



SIGN UP

To receive fortnightly updates online here

bit.ly/NCTIRBulletinSignUp

The Bulletin Kaikōura earthquake update



24/7 ROAD READY

With just days left until State Highway 1 (SH1) north and south of Kaikōura reopens to traffic 24/7, construction crews are putting final safety measures into action. Following an extensive year of construction the route is now a lot safer than it was this time last year. More than 30,000 square metres of steel mesh has been wrapped around slips in the south and new infrastructure, such as seawalls, have been built in the north.

Network operations manager Tresca Forrester says opening the road to traffic day and night is the right decision. 'This is really important for our customers and stakeholders and it has been our focus since the road initially opened in December last year to get to this point,' she says.

Part of the reason the road can now open 24/7 is because major construction activities are now complete. 'Crews building the seawall at Ohau Point couldn't work during the day because of the narrow corridor. Instead they carried out key work at night which meant we couldn't consider reopening the road to the public,' she says.

When the road reopens 24/7, crews will carry out regular observations and inspections of the route and nine sets of traffic lights will replace the ever-friendly stop/go workers at night. Signage along the route is being upgraded ahead of the road opening with new signs highlighting no stopping areas because of rockfall danger.

Rockfall signs can be unnerving to come across when travelling, but they are there to protect road users and alert them to potential danger. 'These signs are located along the route where we know rocks are continuing to make their way down the hills,' says Tresca. 'We have put prevention measures in place such as mesh and physical barriers to stop the rockfall reaching the road, but we will never be able to eliminate the movement altogether, it's the reality of having a road at the base of steep slopes.'



IN THIS ISSUE

- Safety on the road
- Temporary to permanent
- Destressing the rail
- Freight industry - road 24/7
- Working from above

BY THE NUMBERS: STATE HIGHWAY 1 NORTH AND SOUTH OF KAIKŌURA



2500 vehicles currently travel the route during the day with 500 projected to travel at night



50 percent of all traffic travels between the hours of 8pm - 9pm and 6am - 7am



An average of 30 vehicles an hour travelled on the road between 10pm and 5am before the earthquakes



60 percent of total traffic pre-quake was heavy traffic



Nine sets of traffic lights at night over nine sites at night

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.



Principal geotech Greg Saul agrees, and says there will always be movement along the corridor so it is important the right mitigation tools have been put in place. 'The Kaikōura earthquake has shaken up a lot of material. The coast is a lot more active than it once was and we know historically debris flows and slope instabilities are more frequent after a big event like this,' he says.

Ex-cyclone Gita brought down more than 300,000 cubic metres of fresh material because of the intensity of the rain event. This is why the NZ Transport Agency will be more proactive with road closures when heavy rain events are forecasted.

Tresca says: 'it's not black and white but we will be changing our approach. If the projected rainfall and the intensity per hour is high enough we will close the road in advance and we will try to give people as much notice as possible before we do this.'



TAKING THE STRESS OUT OF THE TRACKS

Crucial destressing rail maintenance work to increase railway line speeds in all weather is heating up across the Main North Line between Waipara and Oaro. Steel rail can be susceptible in summer warm temperatures to expanding and potentially buckling and in cold weather contracting leading to rail fractures.

To prevent this from happening KiwiRail is using an engineering process called 'destressing' whereby rail tracks are cut, stretched and re-welded to reduce the risk of excessive expansion and contraction of continuously welded track. 'By working out the neutral temperature, we can adjust the rail, making it resilient for all weather conditions,' says KiwiRail Track Access Manager Steven Crump. 'Basically, we end up removing excessive rail so it removes the ability for the rail to expand or contract. This reduces track movement and means we can reduce temporary speed restrictions.'

The first part of the process, which was completed last week, was to lift the rail and measure the temperature. 'Every 250 metres of rail we tested the temperature with specialised equipment. We use the temperature to calculate the adjustments that we need to make to the rail,' says Steven. 'It's quite a technical process involving a number of different machines and devices such as thermometer, hydraulic jacks and pullers. By taking out any slack in the track lines we remove any opportunity for the tracks to buckle in the warmth or contract in the cold.'

Ultimately, the process results in the reduction of transit times for trains so KiwiRail can provide an efficient reliable service for its customers.



DIGGING ARCHAEOLOGY

Want to know what archaeologists do once an excavation is over? And what happens to all the things they dig up? Join archaeologist, Jean Spinks, and Kaikōura Museum manager, Stephanie Lange for a look at what happens behind the scenes, once all the digging is done.

