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# The Bulletin Kaikōura earthquake update



## Engineering solutions north of Kaikōura

While safety road realignments are underway at Rākautara and Half Moon Bay to make the roads safer for traffic, permanent rockfall protection solutions have been completed south of Ōhau Point to protect the rail and road from falling debris.

At the southern entrance of rail tunnel 19, which runs through Ōhau Point, a special triple-layer rockfall protection wall, designed and tested in Christchurch, has been completed.

The three-metre-high section, closest to the hillside, is a gabion rock basket layer designed to reduce the impact of slips. The centre layer is comprised of sand and texcel-filled gabion baskets. These baskets absorb the initial impact, with the softer sand dispersing the force and allowing the final rock wall layer, closest to the rail, to be pushed out slightly without being damaged.

Each part of the 40-metre-long wall is connected with wire, steel rings and eye bolts to keep the structure together. Project engineer Tomislav Diklan says the wall works in a similar way to a concrete barrier for traffic, only much more flexible and compact.

A drainage system built into the bottom block-wall layer directs water into a swale, and then out to debris flow bridge 115C, to be carried underneath the rail and road and back out to the ocean.



Aerial view showing all three layers of the modular rockfall protection wall

Just south of this, a 126-metre-long and 4-metre-high landslide barrier has been completed to protect the rail from the 100-metre-long slip face behind it. This has a series of posts anchored deep into the ground, and upslope into the rock face, with three wire retaining ropes stretched from post to post at the top, middle and bottom. Strong spider net is applied over these wire ropes, along with a secondary mesh to capture smaller sediment.

We have run the wire ropes through energy dissipating rings at the top, middle and bottom of the border posts. If debris hits the fence, the rings absorb much of the force and protect the wires. Hinges at the base of each post add further protection by allowing for back and forth movement while the middle wire rope, called a transmission rope, is anchored every 50 metres so it can bulge when filled with material, preventing it from reaching the rail. All of these solutions will protect the Main North Line and keep trains on schedule.



A crew at work on the shallow landslide barrier

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.





# Your questions answered

During our recent NCTIR project update evenings, you asked us some great questions. We're answering them here so everyone can read our responses.

We'll continue to answer your questions in future issues of the Kaikōura Star. If you have anything you want to know, please email [info@nctir.com](mailto:info@nctir.com). We appreciate your comments and feedback.

## How many crashes have there been around Māngamāunu?

Over the last 10 years between Māngamāunu Te Pō o Te Manu (the Fisherman's parking area) and the 80/100 km/h zone (including Kiwa Rd) there have been 2 fatalities, 2 serious and 7 minor injury crashes recorded. This doesn't include the crashes that don't get recorded for various reasons.

Rather than just fixing blackspots, the Transport Agency aims to reduce deaths and injuries on our roads by identifying and addressing risks before they result in crashes. There are lots of tools to help identify where crashes may happen, as a result of multiple factors - including speed, types of traffic, out of context curves, road surface quality, road width, and roadside features such as ditches, power poles and trees.

Along the Kaikōura coast the Transport Agency is carrying out a route safety project that will widen the carriageway, install a wider centre line and protect vehicles that may hit an object or go down a slope by installing barriers.

The informal 'surfers' carpark location at Māngamāunu is an unexpected place for cars to be entering and exiting the highway (parking) and for people to be walking across

the state highway. This is a surprise to many drivers that are not familiar with the area, which contributes to its inherent risk. KiwiRail also have safety concerns with people crossing the live rail corridor in this area. Relocated parking will provide safer access across the rail corridor.

## Will you be closing the informal carpark at Māngamāunu in March?

No, we won't be closing the informal carpark until alternative parking options are available. We will be developing options in discussion with the local surfing community, iwi, and residents for feedback.

The present informal parking area creates a safety risk for pedestrians crossing SH1 and then crossing and standing on a live railway line.

## What are the plans for Te Pō o Te Manu (the Fishermans car park)? It's not close enough for the surfers and there won't be enough parking.

At present there are no plans for this area. It will be discussed as part of the wider engagement for this part of the coastline. This will be required to go through the Resource Management Act consenting process.

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## When will the shared use path between Okiwi Bay and Māngamāunu be completed?

