

The Manawatu Gorge Crumble

A VICTORIA SCIENCE TEACHING RESOURCE

WHAT'S THE STORY ?

Te Apiti, the Manawatu Gorge, has been closed for months due to a massive slip.

WHAT IS HAPPENING? ?

The type of rock that the road is carved into, greywacke, is being 'rotted' by sun, wind, and rain, and when rainfall happens it can end up causing a big slip across the road.

WHAT DO WE KNOW ABOUT THE MANAWATU GORGE ?

The Manawatu Gorge is a bit different to other gorges, because it didn't form by a river carving its way through a set of mountain ranges. Instead, the Manawatu River was already there when the ranges got lifted up by tectonic plate movement. As the ranges got pushed up, the river kept cutting down into them to form the gorge.

Because of the constant tectonic movement, the rock of the Manawatu Gorge is cracked and shattered in lots of different places. This means there are places where the rock is very unstable, and where water can seep through and break it down even more.

The main rock of the Manawatu gorge is greywacke, a type of sandstone. It's a sedimentary rock formed

when layers of sand, clay, and small rocks are pushed together at the bottom of the ocean. It's very common in New Zealand and makes up almost all of our mountain ranges.

WHAT DOES 'ROTTEN ROCK' MEAN ?

The rock isn't actually rotten in the way wood becomes rotten. Greywacke becomes 'rotted' when wind and rain opens up cracks in it. Water flows into the cracks and breaks down minerals in the rock, which makes it weaker.

'Rotten rock' is usually a brown colour due to the rusting of the iron that can be found in greywacke.

WHY IS THIS SO MUCH OF A PROBLEM IN THE MANAWATU GORGE ?

There are a few reasons why this keeps happening in the Manawatu Gorge.

The steep cuts that are made into the cliff face mean that there isn't as much support for the looser rock above, which makes it more likely to slip.

The road side of the gorge gets a lot more sunlight, meaning the rock gets wet and dry, warm and cold, more frequently. This makes it break down faster.

Activities for your Class

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FIND OUT MORE

The School of Geography, Environment and Earth Sciences at Victoria University

▶ <http://www.victoria.ac.nz/sgees>

A School Journal article about the challenge to remove the 2011 slip

▶ <https://education.nzta.govt.nz/news/national/school-journal-features-manawat-gorge-slip>

The Horizons City Council website about the story of Te Apiti - Manawatu Gorge.

▶ <http://www.teapiti.com/the-park/>

Use this interactive GNS map to explore the geology of the Manawatu Gorge.

▶ <http://data.gns.cri.nz/geology/>

FIND OUT MORE

Investigate some of the options that are being proposed to make travelling across the ranges easier.

One suggestion is a tunnel. What kinds of challenges would there be given what we know about the geology of the ranges?

In groups, come up with another solution to the challenge of crossing the ranges. You can still travel through the gorge, or you can come up with another route.

Visit an area close-by to the gorge and investigate any rock formations you can find. See if you can collect samples of different types of rock.

Using wet sand, build a model of the gorge before the road was built. Then excavate out the path of the road and see what challenges you're faced with.