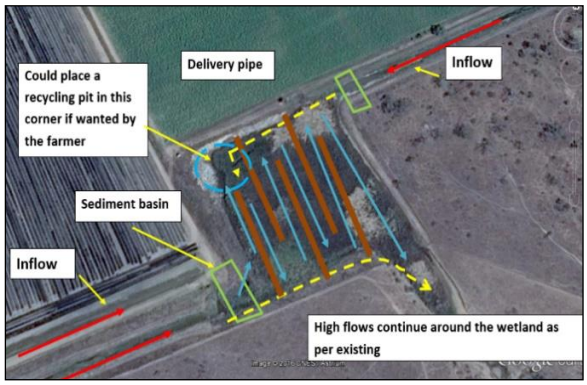

Figure 3: AWC design mark-up. Source: AWC

2. Training

AWC will provide on-site and classroom training to upskill local people. Training will cover:

- Site Consideration
- Design Steps
- Landscape Design
- Construction and Establishment
- Maintenance Requirements

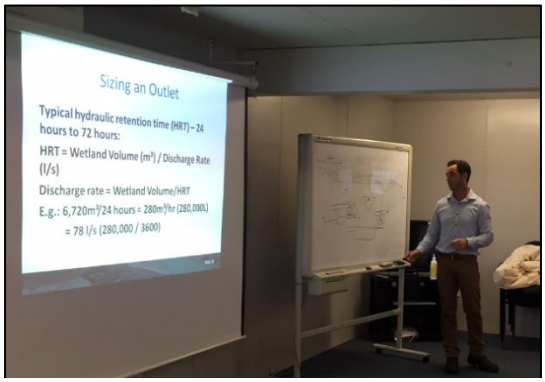

Figure 4: AWC will provide expert training in the design of constructed wetland systems.

3. Plants

The establishment of local native plants will create the biological environment necessary for the treatment of polluted water. Lower Burdekin Landcare will provide local native macrophyte species suited to the site.

4. Monitoring & Evaluation

The project's water quality monitoring (ground and surface) will be managed by BBIFMAC which has a long history of successfully conducting water quality monitoring in the area. Inlet and outlet points will be monitored to establish the extent of water quality improvements attributable to the treatment system, while adjacent farmers will be encouraged to provide farm practice records to better understand the inputs entering the system.

Figure 5: Project management team members meeting onsite to discuss project design.

For further information contact:
Arwen Rickert
Manager BBIFMAC **M:** 0417 429 586
E: arwen@bbifmac.org.au