



CASE STUDY:

ROMA FLOOD LEVEE STAGE 2

ROMA, QUEENSLAND

OCTOBER 2018

CLIENT: MARANOA REGIONAL COUNCIL

Reno Mattresses

Maccaferri Reno Mattresses, also known as rock mattresses, are thin, flexible rectangular mesh cages made from double twisted woven wire mesh.

Reno Mattresses are filled with stones on site to create a flexible, permeable and monolithic structure for use in river and canal bank protection works as well as erosion control and scour protection of slopes. Hydraulic testing of Reno Mattresses has shown that by containing rock within the cells of the mattresses the resistance to rock movement under high flows is dramatically reduced resulting in the use of smaller and less rock for channel lining works.

Roma is situated on Bungil Creek, a tributary of the Condamine River and is 480 km WNW of Brisbane with a population of approximately 7,000.

In March 2010, Roma experienced its worst floods in over 100 years. Flooding also occurred in April 2011, a year of record rainfall in Roma. In early February 2012, Roma was devastated by its worst floods in history, eclipsing the level reached in 2010. There were 444 homes inundated, twice as many that were flooded in the two previous years. Roma residents were unable to obtain insurance from some insurers after three successive years of flooding unless action was taken to mitigate the flood risk in Roma. Previous flood mitigation was insufficient for the level of flooding being experienced.

GHD completed the design, ecological and overtopping assessments, the hydrology and hydraulic studies along with the flood mitigation project operations and Maintenance Manual. Geofabrics in consultation with Maranoa Regional Council and GHD, provided minor design suggestions and some cost saving solutions via the use of larger Gabions, while maintaining the intent and function of the original design.

Maranoa Council tendered the installation by invitation. Concrib Pty Ltd were selected as the successful contractor to supply the 13t excavator and labour. Geofabrics supplied the Maccaferri double twisted mesh Gabions and Reno Mattresses.



After three successive floods, a solution was needed



In total 162 Gabions over three sizes and 334 Reno Mattresses were installed



The install only took 5 weeks out of the allowed 8 weeks

Maranoa Council's works programme for the installation was a time frame of 8 weeks.

Concrib Pty Ltd were able to achieve installation in 5 weeks with a crew of 10 labourers. The planned process was to have several small highly skilled crews with years of experience in Gabion and Reno Mattress installation managing different parts of the project such as:

- Prefabricating cages
- Setting up cages
- Filling cages
- Closing cages

This ensured continuity and speed of installation.

The project was also successful due to excellent planning by Maranoa Regional Council which included:

- Bulk and preparatory earthworks
- Access provided to work areas
- Delivery of rock to work areas
- Correct rock spec (DTMR) with regards to size of rocks

The Council and contractor also had to manage potential flooding of work areas which required areas to be completed and secured at the end of each day to ensure minimal damage in the event of rain.

In total, three sizes of 162 Gabions, 334 Mattresses and 6,300m² of bidim geotextile were supplied.

The Roma Flood Levee Stage 2 consists of a diversion channel to the east of Bungil Creek and an extension of the current Western Levee to the West of Bungil Creek. Stage 2 is designed to work with the existing Stage 1 which protects 480 properties to reduce the risk of above floor flooding to an estimated additional 51 properties. The Levee is complete in time for summer storms and potential flood events.

Geofabrics has over thirty years' experience in designing and supplying gabion and mattress structures. The qualified Geofabrics Tech Hub team offers designers, engineers and asset owners assistance in fine tuning designs to maximize efficiency and cost effectiveness.