

# CASE STUDY

# KOWAI RIVER

# FLOOD REPAIR



MAGNUMSTONE™



<b>CONTRACTOR</b>	Downer
<b>ENGINEER</b>	WSP
<b>CLIENT</b>	Waka Kotahi
<b>LOCATION</b>	Canterbury
<b>PRODUCTS USED</b>	MagnumStone

**ADVANCED  
GEOSYNTHETIC  
SOLUTIONS**

## PROJECT

This section of State Highway 73, a key arterial route in Canterbury New Zealand, follows the Kowai River through the foothills of the Southern Alps as it flows to the Waimakariri river, near Springfield. During a recent large storm event, the highway suffered a significant underslip in this section of the road which has a steep toe slope down to the river. Traffic management was required immediately on site due to the road being cut back to one lane. The road needed to be urgently and safely reinstated to its full operational level with both lanes.

## DESIGN

The initial design consisted of a wire mesh reinforced soil mass with gabion facing. A significant concern was raised as to the time and cost to source, transport and place the considerable quantity of rock within the gabion facing due to the remote location. MagnumStone precast concrete blocks with StrataGrid positive connection was then considered as an option and offered significant benefits in speed of construction, availability of materials and long-term durability. From a design perspective the changes were relatively simple, the facing and reinforcement components were enhanced however the overall design methodology remained the same, being a Mechanically Stabilised Earth system. This meant that the facing and reinforced soil components of the design assessment could be undertaken quickly. The other primary benefit of the MagnumStone system was the ease with which the top of wall detailing, and traffic barrier integration could be achieved. Cirtex worked very closely with the design engineers at WSP to complete a concept design which WSP took on and integrated into their overall design.

## INSTALLATION

Speed and efficiency of installation were critical to the project due the limited workable time available in the winter months and the cost of traffic control. Adding to the complexity of the installation was that the main fibre optic cable for the West Coast, running under the roadway, was exposed. The construction team had to cautiously work around the suspended cable. MagnumStone significantly reduced the risk of damaging the cable, as the blocks were easily craned into place. Installation of the MagnumStone facing also removed the need to place the gabion rock, which minimised the labour component of this work and substantially lowered the associated site risk. Cirtex manufacture MagnumStone locally with production sites in Waikato, Canterbury, Queensland and New South Wales ensuring good stock levels are maintained and readily available to be delivered straight to site.

### The MagnumStone used provided the following benefits to the project:

- Speed of construction
- Stock availability
- Strong and durable

