Agriculture and water quality

October 2016

Cape York NRM delivered *Sustainable grazing management and on-ground works: maintaining Cape York's resource base for sustainable management and use – reducing pests and weeds, improving water quality* in 2013-2016. The project was funded by the Queensland Government's Queensland Natural Resource Management Investment Program.

The project had a broad impact over its three years of implementation, with significant outcomes in developing best practice frameworks, coordination, engagement, capacity building, on-ground works, planning and resource assessment.

Key outcomes from the project follow.

Development and monitoring of indicators of sustainability

The identification, development and monitoring of indicators for agriculture and grazing sustainability went through several phases between 2013-2016, and involved engagement with 20 properties. The project investigated multiple types of indicators, including ABCD land condition, weed infestations, soil condition, pasture grasses, salinity, grazing rings, fence lines, watering points, flooding areas, erosion, nutrient management and runoff, fire management, ground cover of grasses, irrigation efficiency and assessment of nature values through vegetation, wetlands and threatened species.

Red Valley compost production

Kureen Farming - biofertiliser project

New practice trials for this project included supporting the establishment of a biofertiliser factory on Kureen Farm to increase soil biodiversity and improve fertiliser efficiency, and a rainfall simulation project with landholders in Lakeland and Cooktown to investigate reducing soil erosion.

Surveys were conducted for water quality outcomes in 2015 for horticulture and grazing management, leading to the development of management practice frameworks.

Overall, the project improved efficiencies from landscape scale coordination and for collaborations across properties.

Localised contracts for planning for grazing and agricultural property pest management

Cape York NRM supported land managers in central Cape York and Lakeland in pest management planning and on-ground weed control.

Comprehensive property management planning that included pest management planning was undertaken for Holroyd, Yarraden, Olivevale and Fairview with additional funding leveraged through the National Landcare Programme.

Information sharing with beef cattle producers at Olivevale

Violet Vale - Cattle in wetlands

Pest management planning to target on-ground works was also undertaken with Soda Springs, Mt Mclean (and One Mile), Butchers Hill, The Brothers, Violet Vale, Malarki, and Dawnvale, with property management plans developed for Holroyd, Yarraden, Olive Vale and Fairview.

Three Aboriginal Shire Council Pest Management plans were supported at Aurukun, Lockhart and Hope Vale.

14 contracts for on-ground weed management were developed to manage sicklepod, calotrope, snakeweed, rubber vine and hymenachne.

Yarraden Station - Sicklepod monitoring

Soda Springs - Weed control

98,000 hectares of weed infestations were mapped, and 10 hectares of sicklepod controlled at Yarraden, Holroyd and Bamboo. 589 ha of hymenachne was sprayed at Pormpuraaw and 20 ha of sicklepod mapped and controlled at Dawnvale. Sicklepod was also controlled at Violet Vale, while in the Lakeland area, agencies and land managers worked together to control 2000 ha of calotrope. A snakeweed control trial was undertaken using direct seeding of Rhodes grass, however the trial had limited success due to the timing of direct seeding and climactic variables.

Engagement, management and monitoring of grazing and agriculture for water quality and best practice NRM outcomes

Cape York NRM provided extension to, and engaged with Cape York's agriculture and grazing sectors providing information and support to enhance practice change and enhance water quality. This involved engagement with 31 Cape York properties for property planning, and information sharing about agricultural practices, sedimentation, and best practice beef cattle production. Six Indigenous organisations were supported through funding application support, and monitoring and mapping of grazing lands. 15 Lakeland growers attended a soil science event coordinated by Cape York NRM and 28 landholders met to discuss water quality impacts to the Great Barrier Reef.

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A project supporting exclusion fencing of wetlands on Violet Vale (for cattle) and to monitor biodiversity was also supported. Fixed monitoring points were established, and vegetation and aquatic surveys were undertaken, through Queensland Government investment. Management practice change can be effectively evaluated now that these baselines in land and water condition are established. The land managers undertook pig eradication as in-kind to this project.

Engaging with land managers in Lakeland

Cape York Atlas launch

This project was instrumental in providing leverage to several new projects for the Great Barrier Reef, including the *Eastern Cape York Water Quality Improvement Plan*, and the Reef Trust project *Fifty per cent reduction in gully erosion from high priority sub-catchments in the Normanby*.

