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The Bulletin Kaikoura earthquake update



OPENING HOURS FOR SH1: 7AM-8.30PM

While the opening time on 15 December is yet to be confirmed, the NZ Transport Agency has announced that the initial hours of operation for State Highway 1 (SH1) north and south of Kaikoura will be 7am to 8.30pm, when the road reopens next month.

The section north of Kaikoura will be closed at night between Clarence and Mangamaunu. South of Kaikoura the night closure will be between Goose Bay and Peketa. Crews will drive through both closure sites before 7am each day to ensure the road is safe for opening and another drive through will be carried out each evening to ensure all traffic has cleared the road when it closes at 8.30pm.

The number of worksites on SH1 will be reduced between 15 December and 7 January 2018 to help with traffic flow. NZ Transport Agency Earthquake Recovery Manager Tim Crow says: 'We want to ensure that people's journeys are as smooth and reliable as possible over the holiday period, and we also want to give the road crews a well-deserved break. From 8 January we'll be back working at full capacity to finish and improve the road.'

For more information: www.nzta.govt.nz/p2c. The page will be updated regularly.



This weekly bulletin provides the latest information about the rebuild of road and rail networks damaged by the Kaikoura 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.





NCTIR EXPRESS TOUR BOOKED OUT IN DAYS

With three weeks to go until State Highway 1 (SH1) north of Kaikoura reopens, NCTIR is giving the local community a sneak peak of the changes and repairs to the closed section of highway.

More than 160 people will have a preview of progress being made in the north when the NCTIR Express community bus trip launches this weekend.

For the next three Sundays two 4WD buses will make two trips each to the worksite north of Half Moon Bay and back as part of the tour.

Kaikoura resident Cindy Boyd was the first person to pick up a ticket for the bus and she's looking forward to seeing the work first hand.

'After watching the progress on TV, I can't wait to see the scale and reality of the job in person.'

After travelling to Blenheim on the alternate route a few times and experiencing four seasons in one day, Cindy is excited to get back to her usual route.

Local Rakautara resident Ngaio Te Ua lives within the worksite and says people will be amazed by what they see.

'The community bus trip is an awesome idea, it will be great for people to see the progress that has been made and to see the changes to the landscape, especially the uplift of the sea in Half Moon Bay,' says Ngaio.

NCTIR Stakeholder Engagement Manager, Mike Seabourne says NCTIR had always planned to give the community a 'sneak peak' before the road opened.

'This is something we have been wanting to do for a long time, but before we could put the public on buses we needed to make the landslides as safe as possible by sluicing, scaling, clearing material and in some cases building new roads.'

Those on board the NCTIR Express will get to see the two landslides at Mangamaunu where the road and rail has been realigned further out to the sea, away from the landslides. They will also get to see the new Irongate Bridge and seawall which is nearing completion and will be ready for vehicles when the road reopens.

'Our crews are really excited to be able to share this construction site and road with Kaikoura again. We have put in a lot of hard work across the project, more than 1.5 million person hours,' says Mike.

After the event, Rachel Vaughan and the 'All Right?' team will offer the community a chance to connect and reflect with refreshments.

'The trip will give residents a chance to familiarise themselves with the changes, and time to deal with any emotions,' says Rachel.



NCTIR express

All tickets have been issued for the bus tour. We are hoping to launch a video of the tour on social media next week so people outside of Kaikoura can join the bus tour virtually.

'The Kaikoura community has been extremely patient and supportive while our 1700 strong team has been busy working to get the Main North Line railway, Kaikoura Marina and State Highway 1 open.'

MIKE SEABOURNE, NCTIR STAKEHOLDER ENGAGEMENT MANAGER

ENVIRONMENT

200 
SEEDLINGS HAVE PROPAGATED FROM THE SEEDS OF 6 RARE OHAU POINT ROCK DAISY PLANTS COLLECTED IN APRIL TO RE-ESTABLISH THE PLANT

