

Raglan Station — Fitzroy

Gully Erosion



The rock chute spillway recently constructed on Raglan Station will successfully divert flow away from the gully head, and is a critical first step towards soil conservation on the property.

“Given the property’s proximity to the Fitzroy Delta, and the amount of sediment estimated to be reaching the coast, it was important to remediate the erosion at this site”

FBA Senior Land Management Officer
Bernie Claussen

Raglan Station is a 16,919 hectare property sharing frontage onto Raglan Creek, a tributary flowing directly into the Fitzroy Delta. A highly erosive gully was present on the property, measuring depths of up to 10 metres and widths of up to 20 metres in some areas. The entire length of the gullied area spanned 241 metres. Fitzroy Basin Association Inc. (FBA), with funding through the Australian Government’s Reef Trust II Program, undertook a three-pronged approach to addressing gully erosion in the latter months of 2018.

A bund to redirect flow away from the gully, exclusion fencing and the installation of a rock chute was determined by engineers at The Neilly Group to offer the best outcome - overcoming any threat of the gully head expanding in the future, reducing soil loss, erosion and forfeiture of productive land.

SITE DESCRIPTION

Hollybrook paddock, stocked with 180 Brahman stud cattle, extends both sides of Raglan Creek. The ponded pasture in this paddock was installed over 30 years ago, initially covering an area of approximately 3.8 hectares. This has reduced dramatically over the past decade to around 2.4 hectares due to the incised gully. During times of flood, the gully advanced rapidly cutting into the extensive floodplain, so the potential for ongoing accelerated erosion was high. The landholder, Ryan Olive, conceded erosion had visibly reduced his ponded pastures, and was cutting into productive grazing land. Ryan recognises the need to improve grazing land management, through resting paddocks and fencing off creeks.

SITE REMEDIATION WORKS

Rock chutes are designed to slow the velocity of run-off occurring in a rainfall event, and subsequently, the potential for erosion, including valuable top soil.

The rock chute spillway and the earthen bund are designed to ensure that any flow exiting the ponded pasture will travel via the spillway, and not via the gully head. According to engineers, the newly installed rock chute is designed to handle flow rates up to and including a 1-in-50 year rainfall event. Without the chute and bund wall in place, runoff enters the gully at a rate seven times faster - triggering significant erosion as a result.

An added benefit of the design was that the excess water would again be flowing down the original, gently-sloping course entering Raglan Creek further downstream.

Fencing was recommended around the rock chute and the gully to exclude 1.7ha from stock, minimising loss of grazing land and ensuring the success of the spillway.

Excluding cattle will promote the establishment of vegetation and provide long-term soil and bank stability. The works have saved the ponded pasture and undoubtedly prevented huge soil losses from the floodplain.

INVESTMENT

This funded program demonstrated a strong example of landholder contribution and support - resulting in significant cost-effectiveness and an impressive return-on-investment per tonne of sediment saved. In total, the project costs

This project was supported by Fitzroy Basin Association through funding from the Australian Government and delivered through Reef Trust.



“I want to stop the ponded pastures from reducing any further.

If I fence off the creek then I will have two paddocks to rotate the cattle between - resting one at a time.”

**Landholder
Ryan Olive**



amounted to \$71,635, with the landholder making in-kind contributions, covering the costs of exclusion fencing.

POSITIVE IMPACTS FOR THE REEF

This project will save an estimated 558 tonnes of sediment washing from the 16,919 hectare property into Raglan Creek each year. Downstream Raglan Creek forms part of the Lower Fitzroy Fish Habitat Area, an important system for fish recruitment. Water quality in Raglan Creek is not only essential for the health of the Great Barrier Reef, but additionally for juvenile barramundi and other fish species. Eventually, the revegetation of

the bund and rock chute will further protect the site from erosion in the future.

FBA Senior Land Management Officer Bernie Claussen says the works which have occurred are a major initial step towards improving soil conservation.

“The proximity of this property to the Fitzroy Delta and the depth and severity of erosion are already demonstrating great cost-effectiveness,” she said.

“Further fencing along Raglan Creek to create two paddocks will need to be completed as the next stage of this project to ensure grazing land management across the paddock is improved - improving ground cover, soil conservation and productivity of pastures.”

LEFT - A highly erosive gully was present on the property, measuring depths of up to 10 metres and widths of up to 20 metres in some areas.



RIGHT - The gully from above

Picture: The Neilly Group



LEFT - The earthen bund wall is designed to prevent overflow from the ponded pasture into the gully head.



RIGHT - The ponded pasture which has retreated over a decade approximately 1.4 hectares due to gully erosion.