Where: Kaikōura Museum

When: Saturday 28 April
Session 1, 10.30am -11.30am
Session 2, 12 noon - 1pm

Who for: Children aged 7-14
(children under 10 must be accompanied by an adult)

NCTIR and Kaikōura Museum are hosting a talk series about the cultural landscape of Kaikōura and an introduction to archaeology. The archaeology of the area represents the enduring connections local communities have with the past, and the coast is considered by archaeologists to be among the richest and most interesting parts of the country. The talks will cover an introduction to archaeology, how the earthquake affected archaeology, and how NCTIR is managing the impact of the works on local heritage. A brief history of whaling and the whaling stations in Kaikōura will be included, and the speakers may field questions from the audience.

Where: Kaikōura Museum

When: Wednesday 2 May, 6pm

Admission: Free

Booking essential: Book your places on 03 319 7400.



SLIP 23 - TEMPORARY TO PERMANENT



Safety and value for money are winning out at slip 23 south of Kaikōura as temporary rockfall protection is being made permanent. Mesh installed on the slip last year to get the road open safely before Christmas will remain as a permanent protection feature. At 45 metres high the mesh drapes over the cliff face having two functions:

- slowing falling rocks keeping them close to the slope face (preventing them from bouncing out over the road); and
- catching and holding larger rocks (also stopping them from damaging the corridor).

‘The draped mesh has performed exceptionally well over the past three months, through earthquakes and some pretty fierce weather, like ex-cyclone Gita,’ says site engineer for earthworks Jonathan Armstrong. ‘It makes sense to continue using it because of its performance.’ Another advantage of the mesh is it can easily be moved and rock collected in it can be emptied.

Site supervisor Christophe Bourgeois says: ‘it’s a great system whereby a loop of rope can be released at the bottom of the drape, you can move the mesh letting any rockfall out, which can then be collected and removed’. The mesh is secured to the hillside by 40 anchors and was transported by helicopter to the slopes, where a team of five abseilers positioned it correctly. Jonathan says it’s a ‘win-win’. ‘There are two advantages of keeping the mesh permanently at this site – the road is well protected and we are saving money continuing with a protection, which works.’



WHAT DOES ROAD OPEN 24/7 MEAN FOR THE FREIGHT INDUSTRY?

Drivers can continue to expect sharing the road with freight trucks along both routes – the alternate route via Lewis Pass, and State Highway 1 (SH1) between Picton and Christchurch – when SH1 opens 24/7. While freight industry representatives were happy to hear the road was opening 24/7 at a recent NZ Transport Agency and NCTIR forum, there were some reservations.

Some say for pre-planned freight movements the alternate route is likely to remain the preferred option due to its reliability. ‘It will really depend on the freight company and their operations,’ says NZ Trucking Association chief executive officer Dave Boyce. ‘Often companies have to do planning and scheduling weeks in advance so until SH1 is back up to pre-quake reliability, some companies have said they will be sticking with the alternate route, which is less prone to unexpected closures. ‘The work that has been done on SH1 so far is impressive and it’s certainly good to have the two options available day and night for all drivers, but for the freight industry and its clients it’s going to be even better once that pre-quake reliability is there.’

Sharing both routes with freight traffic means both truck drivers and other vehicle drivers need to be conscious of each other. ‘No matter what route you are on all drivers need to be patient using their common sense to take precautions to keep each other safe on the road,’ says Dave.

SHARING THE ROAD WITH TRUCKS SAFELY

- Keep well back when following trucks.
- Keep out of a truck’s blind spots – remember: if you can’t see the truck driver in their side mirror, the truck driver can’t see you!
- Watch out for blind spots at the sides – trucks have large blind spots on both sides – but especially on their left. On multi-lane roads or when overtaking, try to avoid these blind spots, or keep the time you spend in them to a minimum.
- Be patient when waiting to overtake a truck. It takes several seconds longer to pass a truck on a level road than it does to pass a car, so it’s more important than usual to make sure there’s plenty of clear road ahead so you can safely complete the overtaking manoeuvre.
- Remember: it takes a truck longer to stop. At 90km/h, it will generally take a truck-trailer unit more than twice as far to stop as it would take a car. This is because of the truck-trailer unit’s weight and the design of its brakes.



