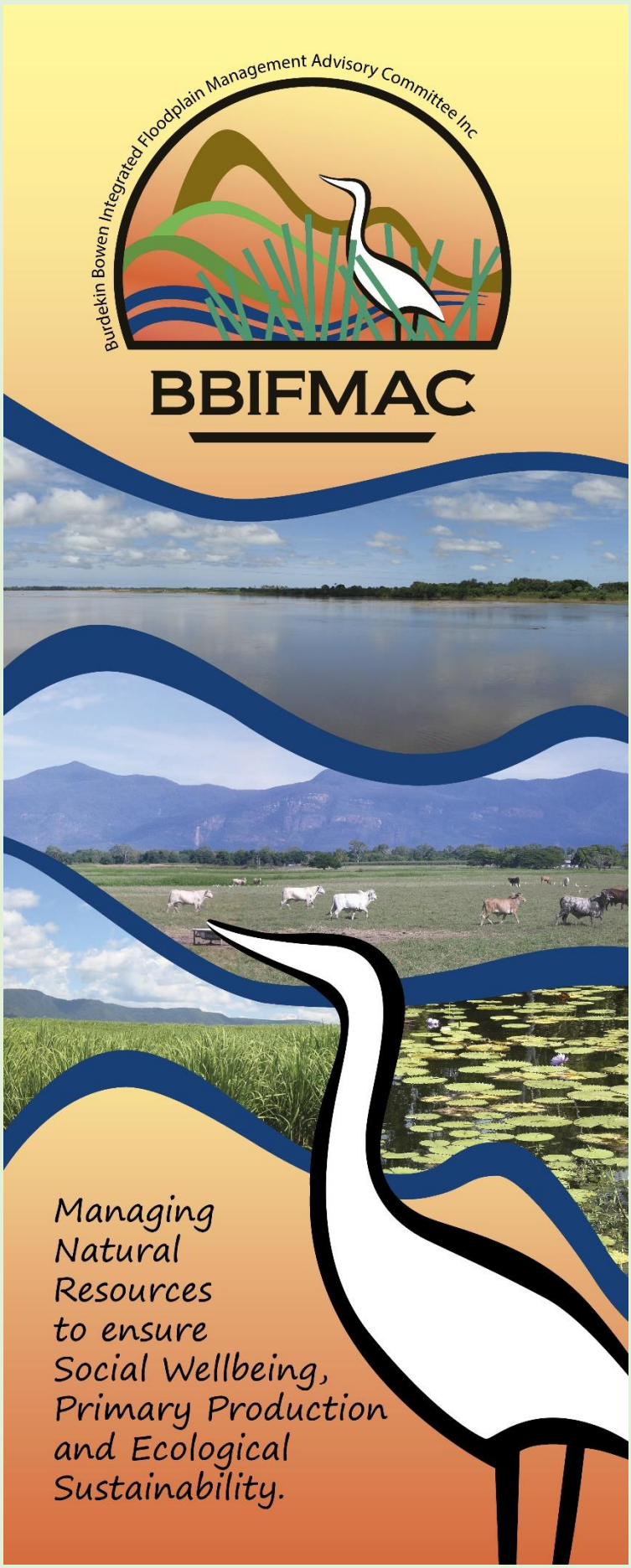
NEWSLETTER

Issue No. 4 August 2020

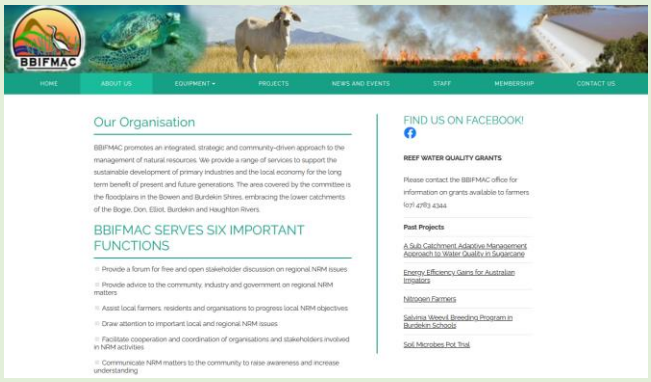


What's New?

Our technical officer, Luke, has been working very hard to re-design and update the BBIFMAC website.

You can check out the new website at…

bbifmac.org.au



Join the BBIFMAC Committee!

We would like to take this opportunity to thank Bill Lucas for his involvement with BBIFMAC over many years. Bill has been a member of BBIFMAC since 2005, and has recently retired from his position on the BBIFMAC management committee.

We are now seeking applications from those who may be interested in joining the BBIFMAC management committee. Being a member of the Committee enables you to provide input to the direction of BBIFMAC, as well as represent the interests of your local community. The position is voluntary (unpaid).

Anyone who resides or works regularly in the Burdekin-Bowen area can be a member of the management committee. It doesn't matter whether you are retired or still actively working, a local business owner or farmer, a government employee or community group member – BBIFMAC represents all stakeholders. **Have your say in the direction of BBIFMAC and matters of importance to your community!**

Current BBIFMAC Committee members are: Steve Attard (Chair), Merv Mohr (Treasurer), Don Salter (Vice chair) and Brock Dembowski (ordinary member).

