GDE mapping: Great Barrier Reef (Mackay–Whitsunday)

Groundwater dependent ecosystems (GDEs) in the Great Barrier Reef (GBR) catchments are important natural ecosystems that play a significant role in maintaining the health and biodiversity of Queensland's catchments and associated reef lagoon. Understanding where GDEs are and how they function is critical to managing wetlands as groundwater provides a key source of water. This project will combine existing datasets with expert consultation previously undertaken to identify and map GDEs in the Mackay–Whitsunday area.

Background

It is likely that many of Queensland's ecosystems demonstrate some reliance upon groundwater to support ecological function on either an intermittent or permanent basis. Groundwater contributes to terrestrial and aquatic ecosystems by supporting vegetation, supplying discharge to wetlands and providing refugial habitat for flora and fauna during dry periods. The ecological integrity and function of GDEs may be adversely affected by poor management. Effectively managing these systems requires a good understanding of their location, water source and function—often identified as a significant knowledge gap.

The Queensland Government possesses well advanced and current wetland and regional ecosystem mapping, placing it in a unique position to advance mapping of GDEs. This project will progress the GDE mapping process within the state, targeting the priority catchment area of the Great Barrier Reef. It will build upon previous consulation with experts to further develop GDE models and mapping rules in the Mackay–Whitsunday area. The resulting GDE mapping products will be integrated into statewide GDE mapping products.

Project area

The Great Barrier Reef catchments cover an area of approximately 424,000km^2. Of this, the regional natural resource management area for Mackay and Whitsunday constitutes approximately 9,340km^2 (see Figure 1). The major catchments within the area are the Proserpine, Pioneer and O'Connell Rivers, Plane Creek and the Whitsunday and other islands. Major land uses in the catchments include sugar cane, cattle grazing, tourism and national parks with smaller areas of aquaculture, other agriculture, urban and small industry uses.

The Mackay–Whitsunday area contains many of the GDE types and faces similar land use issues that are found in the greater GBR. GDEs within these catchments support wetlands and other ecosystems providing a variety of significant ecosystem services.

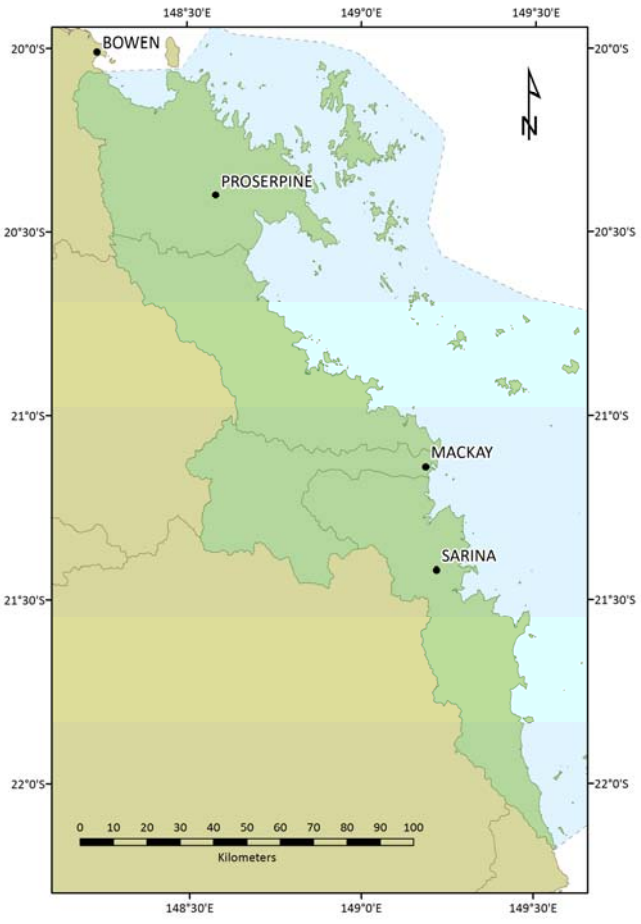

Figure 1. Project area of the Mackay and Whitsunday catchments.

Project management

This project—funded by the Queensland Regional NRM Investment Program—is an initiative of the Queensland Wetlands Program and is being delivered by the Department of Science, Innovation, Information Technology and the Arts.

Drivers

The expansion of GDE mapping to the Mackay–Whitsunday area will enhance and complement existing tools and fill critical gaps that have been identified as limiting the usefulness of those tools developed to date.

Furthermore, expansion of the GDE mapping to include the Great Barrier Reef catchments will contribute towards improved understanding of wetland location and function, underpinning the Queensland Government's commitment to improved wetland management in the GBR.

The inclusion of relevant experts and stakeholders in the development of GDE mapping and making these valuable mapping products freely available on Wetland*Info* will assist with:

- raising awareness of the importance of wetlands and other GDEs
- incorporating relevant local expertise into final mapping products
- integrating tools in key decision-making processes
- increasing on-ground take-up of tools and building capacity.

Strategic approach

The project aims to continue the use of previously developed methods and add value to existing knowledge and practice. The GDE mapping method employs an iterative consultative process to ensure the mapping is developed utilising pre-existing datasets and models and combining it with expert knowledge.

The following key processes will be employed:

- Establishment of a steering committee representing key stakeholders to provide guidance, technical input, contacts and feedback on the project.
- Completion of spatial analysis for the Mackay-Whitsunday area, utilising the GDE Mapping and Classification Methodology (version 1.0), finalising the information collected at the Mackay GDE mapping workshop in 2012.
- Carrying out a follow-up workshop and user acceptance testing to finalise Mackay mapping.
- Identification of other priority areas for mapping within the Great Barrier Reef catchments, based upon water resource plan requirements and other State priorities as related to the strategic assessment, Reef Plan and natural resource development.
- Extensive consultation with organisations undertaking research in the wetlands within determined priority areas, including universities, cooperative research centres, government departments, industry groups and local councils.

Outputs

- GDE mapping of the Mackay-Whitsunday area within the Great Barrier Reef catchments.
- Mapping and associated information, including conceptual models, technical specifications documentation and associated communication products, prepared in suitable format for delivery on Wetland*Info*.
- A report identifying key knowledge gaps relating to the function of GDEs in the Mackay-Whitsunday area and other priority locations within the Great Barrier Reef catchments, and recommendations for priorities in addressing these.
- Database of existing information for priority areas in the GBR.

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 joint initiative of the Australian and Queensland Governments.

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