Natural Disaster Recovery at West Hill Creek

Three sites along West Hill Creek near Ilbilbie were identified as a priority for remediation under the Natural Disaster Relief and Recovery Arrangements (NDRRA) to assist with environmental recovery and repair from the impacts of Severe Tropical Cyclone Debbie and its associated rainfall and flooding.

Severe Tropical Cyclone Debbie and associated floodwaters caused major erosion along West Hill Creek in March 2017. It is estimated that approximately 5-15m of bank retreat occurred at three sites with an accumulative bank length of approximately 455m. This erosion has resulted in the loss of approximately 4,000m2 of productive sugarcane land.

Banks at the sites were approximately 4-5m high with the upper 1-2m of the bank vertical or near vertical and composed predominantly of silty clay. The lower banks consisted largely of gravel, cobbles and sediment, which were unconsolidated and likely to be mobilised in the next large flow event.

A farm track that is immediately adjacent to the top of banks was at risk from future erosion. Any further erosion will result in the requirement to reinstate the farm track further into the sugarcane paddock subsequently resulting in the loss of more land under cane.

Figure 1: Erosion at WH1, Nov 17

Figure 2: Erosion at WH3, Nov 17

Figure 3: WH4 Bank, Nov 17

Funded Remediation

Sites WH1 and WH3 were funded in March 2018 and work were completed by August 2018. Site WH4 was funded in September 2018 with works currently underway.

LiDAR data was captured to accurately display sites and enable detailed site assessments including hydraulic modelling to be undertaken. An options assessment considered all remediation options and concluded that a rock toe was the best solutions or the sites.

In consultation between Reef Catchments, the landholder and the fluvial geomorphologists an option was decided upon to create a benched rock toe constructed using a combination of imported quarry rock and available bed material. The rock was to be placed against the existing bank and keyed in to the bank and bed. Topsoil was placed over rock beaching to assist with revegetation. Hydromulch has been applied to sites to stabilise sediments quickly and the sites revegetated with native plants.

Figure 4: WH1 photopoint 137 pre (left) and post works (right)

Figure 5: WH3 photopoint 149 pre (left) and post works (right)

Project Outcomes

1. Future ongoing anticipated fine sediment loss at the sites was estimated over a four year assessment period to be 900 tonnes per year at WH1, 1,212 tonnes per year at WH3 and 569 tonnes per year at WH4. This is a total potential fine sediment saving of 2,681 tonnes per annum of sediment. Preventing this sediment from entering the Great Barrier Reef Lagoon.
2. Productive agricultural land protected from further loss through erosion. In total 3,975m2 has been lost at the three sites over four year assessment period. Presuming the sites are now stabilised this equates to at saving of approximately 994m2 per annum of productive agricultural land.
3. Around 2,000 native plants installed along the creek to create vegetated riparian buffer and provide a corridor between upstream and downstream.
4. Landholder and Sarina Landcare Catchment Management Association involved in the program utilising and engaging local knowledge and resources.