



The Bulletin Kaikōura earthquake update

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A 'win-win' for NCTIR and KiwiRail

Over 1000 tonnes of slip rock cleared from behind NCTIR bunds has been transported by KiwiRail for repurposing on another of their projects south of Kaikōura. 'It's a win-win for everyone,' says NCTIR Foreman Butch McGinnis, who has been working alongside KiwiRail Civil Project Manager Nolan Chaston to load the rock onto rail wagons at Ōhau Point, where the material was sourced.

'We are currently using the slip rock to stabilise the access road and track formation embankment at Claverley,' explains Nolan. This project includes three rock revetment sections spanning just under 200m, and will require close to 7000 tonnes of rock to build. Nolan estimates that approximately 1500 tonnes of this rock will come from NCTIR sites, with three loads of rock taken so far, and two left to go. 'We are saving NCTIR from having to shift and dispose of the rock, and in turn we are receiving free material, and using one slip to stabilise another,' says Nolan. 'It's a win-win'.



Building a new safer road at Half Moon Bay

Since March this year, there has been a great deal of activity at Half Moon Bay building a new alignment of the road. The realignments at Rākautara and Half Moon Bay work together, removing the dangerous curves in this section of road, which this year has experienced an average traffic movement of 3,000 vehicles per day. Since 1985 there have been 39 crashes, including one fatality, on this small section of SH1.

The Half Moon Bay realignment has an added technical challenge for designers, as the Hope Fault cuts through this section of road. As a result, they needed to ensure that the designed structure is sufficiently flexible to allow for movement.

To build the new road, a seawall up to 9.5m high is being constructed on the seaward side. On completion the wall will be nine blocks high, with a total of 634 concrete blocks, with each weighing 8.5 tonnes. On the seaward side of the wall a rock revetment is also being constructed, which is designed to absorb the wave energy and protect the seawall from coastal erosion.

44,000m³ of aggregate will then be placed in layers to fill the space between the new seawall and the old road. Finally the road carriageway will be formed, sealed and guardrails will be installed.

Completion of the seawall is expected in early October, and the road realignment in January 2020.

Also included in this work:

- Installing a new Telco cable
- Drainage works
- Providing access to the northern end of rail tunnel 18
- Landscaping the existing road returning it to bush.

Constructing this complex piece of work involves a large amount of resources:

- Engineers, surveyor, supervisor and foremen
- A block laying crew
- A backfilling crew
- Three 30 tonne excavators with rock grabs
- One excavator
- Sixteen trucks for backfill.



Hāpuku Bridge upcoming night closures

Hāpuku Bridge, just north of Kaikōura, needs some structural repairs to the bearings, and to do this safely we need to close the bridge for up to two hours at a time while we lift and lower the bridge decks. To minimise any disruption to road users, this will be done at night when traffic volumes are low.

To reduce the impact of traffic loading on the bridge it is currently one-way with a speed limit of 30km. This will remain in place until the completion of the bridge repairs.

The repair works will require jacking up the bridge decks by 10mm so that we can work on the bearings underneath. The bridge has three decks each supported by four piers.

Work will not be visible from the road as we are working under the bridge. Provision will be made for emergency services. The work is not weather dependent.

When: Starting in the early hours of Tuesday 24 September and then every Tuesday for 13 weeks (last closure 17 December).

Time: Between midnight and 2am, each Tuesday.

Travelling to the Kaikōura Hop?

Prepare for extra traffic on the road over the Kaikōura Hop weekend 18 - 22 September 2019.

For those of you travelling, please expect delays and allow plenty of time. Traffic will still be down to one lane at some sites, with stop/go or traffic lights in place.

Between Clarence and Kaikōura there will be approximately three of these short stops. Between Oaro and Kaikōura there will be three.

On the afternoon of Sunday 22 September we have one five minute stop at a rail bridge site that is just south of Ōhau Point, north of Kaikōura. We are expecting this small piece of work to be efficiently done and only a short stop required.

The travel time between Christchurch and Picton is still expected to be 5 ½ hours. Things can change at short notice so please check real-time travel information: call **0800 4 HIGHWAYS** (0800 44 44 49) or visit www.nzta.govt.nz/p2c.



Road through the Hundalees is back to two-way

In February 2018, Cyclone Gita damaged the road through the Hundalees resulting in a section of the road being one-way only for 18 months.

Repairing this section has been a major piece of work as the edge of the road had fallen off. To rebuild it, the NCTIR crew had to create a working platform on the side of the hill, six metres down, and then slowly build up the land to eventually reinstate the second lane. To do this the bank was stabilised by drilling in 37 six-metre-long soil nails. A retaining wall of 63 gabion baskets, four rows high, was built and this was secured with nine-metre-long rock anchors. All this work has been done out of sight of the travelling public down the side of the hillside.