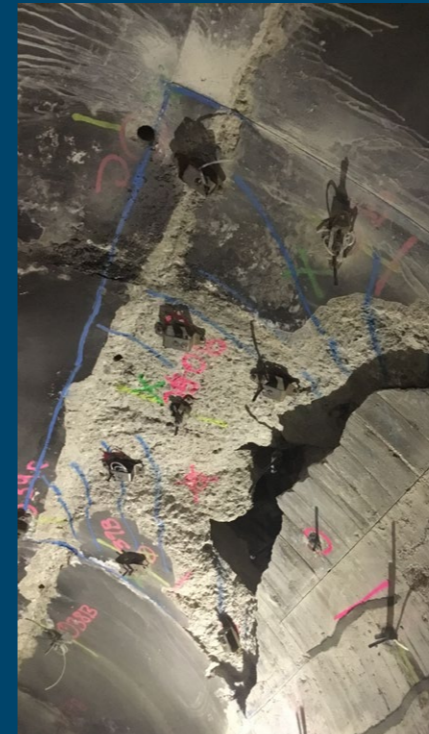
The tunnels team

Tunnels manager Rafael Ballen has been making history with the tunnels team for NCTIR since the start of 2017. After a year of hard work, critical problem solving, and team building, the team was honoured with an award for Achieving Excellence in Innovation for the Tunnel Support System by HEB construction and Vinci as part of the Business Innovation Excellence Awards 2017.



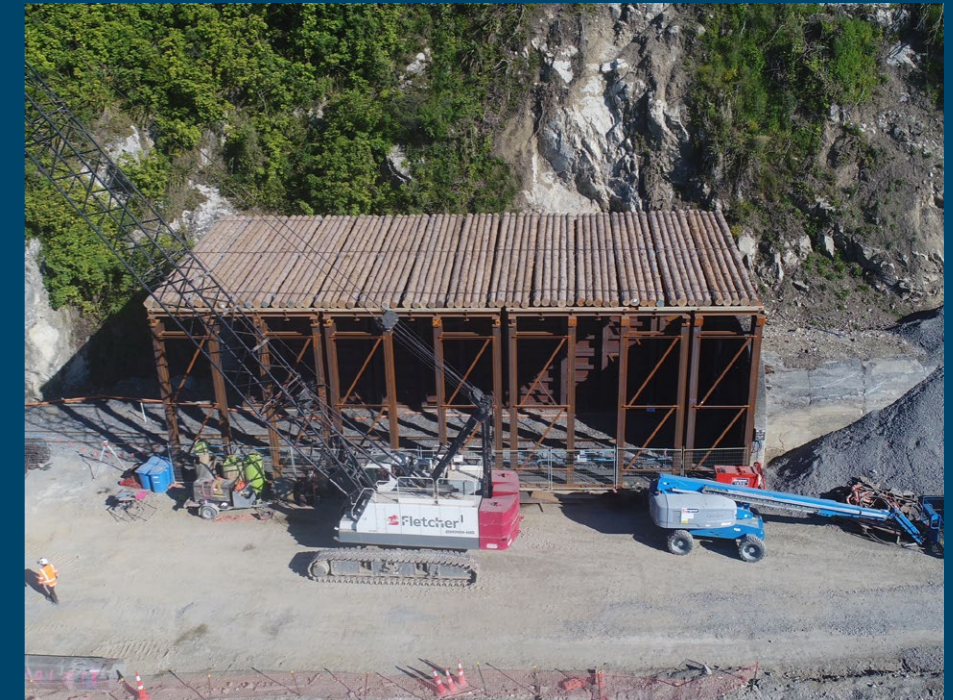
Innovation 1

The **propping system** implemented in Tunnel 13 was the first of its kind to be used in New Zealand, and serves as a prime example of the type of innovation and excellence that earned this award. This innovation was born out of necessity, to prevent the collapse of damaged rail tunnel sections while enabling crews to safely clear slip material and excavate on top of the tunnel, a temporary support structure was required. A collaborative effort between the site team and temporary works designer created and implemented this Tunnel Propping system to provide the required support at high-risk areas of the damaged tunnels, while keeping simple assembly and easy relocation in mind.



Innovation 2

The **grouted anchor support plates** were another applauded innovative solution. They not only worked as temporary mechanical anchors (creating a self-supporting roof) to hold the lining in place while the void between the rock face and lining could be filled, but they also made it possible to grout the anchors afterwards, turning temporary works into permanent solutions. The cost effectiveness over time was remarkable. These plates supported the roof and maintained the integrity of the structure lining, keeping our crews safe at all times. This enabled feeding tubes and breathing tubes to be kept in place for grouting. These grouted anchor support plates were designed, fabricated, and used to stabilise five KiwiRail tunnels. They also prevented grout loss, and maintained a small enough profile so that they did not interfere with train clearance.