200+ 
ARCHAEOLOGICAL SITES IDENTIFIED

30+ 
PACKAGES OF CONSENTS APPROVED

THE TEAM 
HAS PERSONALLY MOVED **11,000+ SEALS** (ADULT AND PUPS) SINCE FEBRUARY 2017

GEOTECHNICAL

NEARLY 1 MILLION^{M3} 
OF MATERIAL REMOVED FROM THE SLIPS NORTH AND SOUTH OF KAIKOURA

152 MILLION 
LITRES OF WATER DROPPED ON LANDSLIDES DURING THE SLUICING OF PRIMARY SLIPS

140 
BRIDGE BEAMS REQUIRED FOR SITES ALONG SH1 NORTH, MOST OF THESE SUPPORTING IRONGATE

144M LONG 
7-SPAN BRIDGE BUILT IN 14 WEEKS

ROAD

BETWEEN CHEVIOT AND CLARENCE THERE ARE: **1,500+** 
DAMAGED SITES **200+ WITH MAJOR ISSUES**

100+ DAMAGED STRUCTURES 
9 SIGNIFICANT DAMAGE

85 
LANDSLIDES

194KM 
OF ROAD AFFECTED BETWEEN WAIPARA AND PICTON

RAIL

100% 
OF THE TRACK IMPACTED BY NOVEMBER'S EARTHQUAKE WAS REPAIRED BY AUGUST 2017

220 
WORK SITES ALONG 190KM OF RAIL LINE

20 RAIL 
TUNNELS SUSTAINED MAJOR DAMAGE

PRIOR TO THE EARTHQUAKE 
1 MILLION TONNES OF FREIGHT CARRIED YEARLY

OARO BRIDGE NOW COMPLETE

One of the most extreme examples of earthquake damage to State Highway 1 (SH1) is what happened to the Oaro road over rail bridge.

Work to repair and restore this vital piece of infrastructure has now been completed.

The restoration process involved removing existing guard rails, clearing out the damaged sections of retaining walls and forming a suitable base on which to build new retaining structures. This was a tricky, labour-intensive job that included repairing and replacing wire baskets and excavating the road out about 2m behind the wall to put in flexible reinforcing to tie the wall into the pavement.



This project is an enhancement to the Oaro community, providing a safer, more resilient structure for years to come. This challenging project included:

- Structural repairs carried out on the bridge from January to April.
- Road approaches began in June and were completed in October.
- The design included widening the approaches and improving the vertical approach to the bridge deck.
- A new steel post wall with timber infill was constructed to replace a damaged concrete crib wall near the railway line.
- The existing stream under the embankment was cleared of vegetation which enabled a channelled flow to carry storm water to the river.
- The old damaged safety guardrail has been renewed and extended to improve safety.
- Working near the rail track required close liaison with KiwiRail staff throughout the duration.



PROGRESSING TIROHANGA STREAM RAIL AND ROAD BRIDGES REBUILD

WHAT HAPPENED?

During the November earthquake the Kekerengu fault moved resulting in a new low lying area being formed on the north side of the faultline. The ground dropped by 2.2 metres north of the faultline and rose 0.3 metres south of the faultline. The net difference in level is 2.5 metres, which is expected to be prone to ponding. This movement also caused significant damage to the rail bridge in this area.



RAIL BRIDGE 129

The bridge known as Railway Bridge 129, located in Wharanui and crossing the Tirohanga Stream, includes three 14 metre spans. The original bridge, designed and constructed in 1948, sustained significant damage because of movement in the Kekerengu faultline, which dropped it 2.2 metres and moved it five metres laterally.

As a result the new bridge is being built about 65 metres north of the original bridge (which has been demolished) to relocate it away from the fault. The rail track has been temporarily realigned so trains can continue to run while the bridge is being built.



NEW EMBANKMENTS

Due to the predicted ponding, new raised road and rail embankments are being built to a much higher level than the surrounding ground to protect them against flood risk.



ROAD BRIDGE 908

About 80 metres to the west of Railway Bridge 129, work is in full swing on a new 21-metre-long road bridge – Bridge 908. The original bridge, constructed in 1938, sustained minor damage because of the earthquake, but dropped with the surrounding ground. The bridge is being rebuilt to give it sufficient clearance of expected water levels. While the new bridge is being built a temporary road and Bailey Bridge have been constructed adjacent to the new road for traffic to continue to flow.

WHAT IT TAKES

Rail rebuild length = **860m**

Road rebuild length = **970m**

Volume of gravel required for both road and rail = **170,000m³**, which is equivalent to a rugby field that is four stories high.

15 rail deck match cast segments make up the **46** metre bridge. These segments and the methodology for building them have never before been used in New Zealand.



RECONNECTING COMMUNITIES AND LOCAL HISTORY

When the transport recovery got underway, there were almost 200 known heritage sites within NCTIR's work area. NCTIR's archaeology team work alongside road and rail construction crews and mana whenua to monitor works likely to impact on archaeological sites, to identify, investigate and record any findings. Several newly discovered archaeological sites have been recorded during this process.

