FITZROY BASIN ASSOCIATION

CASE STUDY

Hillview — Fitzroy

Gully Erosion

Cutting through Hillview's various soils and landtypes, the main gully varies in height from 0.4 metres in the mid-section to 1.4 metres in the lower parts of the channel.

Matt and Diana Hinz have been in the rural grazing industry all their lives. They take pride in owning land, implementing new strategies and seeing improvements being made on their property 'Hillview'.

Hillview is an 810 hectare property located 70 kilometres north-west of Rockhampton, on the banks of the Fitzroy River at Glenroy Crossing. Since purchasing the property in 2013, Matt and Diana (along with their three daughters), have worked tirelessly to improve the property's condition. They operate a rotational grazing system through which they breed weaners from a commercial herd.

Hillview has mostly hilly Goldfields country in its upper parts but gradually flattens through box flats into coolibah floodplains closer to the Fitzroy River.

EROSION IMPACTS

Matt says they first began to notice Hillview's growing gully problems shortly after first purchasing the property in 2013. They first noticed a gully was getting closer to a road they used regularly along their boundary fence.

> **"It was creating problems for vehicle and livestock movement whilst washing significant amounts of our property's topsoil into the Fitzroy River."**

Matt says that without treatment, he would have lost their road and access to approximately 60 hectares of property, making it a nightmare to fence out once it extended beyond the boundary fence.

FUNDING REMEDIATION FOR MULTIPLE BENEFITS

To help Matt and other landholders experiencing similar erosion issues in the Fitzroy sub-catchment, Fitzroy Basin Association Inc. (FBA) partnered with Capricornia Catchments Inc. to work with graziers. Together they have implemented a range of innovative gully repair works through funding from the Australian Government's Reef Trust.

In addition to helping graziers improve their land condition and overall productivity, on-ground works are specifically designed to reduce sediment and nutrients from gullies washing off the property and into local creeks which eventually combine with rivers that discharge into the Great Barrier Reef Lagoon.

Having not done any gully repair work before, Matt says he is grateful for the assistance he received to address the erosion issues on Hillview. He admits it was a big and expensive problem, and beyond his knowledge of technical soil science.

SITE DESCRIPTION

Most of Hillview's major erosion issues stem from a 2.5 kilometre eroding drainage line, with a number of smaller gullies branching out.

Extensive clearing of woody vegetation in conjunction with over and continuous grazing under past management regimes are believed to be major contributing factors. As a result, poor groundcover is still evident at the site. Historical imagery of the property highlights significant clearing of river frontage country, and trees and shrubs across the property sometime prior to early 1950s and continuing into the late 1970s.

This project was supported by Fitzroy Basin Association through funding from the Australian Government and delivered through Reef Trust, in collaboration with Capricornia Catchments.

Australian Government | REEF TRUST | FITZROY BASIN ASSOCIATION | Capricornia Catchments Inc.

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"Owning land and developing it is something we've always wanted to be involved in — it's a good lifestyle and environment to raise a young family."

SITE REMEDIATION WORKS

The central gully has been the focus of remediation works. Commencing in September 2017, works have been implemented along the entire length of the eroding drainage line, including 2.21 kilometres of fencing. Fences have been strategically positioned to exclude stock from two areas (60 hectares and 15 hectares) in order to prevent further soil disturbance and loss as a result of cattle padding.

Following installation of the fences, porous check dams (PCDs) were constructed in the drainage lines north of the gully head in order to slow overland flow before reaching the gully.

In addition to reducing sediments washing into the Fitzroy River and eventually into the waters of the Great Barrier Reef Lagoon, these structures will also capture organic material and seeds, an important basis for improving grass cover within the gully floor.

Two off-stream watering points were installed in the two new paddocks to reduce the need for cattle to access the gullied waterway in future grazing operations.

Revegetation has been implemented across 3.1 hectares of the catchment adjacent to the gully head, and along the gully edges and floor to reduce the rate of head cut erosion, improve pasture condition and protect the property's boundary fence. To provide favourable conditions for seed germination, the catchment was ripped in strips using Water and Soil Conservation Appendages (WASCAs; special tynes which can be attached to a tractor).

Given the soil fragility and sodic subsoil found just 20-30 cm below the surface in box flats country, Matt was careful not to penetrate the surface too deeply with the WASCAs. After ripping and mulching, Matt sowed an appropriate 3P (productive, perennial and palatable) pasture mix to establish a more resilient ground cover and out-compete undesirable Indian couch.

POSITIVE IMPACTS FOR THE PROPERTY

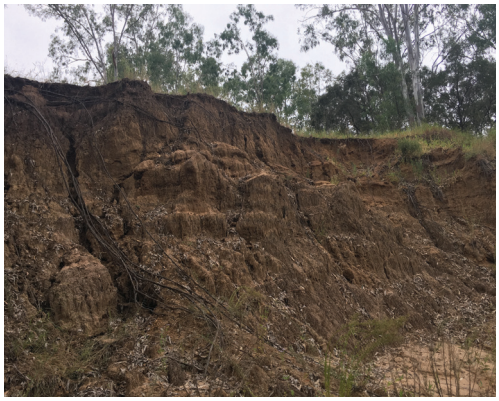
Despite a major flood washing out most of the mulch and seed after the revegetation work, Matt remains positive about making a start and is hopeful to see some great results. Over time, he expects that the new fences and watering points will help achieve better groundcover, increase soil stability and improve grazing management as well as reduce the risks of mustering livestock and vehicles around once badly damaged gullies.

As a result of the training he completed as part of this funded program, Matt says he is also more aware of preventing erosion and gullying in the day-to-day running of his property.

POSITIVE IMPACTS FOR THE REEF

By working to reduce the amount of soil leaving their property, Matt and Diana are helping to improve water quality in the local creeks, the rivers they join as well as reducing sediment loads reaching the Great Barrier Reef Lagoon.

LEFT - BEFORE
Within the channel, patches of exposed, highly dispersive sodosols are interspersed between layers of sandy clay-loam.



RIGHT - AFTER REMEDIATION WORK
In line with using local materials, rocks instead of the usual choice of sticks were chosen to create PCDs.

LEFT - AFTER REMEDIATION WORK
To enhance seed germination around the gully head, 15 round hay bales were also rolled out onto the contour for mulch.

RIGHT - AFTER REMEDIATION WORK
Five months on, exclusion areas are already starting to grass up and the ripped country is going to seed.