This section of road is now back to two lanes, meaning a quicker trip through the Hundalees.

Blue Duck: progress in pictures

During the 2016 earthquake, the corner between Blue Duck Valley Road and Irongate Bridge developed a large tension crack that required serious ground stabilisation work. Before the road reopened in 2017, concrete piles were installed to reinforce the corner. The rock anchors and capping beam currently underway will complete the work required to stabilise the new road. 'The work in this location is unique,' explains Project Engineer Wendy Heynen. 'The team came up with innovative solutions to make this happen.'



Pre-drilling 18-metre rock anchor holes under the road, and into the rock bank, at angles of 15 and 30 degrees. A fine mist is sprayed to reduce dust.



Supervisor Lukis Fuller adding a length of casing to the rock drill.



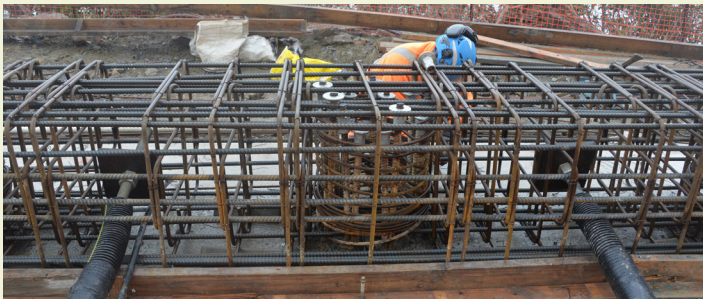
Rock anchors consist of a steel rod grouted inside a plastic tube. This ramp allows grout to be poured into the tubes at the correct 15 degree angle, to secure the rods at the same angle they will go into bank.



Before work started, a platform was built to hold the machinery, and a crane sourced that would fit the narrow corridor, but is large enough to manoeuvre a rock anchor around into the hillside.



Pre-grouted rock anchors are swung into position by crane, then inserted into the pre-drilled holes.



48 reinforced concrete piles were constructed to a depth of 13-22 metres. The concrete at the top of each pier is removed to expose the steel reinforcing rods. These rods, as well as the rock anchor ends, are then tied securely into a complex steel reinforcing cage that will form the skeleton inside the capping beam.



The concrete is poured in multiple sections, with a gap between each segment to allow for earth movement. Once complete, the road can be built up to finished level, and guardrails installed. Road sealing should take place in October, once weather conditions are suitable.





Revetments rock!

We asked our NCTIR engineers Gurdeep Singh and Tim Martin to answer some questions about the revetment work underway along the coast.

What is a revetment?

Gurdeep: 'A rock revetment is basically a sloping structure that is placed on a bank in such a way that it absorbs the energy of incoming water. The revetment also works as a supporting structure for the road embankment or seawall.'

How is the revetment built?

Gurdeep & Tim: 'Our revetments are built in two layers. The big rock on top that everyone sees is called 'rock armour' (400mm - 1400mm diameter), and that's what protects the road from the waves - but we also have an underlayer of smaller rocks (150mm - 400mm diameter), which provides the integration between the big rocks and the soil beneath. We have to overlap the rocks in a certain pattern so that we don't have clean joins, because the waves would pull them apart.'

Where is the rock sourced?

Tim: 'We found it really hard to source the five size ranges that we need to meet our design specifications - because it's no good to have lots of one size of rock - we need an even balance. We sourced the majority of this in Kaikōura, but we're looking all over the country for the big rocks (1100mm - 1400mm) - Lake Tekapo, Blenheim and the West Coast.'

Helping hand for Hutton's shearwaters/Titī

The breeding season for Hutton's shearwaters/Titī has begun and adult birds are returning to their nesting sites around Kaikōura. The Hutton's Shearwater Charitable Trust says the birds are vulnerable to disorientation from artificial lights at night and can crash land on local roads.

This usually occurs from September to November and in past years high numbers of birds have been hit and killed by night-time or early-morning traffic.

The birds are at high risk as a grounded shearwater is unable to take off and is clumsy on land, leaving it unable to avoid oncoming traffic. Also, adult shearwaters are black on top and grey/white underneath making it difficult to spot them when on the road.

The Trust is asking road users to slow down at night and approach any dark shapes on the road with care.

If you spot a Hutton's shearwater/Titī on the ground place it in dark, quiet and contained place and take it to Encounter Kaikōura for release at sea. If it is clearly injured call the Department of Conservation hotline on 0800 362 468.

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www.nzta.govt.nz/p2cjourney



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This Bulletin provides the latest information about the rebuild of road and rail networks damaged by the Kaikōura earthquake in November 2016. The Bulletin is produced by the North Canterbury Transport Infrastructure Recovery (NCTIR) - an alliance representing the NZ Transport Agency and KiwiRail, on behalf of Government.