

Project: Wombarra Cut 100Kj Catch Fence  
Date: October 2016  
Client: Ground Stabilisation Systems  
Location: New South Wales



## Problem

A rail cutting South of Sydney was considered to be a problem site. The site comprised of an upside cutting 8 m high with two levels of gently sloped benches with the lower bench at about 3-4 m high from rail level, and the upper bench at about 7-8 m high from rail level. The cutting materials comprised of moderately to completely weathered sandstone and siltstone. There were a few large isolated boulders and rock outcrops which existed on the highly erodible upslope which were of concern. The client contacted Geofabrics Australasia for some analysis and design assistance.

## Solution

Firstly an analysis was required, Geofabrics with the assistance of the Maccaferri Asia technical hub, were able to carry out a statistical analysis utilising the Rocscience software RocFall to model the expected bounce heights and expected energy of the design blocks. These were based on the topographical information provided, along with the estimated design block mass and areas of expected detachment.



Based on the analysis, the type and location of the catch fence were selected. Selection was also based on the Serviceability Energy Level (SEL) of the catch fence. This is used when reduction of maintenance costs is required, multiple impacts are expected or as in this case, a very low risk level is accepted due to its proximity to infrastructure.

The catch fence selected was the newly ETAG 027 certified Maccaferri 100kj catch fence, 2 m high running for 126 m. The 100kj fence is a fixed post system with wire mesh type 80 mm x 100 mm, woven with steel wire having a diameter of 3.40 mm, reinforced with 5 mm diameter steel cables. Testing shows that it maintains greater than 80% of its nominal height after impact, which is much greater than some other systems currently on the market with similar energy absorption capacities.

Rockfall protection systems are a crucial element in the design and maintenance of road and railway infrastructure networks and keep users safe from unstable rock slopes.

It's important to make a distinction between the different types of Rockfall protection systems and ensure the most suitable system is selected.

Secured drapery and surface stabilisation systems are designed to work in conjunction with anchorages to increase the stability of the unstable surficial layer of the rock slope. The stiffer the mesh, the more effective it is in limiting propagation of the instability.

Passive systems (draperies, catch fences and rockfall embankments) do not affect the process of rock detachment. Instead they focus on containing and intercepting falling and sliding debris, and thereby averting any danger for road or rail users.

Geofabrics offers a range of rockfall protection systems, including hybrid, attenuator and debris flow barriers and supports our systems with design advice and installation support.



# CASE STUDY

Rockfall Protection



Geofabrics also supplied CAD drawings, installation guidelines and foundation design support to the client as well as a final installation inspection check.

Maccaferri catch fences are supplied on site in a kit form to allow easy installation. The contractor who had never installed this particular fence found the installation very easy and didn't require pretensioning of the mesh during installation unlike some fences on the market.

Ground Stabilisation Systems also found this low energy system very easy to work with as there was no requirement for upslope anchors, again easing installation.

The project was completed in less than 6 days which included works to create plinths for the posts due to the irregular topography and some extra drilling required due to unexpected sub surface geology.

Both the client Sydney Trains and Ground Stabilisation Systems were happy with the design assistance, installation and the end result.

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