Please send your expressions of interest by email to secretary@bbifmac.org.au

Constructed Wetland Case Study

BBIFMAC have recently completed a project for the Queensland Department of Environment and Science (DES): Constructed Wetland: Proof of Concept.

The site is located in the Barratta Creek Catchment. The aim of the project was to demonstrate the feasibility of converting an abandoned 2 hectare borrow pit into a low cost, low energy, constructed surface-flow treatment wetland and to see how effective the system was in reducing nutrients, sediments and pesticides from farm runoff.

Basic earthworks and rockworks were undertaken to circulate the water through the system and achieve an optimal hydraulic residence time of 24-36 hours. Local wetland plant species were used to intercept and reduce the load of dissolved nutrients, sediment and selected pesticides, received from the approximately 500 hectare catchment area.

The end wetland result. The system was designed with earthen berms to direct water flow, a sediment pit at the larger inlet, and a leaky rockwall at the outlet.

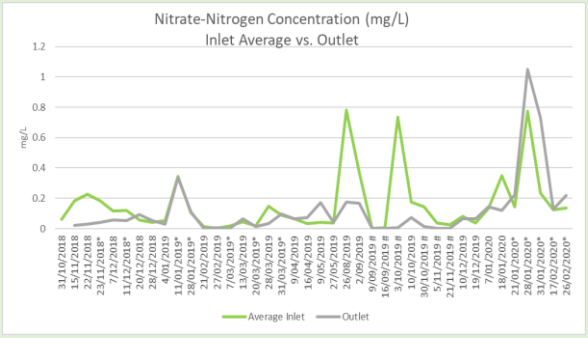
Three auto-samplers and a height logger were installed at the wetland. One sampler was placed at each of the two inlets and one near the outlet. The auto-samplers used were BBIFMAC designed and built KP Samplers.

Overall, the water quality results indicated that the wetland had a positive impact on reducing various forms of nitrogen, total suspended solids (TSS) and several key pesticide concentrations when comparing levels obtained at the inlets to the outlet. However, with the exception of TSS, the removal rates were lower than expected.

The wetland was less effective when the incoming dissolved nitrogen was already low and also during large rainfall events, where it is likely that the optimum residence time for treatment was not achieved due to the high velocity and volumes (e.g. January 2019 and 2020). See Graph 1. This was also the case for several of the key pesticides detected at the site.

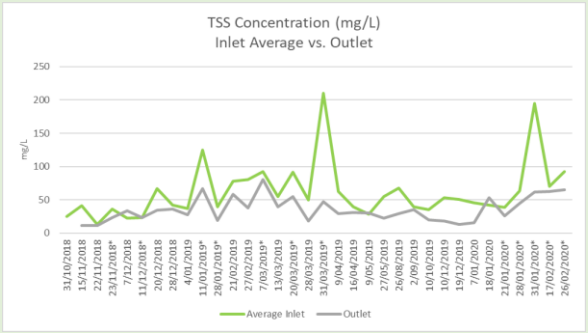
The low nitrogen concentrations at the wetland inlets, which were much lower than that observed in nearby monitored paddocks and recycle pits, are thought to be due in part to the impact of the long vegetated drains that deliver the tailwater into the wetland. These were up to 1km or more long, and it is thought that they performed a role in removing some of the nitrogen before it reached the wetland.

The extent to which long, vegetated drains may be removing nutrients in farm runoff will be further investigated by BBIFMAC this season.



Graph 1: The Nitrate-Nitrogen concentrations (NO3-N in mg/L) are presented for the average of Inlets 1 and 2, compared to the Outlet. Dates marked with an asterisk (*) signify a rainfall event. Dates marked with a hash (#) signify where results obtained from the DES Brisbane laboratory have been used instead of the BBIFMAC in-house analysis.

The TSS results in Graph 2 demonstrate that the wetland performed consistently well in reducing TSS from the inlets to the outlet. The largest reductions generally occurred during periods of elevated TSS during rainfall events, whereby the wetland performance improved as the incoming concentrations increased.



Graph 2: The Total Suspended Solids (TSS in mg/L) is presented for the average of Inlets 1 and 2, and the Outlet. Dates marked with an asterisk (*) signify a rainfall event.

Over a 12 month period it was estimated that the wetland removed approximately 1 tonne of nitrate-nitrogen (N03-N) and intercepted 1,000 tonnes of sediment.

The results of this project demonstrate that a wetland treatment system is not a silver bullet, but may be a useful tool in conjunction with other methods to address agricultural runoff issues.

Thankyou to the project collaborators and contributors - DAF, Sunwater, Burdekin Shire Council, Wilmar, Australian Wetland Consulting, the neighbouring landholders, and the project steering committee.

You can find an informative video about the wetland construction and monitoring at https://www.youtube.com/watch?v=TQpMtYNJ73I

Become a BBIFMAC member!

JOIN NOW FOR JUST $20 PER YEAR.

BBIFMAC members receive:

- Free or discounted water quality tests.
- Discounted water quality monitoring equipment.

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