Engagement and promotion of practice change through communications and events

Extensive engagement with Cape York land managers has been supported by this project, at meetings and events throughout Cape York. Case- studies have been produced on the work carried out by Cape York NRM and Cape York land managers to showcase practice change and best practice in land management. 14 Land Condition reports (soil fact sheets) have been produced through extensive engagement with property managers, and over a dozen case-studies produced. These, along with other useful information, are available on the Cape York Atlas site *Land Manager* http://landmanager.capeyorknrm.com.au/home.

The development of the Cape York Atlas site *Water Quality* http://waterquality.capeyorknrm.com.au/ was supported by this project.

Cape York NRM used a combination of traditional and contemporary engagement and communication techniques to connect with the Cape York community. These methods include written (and mailed) and electronic newsletters, events and field days, one-on-one and group meetings, and social media. Cape York NRM's *Healthy Country Newsletter* is distributed to over 2000 individuals. At 30 June 2016 Cape York NRM had over 1200 Facebook followers and over 700 Twitter followers. Between January and June 2016, over 500 users had visited the *Land Manager* Atlas site.

Development of a water resource assessment framework for Agriculture

Between 2013 and 2016 Cape York NRM engaged with Cape York's agricultural sector through one-on-one meetings, roundtables, field days, events, extension services and training days. Information from this engagement supported the development of the management practice frameworks for stewardship plans, hazard mapping and property risk assessments.

Cape York NRM has developed two management practice frameworks through extensive research and on-ground trials. It was identified that Cape York required management practice frameworks which were specific to the region. The resulting documents are: A new grazing management practice framework for the Cape York region and; A new agricultural management practice framework for the Cape York region.

Extensive on-ground engagement was involved in developing the frameworks, involving eleven properties in central Cape York, seven properties in the Lakeland district, two other locations north of Coen, and in the Bloomfield catchment.

The framework aims to improve productivity and reduce the amount of sediments, nutrients and pesticides entering waterways.

Implications for future direction

This project has provided a base for Cape York NRM's understanding of agriculture and grazing systems on Cape York. Through engagement and extension and the production of communications products, plans and contracts, the skills, knowledge and awareness of sustainable farming practices on Cape York has increased.

It is anticipated that in the long-term, behaviour change and improved practices will occur. In the medium term the project has:

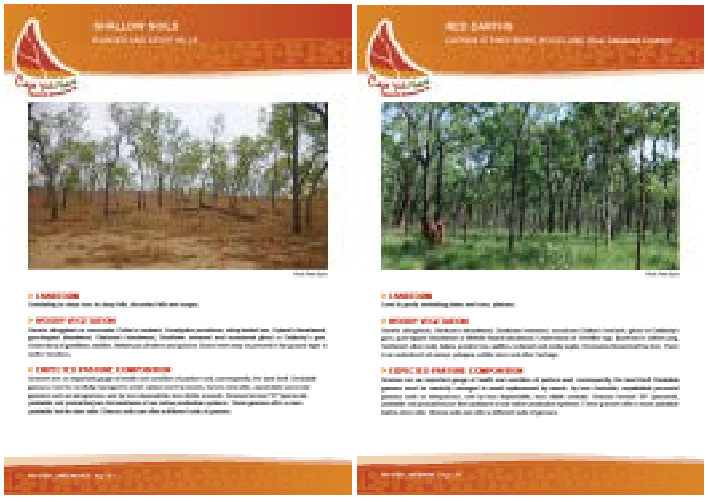
- Improved landholder awareness of water quality, agricultural and environmental connections
- Identified key indicators to monitor agriculture and land condition
- Provided confidence and skills for properties to manage weeds themselves
- Supported a cluster approach, improving the coordination and collaboration amongst properties and support organisations to control weeds
- Developed monitoring systems at sub-property scales to be used in future activities
- Assisted the development of a targeted water quality monitoring program for future fine suspended management in grazing lands, and nitrogen management in agricultural lands
- Supported upcoming projects for the Reef monitoring program for wetlands, rivers and catchments, and the implementation of the Eastern Cape York Water Quality Improvement Plan to deliver water quality outcomes.

Sustainable grazing management and on-ground works: maintaining Cape York's resource base for sustainable management and use – reducing pests and weeds, improving water quality (2013-2016) was supported with funding from the Queensland Government's Queensland NRM Investment Program.