Innovation 3

The **rock fall shelter** designed and fabricated in response to the high risk of rock fall area adjacent to Tunnel 19 at Ōhau Point, was yet another example of innovation. The multiple steel shield units were assembled on site, a safe distance from the hazardous area, and provide adequate shelter for the future works here. The shelter protects the crews working as well as the rail corridor.



Motivating factors

Reconnecting earthquake affected communities drove the commitment shown by Rafael and his team and encouraged them to think outside the box in order to meet their goals. 'This was a huge team effort,' says Rafael. With 16 of the 20 damaged rail tunnels already completely repaired, the tunnels team are well on their way to completing the task at hand. They will finish the four remaining rail tunnels, and works are already underway to complete the Raramai and Parititahi twin road tunnels.



OUR PEOPLE: ON THE ROPES

When State Highway 1 (SH1) opens to 24/7 traffic you can thank a huge team of abseilers for their work which has helped to enable night time restrictions to be lifted.

Angela Buunk has been one of more than 100 abseilers who has been working over the past year to make the slips safe. She first started clearing loose boulders and rocks when she arrived on site January 2017. Focusing solely on the shattered hillsides south of Kaikōura, Angela has been busy – she’s worked on more than 30 of the slips.



We found her half way up slip 3 operating a drilling rig, installing massive rock bolts – each six to nine metres long into the hill side. ‘I’m on the ropes around eight hours a day, I’m quite relaxed and comfortable but it’s still a work out,’ says Angela. Working up to 150 metres above ground may be a challenge for some, but not Angela or her team. ‘You definitely think about what you’re doing but you won’t find many people in the industry scared of heights,’ she laughs. ‘There is a rush of adrenaline when you’re on the ropes, it keeps you on your toes.’

Working as a guide at Fox Glacier, Angela took up the challenge of industrial abseiling work after the Christchurch earthquake. But this is just her day job, as well as being qualified for rescue work, each week she spends one shift as a volunteer for St John in Kaikōura as a first responder. ‘I love it; it keeps your mind active. The Kaikōura station has really good people and this is a great community to live and work in.’

The station is helping her work towards a qualification as an emergency medical technician and she sees this as her future fulltime job. ‘There will be a day when I’m older and my body won’t let me work anymore when I’ll switch to full time medical work,’ she says. Until then Angela will continue abseiling and making the landslides more resilient. ‘It’s such a beautiful place to work, you can see the whales in the ocean too, what a cool place.’



WORKING FROM ABOVE



It was just another day in the office for our abseilers, 35 metres up on a hillside for a five-hour session as they emptied material caught by a debris flow barrier and removed unstable rock around it. The debris flow barrier, south of Kaikōura, performed exactly as designed during the intense rainfall of ex-cyclone Gita – collecting falling material and protecting the road and rail below. ‘The fence had been placed at an angle up the hillside where water flows as we knew this area was susceptible to having material come down during intense rainfall,’ says site engineer Florence Blondeau. ‘We are really pleased that it performed as it was intended during such an intense weather event.’

After Gita passed, our abseiling team set out to empty the fence while protecting infrastructure below. They ascended the slope, using natural anchor points, such as trees, to safely hold and position themselves so they could release the barrier from its frame, allowing the material collected in it to fall below and be cleaned up.

The on-the-ground team had earlier moved ballast rock over the rail tracks protecting them from the falling material. Once the abseiling team had emptied the barrier, loosening and removing material began. ‘We moved ourselves to a safe point on the slope so we could begin sluicing with water brought in by helicopter,’ says site supervisor Christophe Bourgeois. ‘This flushed and loosened off any unstable rock and material. Once the helicopter was gone we moved back onto the rock face to hand remove loose material which remained.’ The team then secured the barrier back to its frame. ‘It wasn’t a bad day in the office – we did the work in a much quicker timeframe than expected. And, we can’t complain while getting to work along such a stunning part of the Kaikōura coastline, arguably we get the best office views in the country,’ says Christophe.

24/7 SAFETY



As we prepare for State Highway 1 (SH1) to open 24/7 on Monday 30 April safety is our number one priority. In the event of predicted heavy rainfall the NZ Transport Agency may close the road as a precautionary measure - this can happen day or night. For real-time travel information about SH1 visit nzta.govt.nz/p2c or call **0800 4 HIGHWAYS (0800 44 44 49)**.

