

CASE STUDY:

STABILISATION

Mangrove Swamp, Magee Road Realignment

30KM SOUTH OF PROSPERPINE, QLD
APRIL 2017
CLIENT: WHITSUNDAY REGIONAL COUNCIL

GEOWEB GEOCELL CELLULAR CONFINEMENT SYSTEM

The Geoweb system consists of a robust three-dimensional structure housing a network of interconnected cells that confine and compact soil. The confinement action prevents erosion and improves the structural performance of the soil or aggregate infill providing an alternative to reinforced concrete or armour. Geoweb's soil confinement system can be used to increase the load capacity in areas with high traffic or heavy use, ideal for permanent and temporary access roads that need to be constructed over soft ground. The Geoweb cellular confinement system comes in collapsed, lightweight panels which can be handled easily and safely onsite.

GEOFABRICS
Smarter Infrastructure

Whitsunday Regional Council in North Queensland manage and maintain vast areas of rural road networks many of which transverse mangrove swamp hinterlands and sugar cane agricultural fields. one such road is Magee Road.

Council needed to realign Magee Road, an unsealed road, from a private sugar cane field to align with an existing council road easement. The challenge facing the designers was that the easement is within a tidal flood zone and has insitu material of soft clay and mud with a CBR rating of less than 1%.

The realignment had to withstand the tidal effects of the local area, but also be approved by the Department of Fisheries, so as not to hinder the natural fish breeding ground requirements of the area. To develop a solution for all these parameters Whitsunday Regional Council project engineers contacted Geofabrics for assistance.

The final solution included a pavement design utilising our Geoweb Geocell Cellular Confinement system as well as bidim nonwoven geotextiles and Tensar TriAx geogrids. In preparation for placement of the Geoweb, bidim A24 was placed as a separation layer on the prepared subgrade surface followed by the Tensar triaxial geogrid TX160 to improve the bearing the capacity of the subgrade. 150mm Geoweb Cellular Confinement System was then placed on top and back filled with 25 mm crushed aggregate to complete the pavement sub base layer. This was then followed by another layer of bidim A24 acting as a separation layer for the pavement base.

The unsealed road was completed with a 150-200 mm layer of Class 2 crushed rock and compacted in accordance with the Whitsunday Development Manual standard for rural roads.

The total area of confinement system installed was approximately 800 m² (38 panels).

[Continued >](#)

AFTER CYCLONE DEBBIE

Severe Category 4, Cyclone Debbie crossed the coast directly over Proserpine, Magee Rd within a month of the realignment being completed. Local reports suggest the road was over-topped by 1 metre of water due to tidal storm surge, wind speeds gusted to 165 k/h and there was in excess of 196 mm rain in the Proserpine area during the 18 hours of Debbie crossing. Note the flood markers, 2 m in height, indicate the potential of tidal inundation.

Whitsunday Regional Council, Project Engineers, are extremely pleased with the durability of the road and performance of the Geoweb considering the extreme weather conditions Magee Road was exposed to during and in the aftermath of Cyclone Debbie.

Photos taken on Tuesday 18th April – 3 weeks after Cyclone Debbie crossed over the area.