NCTIR's archaeology team has been investigating a site of great cultural significance at Waipapa Point. The investigation has recorded evidence left behind by the people that once lived at Waipapa Bay, south of Clarence. The dig is part of the preparations for building a new road and rail alignment around the base of a slip that came down in the earthquake (Site 9). As the new alignment crossed through a known archaeological site, NCTIR needed to undertake a controlled excavation on part of the site in advance of construction works.

When road and rail works begin, the archaeologists will still work alongside construction crews in order to monitor any other archaeology disturbed during works. Unlike the controlled excavation, which collates a large amount of data on the precise location of archaeological material within a small defined sample area, monitoring provides an opportunity to examine a much larger area and record limited information on archaeology features as they are found.

Being part of a construction outfit can be handy. The archaeology team uses a 'sieve station' made from scaffolding that can be moved from site to site.



Archaeology dig at Waipapa Point



Sifting for artefacts

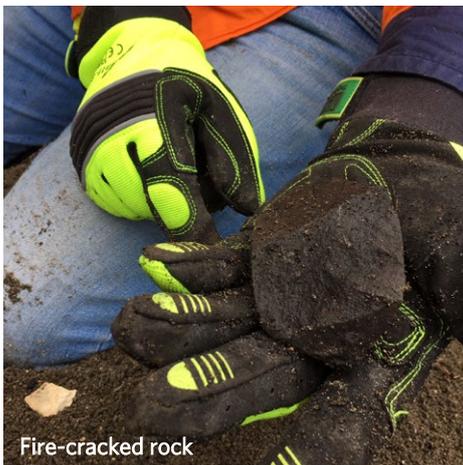


Oven at The Pines

The sieves are used to check soil for artefacts and fragments of bone or stone that give clues to how people lived – things like fishing hooks can indicate what people ate and the ecology existed hundreds of years ago. 'It's a forensic examination of what's been left behind,' says NCTIR's lead archaeologist Nick Cable. 'We are sieving a set quantum of material using a standard mesh size in order to provide comparative data about the density of cultural material in this spot.'

One of NCTIR's field archaeologists, Dr Jeremy Habberfield-Short, examines a stone oven on the side of SH1 at The Pines. 'It's a rare find,' he says. 'The rocks are pretty much where they were placed and haven't been disturbed. In areas where people were settled for a period of time, we normally find that ovens have been raided of rocks to re-use in another oven close by. Over time you see an attrition in single use ovens.' Excavator operators are trained to call in archaeology support if they see a 'tell-tale layer' of dark, charcoal-rich soil, which can indicate a cooking site or midden (rubbish pile). Evidence of villages have been discovered at The Pines, Rakautara, Hapuku and Waipapa Point. 'We respond to call-outs throughout the NCTIR project and assess whether we need to investigate in more detail, and help form a strategy that will allow construction to go ahead with the least impact on heritage sites.'

'One of the first things we do is look at a rock and ask whether it's been cracked manually, by machine or by heat, so that we can effectively distinguish between an archaeological or non-archaeological site. We can then carbon date materials from the site such as shellfish, bone and charcoal to find out when the area was inhabited,' Jeremy says.



Fire-cracked rock



KAIKOURA FISHERIES CLOSURE

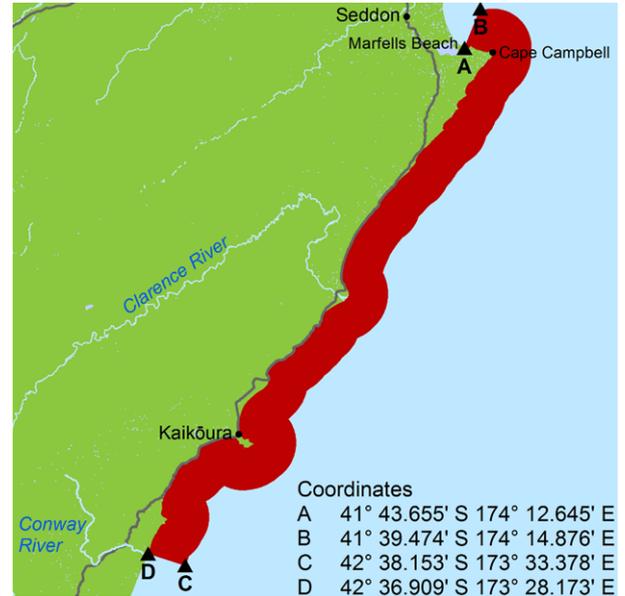
Important notice: Kaikoura earthquake fisheries closure extended - no gathering of shellfish and seaweed.

The Kaikoura earthquake had a big impact on Kaikoura’s marine environment, especially on shellfish and seaweed, and it’s going to take several years to recover.