What to expect when travelling SH1 at any time:

- Passing by or travelling through construction sites where works continue
- Stop/go areas controlled by traffic lights
- Single lanes in place with speed restrictions
- Unsealed road and loose gravel in places
- Trains travelling in either direction from Picton to Christchurch
- 'Danger - rockfall zone - no stopping' signage for safety
- Signposted stopping areas - the ONLY places to safely pull over for a break
- Sharing the road with freight vehicles and construction vehicles



Watch out for cones and reflectors when travelling at night.

Here's what you can do to make sure your journey is safe:

- Obey all instructions, signage and only travel in designated areas
- Drive to the conditions: the weather, the road you're on, the vehicle you're in, the traffic around you, and your level of experience
- Obey traffic lights
- Make sure everyone in your vehicle is wearing their safety belt
- Check weather and travel conditions before you start on your trip
- Be prepared when travelling with warm clothes, food, water, and a charged cell phone
- Be aware of your environment:
 - Be patient, cautious and courteous
 - Follow all traffic signs and any instruction given by road crew
 - Obey speed limits to keep all road users and workers safe
 - Keep fresh by taking breaks and supporting communities on the route

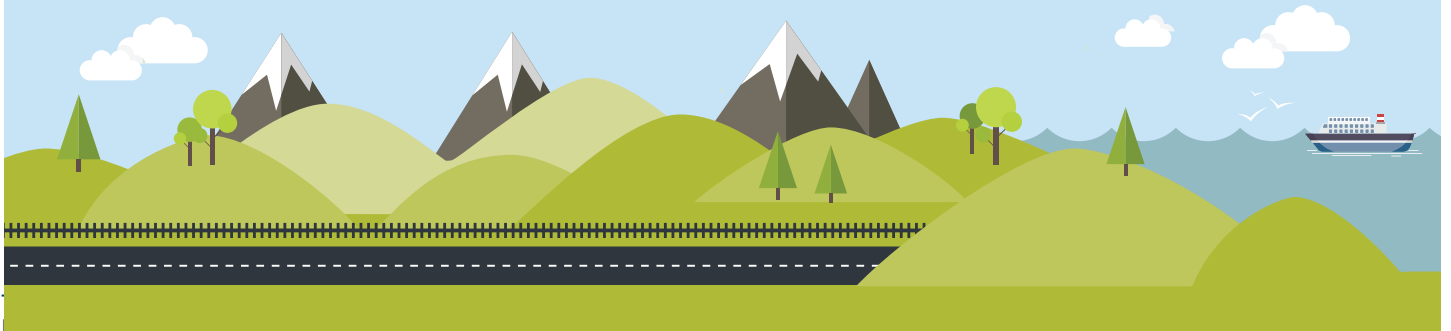


If you're cycling, travel during the daytime for your own safety

Rail safety for drivers and pedestrians:

- ✓ Expect trains at any time, from either direction.
- ✓ Take extreme care when approaching a railway level crossing
- ✓ Obey the warning signs and look carefully in both directions for trains
- ✓ Listen, be aware and pay careful attention to your surroundings
- ✓ If there is a queue of traffic, before you drive over a railway crossing always ensure there is space on the other side for your vehicle to fully cross the tracks
- ✓ Trains travel faster than they appear and can't stop quickly. Always check both ways at level crossings before proceeding

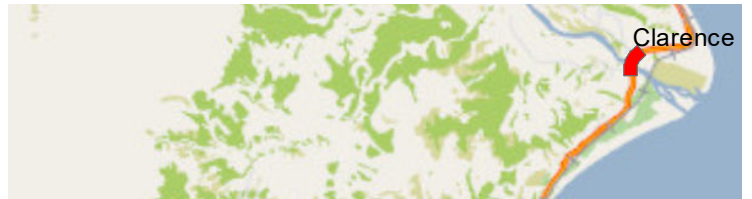
Allow plenty of time for your trip and check the status of the road by visiting www.nzta.govt.nz/p2c or calling **0800 4 HIGHWAYS (0800 44 44 49)** at least two hours before travel.





DELAY HOTSPOTS

In the red on the map below are delay hotspots along State Highway 1. Please drive safely through these areas - some of which are single lane.



Thank you for your patience.
For further updates on the condition of State Highway 1 both north and south of Kaikōura please visit here www.nzta.govt.nz/p2c or call 0800 44 44 49.

KEEP UP-TO-DATE
Subscribe to our weekly bulletin by emailing info@nctir.com, with 'Bulletin' in the subject line

- South Island www.facebook.com/nztasouthisland/
- KiwiRail www.facebook.com/kiwirailNewZealand/

CONTACT US
Call our Freephone: 0800 NCTIR EQ (0800 628 4737)
Email us: info@nctir.com