

Agriculture water treatment Project fact sheet

A whole-of-system approach is needed to improve water quality in agricultural areas adjacent to the Great Barrier Reef. This approach involves a treatment train including:

1. Best management practices to minimise pollutant loss;
2. Treatment systems to intercept and treat run-off or shallow groundwater on the farm and
3. Wetland management or restoration in the catchment to treat larger volumes of water.

This project builds on the extensive information already available and focuses on increasing awareness, knowledge and adoption of systems that harness wetland treatment processes to improve water quality and sustainability in intensive agriculture.

Why is this project needed?

Treatment systems, such as bioreactors, treatment wetlands and vegetated drains complement agronomic 'best management practices' to enhance pollutant reduction in farming landscapes. The water quality targets in some Great Barrier Reef (Reef) catchments are unlikely to be met through adoption of best management practices alone and meeting dissolved inorganic nitrogen (DIN) targets cost-effectively is challenging. A whole-of-system approach to farm management, including treatment systems and wetland management or restoration is needed to further reduce pollutants, particularly nitrogen, leaving priority catchments.

Research demonstrates that well located, designed and managed treatment systems can be cost-effective at reducing DIN in farm run-off and potentially other pollutants, like pesticides. More work is needed to enhance, synthesise and extend information; build capacity; and integrate a whole-of-system treatment train approach in Reef water quality programs.



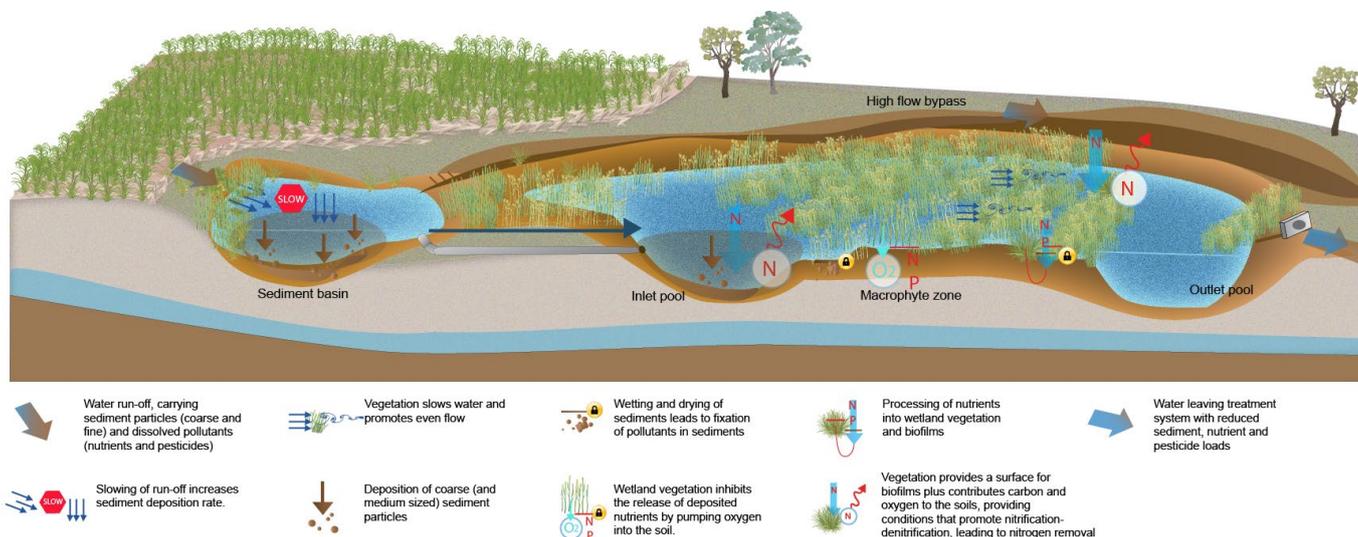
Figure 1 Vegetated drains can reduce nitrogen through wetland processes. Queensland Government

What is the aim of the project?

The Agriculture water treatment project will focus on reducing DIN from intensive agricultural areas, i.e. sugarcane and horticulture. The project extends over four years (July 2022 - June 2026) and aims to build awareness, knowledge and capacity in the use and management of treatment systems to improve water quality. The project will engage a diversity of stakeholders including landholders and their advisors, natural resource managers and industry bodies to promote and deliver a whole-of-system approach to help farms improve water quality and sustainable production.



Figure 2 This woodchip bioreactor bed was effective at removing DIN from irrigation tailwater from a cane farm. Queensland Government



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Figure 3 Illustration of the main treatment processes occurring in a treatment wetland. Source: WetlandInfo 2022.

What will be delivered?

The project will:

- classify farm drains to identify those drains with the characteristics for potential DIN reduction
- install and monitor treatment systems, like vegetated drains and bioreactors, to increase knowledge of the effectiveness, design and management of these systems
- collate, synthesise and communicate knowledge on treatment systems via guidelines, case studies, websites, presentations and other communication products
- provide extension advice and support to increase awareness, knowledge and capacity
- facilitate stakeholder networks to share knowledge and enhance communication and linkages between projects.



Figure 4 Field days and workshops bring stakeholders together to network, share knowledge and learn from each other. Queensland Government

Who is involved?

This project is led by the Department of Agriculture and Fisheries (DAF) in partnership with the Department of Environment and Science (DES), under the Queensland Wetlands Program. The project is funded through the Queensland Government's Queensland Reef Water Quality Program.

Project delivery involves partnering with Natural Resource Management bodies, agricultural industry, research bodies and community, non-government organisations.

For more information

The treatment systems toolbox on WetlandInfo <https://wetlandinfo.des.qld.gov.au/wetlands/management/treatment-systems/> has information on how to plan treatment systems, different treatment system options, pollutant removal processes and cost considerations.

DAF provides advice and support to help agricultural industries be profitable, productive and sustainable. For information visit [Farming in the Reef \(daf.qld.gov.au\)](https://www.daf.qld.gov.au) or contact 13 25 23.

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 Queensland Wetlands Program is currently funded by the Queensland Government.

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

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