Botanist James Hill undertakes vegetation surveys at Violet Vale

Key partners meeting in Cooktown to discuss the first Water Quality Improvement Plan for east flowing Cape York catchments

Map showing cattle exclusion fencing on Violet Vale



Fact sheets for fourteen Cape York soil types were produced

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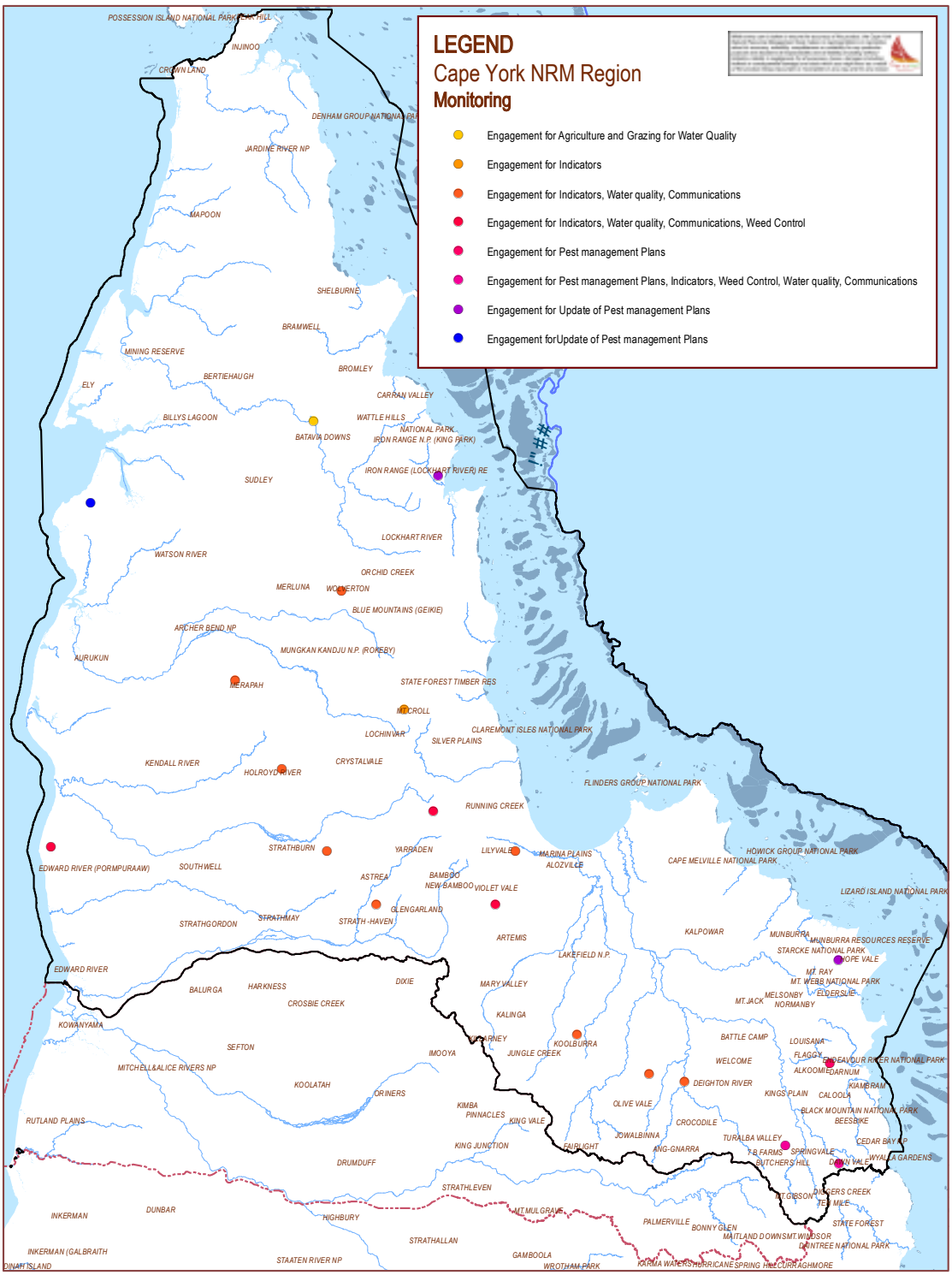

Project Point Location

This case study is produced by Cape York NRM with funding from the Queensland Government NRM Investment Program

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