



CASE STUDY:

BOOLAROO BATTER STABILISATION WORKS

DESIGNER: REGIONAL GEOTECHNICAL SOLUTIONS PTY LTD

CONTRACTOR: GROUND STABILISATION SYSTEMS

MACMAT® R

MacMat R is a mesh reinforced three-dimensional geomat that can be applied as an erosion control mat for sloped embankments, channel linings and soil-veneer applications. It was developed to meet the need for permanent erosion control material which was both strong and environmentally acceptable.

MacMat R turf reinforcement matting is a unique composite material of MacMat and Maccaferri's double twist hexagonal woven mesh reinforcement.

The double twist mesh provides resistance to rupture of the geomat on steep slopes when soil filled as well as improving the efficiency of soil anchors.

A cutting on a residential subdivision was observed to be a two-level slope that reached maximum heights of approximately 8 to 10 m. It was excavated as two batters separated by a mid-level bench. Measured batter angles ranged from 31 to 34 degrees, or approximately 1V:1.5H. The batters exposed highly weathered sandstone, with beds of carbonaceous clay and weathered coal, with a gentle dip into the slope face (<5 degrees). The batter surfaces were vegetated by grass that had been established by spray-seeding the exposed face.

Erosion of the seed and the grass from the surface was evident, due to the batter angle and the lack of a holding medium on the surface to retain the seed. Minor rock falls were evident in the lower batter, where small rock blocks had been undercut by erosion. The upper batter face revealed minor rill erosion and early stage fretting, but no rock falls were observed.

A 3-dimensional turf reinforcement mat (TRM) made of continuous monofilaments fused at their intersections was specified for the upper batter and bench. Ninety-five (95%) percent of the TRM is open and available for soil, mulch and root interaction, creating the most effective root reinforcement mat available. This would be suitable for areas where there is a requirement for erosion protection, but not expected to be any slope stability issues.



The eroding slope before the project.



The slope after installation of MacMat R.



MacMat R provides surface reinforcement, stops erosion and promotes revegetation.

Maccaferri Macmat R[®] was specified for the lower batter where an increased tensile strength was required to support potentially loose soil or rock. Maccaferri MacMat[®] R is a three dimensional, permanent geomat that provides surface reinforcement, stops erosion and promotes revegetation. An integral woven steel mesh reinforces the geomat, significantly increasing its tensile strength (up to 54kN/m), enhancing its erosion protection ability and shear resistance capacity when compared to unreinforced erosion protection mats. MacMat[®] R consists of a matrix of UV stabilized polymer fibres, extruded onto Galmac coated steel mesh (with or without additional polymer coating) during the manufacturing process, to form a unique, one-piece geocomposite mat for ease of installation.