To protect the area, on 20 November 2017 a new permanent closure replaced the initial emergency closure. The area from Marfell’s Beach to the Conway River (area in red on the map) is closed

to the gathering of shellfish and seaweed to both commercial and recreational fishers. Anyone who contravenes this closure commits an offence and can be fined up to \$100,000.

During the closure, Ministry for Primary Industries will carry out more scientific studies to measure the impacts of the earthquake, monitor recovery progress, and help decide when the fishery might be re-opened.



How can you help?

- Limiting your catch, just take enough for a feed.
- Changing your fishing method or area if you’re only catching small fish.
- Taking special care to return undersized fish immediately and with minimum harm.
- Report suspicious or illegal activity to us on 0800 4 POACHER.

Visit www.mpi.govt.nz/fishingrules to check the rules for your area, or download the NZ Fishing Rules App.



PLEASE KEEP YOUR SPEED DOWN

Working around hazardous heavy machinery, sheer cliff drops and sometimes in isolated areas away from family can be tough on road crew. But it’s even tougher when traffic speeds through the work site, putting everyone in danger.

With all the gear being used, the crew don’t always hear traffic approaching or have time to get out of the way of any drivers not adhering to signs and speed limits.

If you’re driving the busy alternate Picton the Christchurch route (via Lewis Pass), you’ll be passing through numerous sites, part of the \$60 million improvement programme of work being done by the end of this summer. You’ll also see many initiatives designed to keep everyone safe such as temporary ‘speed bumps’ and electronic road signs - both pictured.

Your patience and observing all instructions on road work sites is much appreciated and helps to get everyone home safe at night.





RAIL SAFETY MESSAGE

With freight trains back on the Main North Line railway between Picton and Christchurch, please remember to stay focused every time you approach a level crossing and to always expect trains at any time, from either direction. Trains are fast moving, deceptively quiet and they can't stop in a hurry or swerve to avoid anything.



OPEN/CLOSED SCHEDULE FOR SH1 SOUTH OF KAIKOURA

Reminder: Next closure SH1 south of Kaikoura between Peketa and Goose Bay:

Monday 27 November to Friday 1 December 2017

- There will be local only convoys each day, at 7am and between 6pm and 8pm
 - Inland Road (Route 70) remains open for travel 24/7 and takes around 3 hours between Christchurch and Kaikoura
- This closure is needed for the critical work to be done before the road opens on 15 December. This means our crews can progress the extra work clearing slips and rockfalls because of the heavy rain in September and October. These works are only possible with a full road closure to enable the crew to work safely and efficiently in the tight corridor. We are on the countdown to opening - thank you for your ongoing patience. We couldn't have done this without your support.

The current schedule* for SH1 South of Kaikoura between Peketa and Goose Bay is:

DATE	OPEN HOURS	STATUS
Saturday 25 and Sunday 26 November	Open 7am to 8pm for public. Closed overnight.	Normal schedule
Monday 27 November - Friday 1 December	Closed to the public. Local convoys at 7am and between 6 to 8pm each day.	Scheduled closure week
Saturday 2, Sunday 3 and Monday 4 December	Open 7am to 8pm for public. Closed overnight.	Normal schedule



EXPECT DELAYS IN THE HUNDALEE

A further significant ramp up of work to complete road retaining wall repairs through the winding hilly section means there are now multiple one lane worksites with stop/go traffic control. This will add to overall travel times - an estimate four hours from Christchurch to Kaikoura. The Inland Road (Route 70) is open 24/7 and while winding and more challenging to drive is currently providing reliable travel times of around three hours.

KEEP UP-TO-DATE

How to contact us and keep up to date with our road and rail projects:

- Subscribe to our weekly bulletin by emailing info@nctir.com, with 'Bulletin' in the subject line
- Visit our website: www.nzta.govt.nz/kaikoura-earthquake-response/
- Call our freephone: **0800 NCTIR EQ** (0800 628 4737)
- Email us if you have a question: info@nctir.com
- Attend a community meeting - keep an eye on local newspapers for details
- Follow us on Facebook, see: NZ Transport Agency - South Island www.facebook.com/nztasouthisland/ and KiwiRail www.facebook.com/kiwirailNewZealand/
- **Check out www.nzta.govt.nz/p2c**

GET REAL-TIME TRAVEL INFORMATION FOR OUR ROUTE

On the NZ Transport Agency's website:

www.nzta.govt.nz/traffic

By phoning **0800 4 HIGHWAYS** (0800 44 44 49)

On the Transport Agency's social media: www.nzta.govt.nz/contact-us/connect-with-us/