The shared use path is currently on hold and for internal planning purposes has been ringfenced from the current construction programme while we continue engagement with our Treaty partners and the local community. It can be added back in to the construction programme at any time.

This is so our construction teams can better plan for people resourcing and procurement of materials for the remaining safety and resilience works. Allowances for the shared use path to be constructed in the future have been made in the design and construction of the new seawall structures, safe stopping areas and bridges between Irongate and Ōhau.

## When will the cycleway between Picton and Christchurch be finished?

The NZ Transport Agency funded shared use path (walking and cycling) announced in July 2017 is planned to be constructed between Okiwi and Māngamāunu only. Any areas beyond that are not part of our remit.

The organisation working to develop a cycle trail between Picton and Christchurch is the Marlborough Kaikōura Trail Trust and there are no timeframes around that delivery. It is expected that our section would connect to the wider cycleway.



## The Hutton's Shearwaters need your help



### Why?

During March-April, young Hutton's Shearwater, fly from their mountain burrows out to sea.

They fly at night and can become disorientated by artificial lights and crash land on dry ground.

The birds cannot take off by themselves once grounded.

### What to do if you find a bird?

Pick it up and place it in a non-airtight container/cardboard box.

Keep the bird's wings contained: a towel/t-shirt put over the bird can help to pick it up.

If you're in the Kaikōura township drop the bird off at the 'Huttons Hub' on Ludstone Rd, next to the DOC office.

If you're out of Kaikōura, release the bird onto the water at a sheltered undisturbed location. Do not throw the bird.

### Can't drop off/release straight away?

Keep the bird in a cool and dark location; do not water, feed or further handle the bird.

### Help us learn more

Report rescues or sightings by emailing information of the date, number of birds and location to [admin@huttonsshearwater.org.nz](mailto:admin@huttonsshearwater.org.nz)

For more information about Hutton Shearwaters visit [www.huttonsshearwater.org.nz](http://www.huttonsshearwater.org.nz)



## Kia Kaha Christchurch

The NZ Transport Agency, KiwiRail and NCTIR would like to acknowledge those affected by the 15 March attacks in Christchurch. We are sending our support to the Muslim community and all those impacted by the horrendous events that took place. Many of our people are based in Christchurch and we are supporting them at this difficult time.

## An investment in foresight

Around 30 members of the Hong Kong Institute of Engineers (HKIE) recently visited New Zealand to gain insight into a number of engineering projects around the country. One of the projects that they visited was the Kaikōura earthquake recovery where they met with the NCTIR team. 'One of the purposes of our visit is to learn something innovative and new - technological advancement - and its application in New Zealand,' said tour leader, Tony Ho Ying-Kit.

The group met up with several members of our design team at Clarence to travel down to Kaikōura by bus, before staying overnight and attending a workshop at the NCTIR Village to explore some of the works programme in greater detail. Louise Kendal-Riches, one of NCTIR's Geotechnical Engineers who met with the group, said it was a whirlwind tour, trying to show so much in such a short space of time, but that it was a really valuable learning experience for all. 'Different people in the group were interested in different aspects of the project, and it was great for us, too, to compare what we're doing with how they do things in Hong Kong. They particularly commented on the difference in scale: we have 4.5 million people needing infrastructure across the whole country, compared to more than seven million in the small area of Hong Kong.'

At the workshop, Tony Ho Ying-Kit went on to say 'noting that the scale of earthquake recovery work was so extensive, the efficiency of the New Zealand Government to come up with a big team of multidisciplinary professionals was amazing. In a crisis such as this, it's important to get the lessons learned and drill deeper to understand how to avoid or minimise damage and risk in future events for the public at large. In this regard, innovative technologies do help and are worth investing - it's a path driving to the future!'



## Flaxbourne A&P Show

Weld Park, SH1, Ward,  
Marlborough  
Sunday 24 March,  
8.15am to 9pm

Come along and check it out! There'll be a handy dog competition, a terrier race, sheep shearing, an Iron Man competition, and plenty more to enjoy.

The NCTIR Communications team will be there with a stand to talk to the community and showcase some of our updated designs for the safe stopping areas. We'll have giveaways for the kids, and a free jellybean counting competition to enter. If you're at the Show, please stop by and say 'hi' to the team.

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