



The Bulletin Kaikoura earthquake update

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WORK ON STATE HIGHWAY 1 RAMPS UP

With just a few months left before Christmas, crews working on State Highway 1 between Christchurch and Picton are working hard to complete a number of key projects that will enable the road to reopen and keep rail freight running on the Main North Line (MNL).

The initial stages of the project were driven by the need to clear slips and get the MNL reopened. The rebuild of the highway began in earnest during the first part of winter and includes bridge repairs and building, seawalls construction and road realignments, rock fall mitigation, tunnel repairs, and fixing the highway.

While work is happening on the ground at the critical sites, the office-based design teams (drainage, roading, geotechnical and structures) play a critical role in getting the jobs done. Supporting everyone with much needed mapping information is the Geographic Information System (GIS) team.

South of Kaikoura work is taking place at more than 10 sites at the same time. Projects include rock fall mitigation and stabilising cliffs (see photos next page), tunnel repairs, bridge repairs and a massive work programme in the Hundalee. The recent weekday closures of SH1 south of Kaikoura has enabled a massive amount of uninterrupted work to be done in a short amount of time (see pg 6).



This visualisation is an artistic impression of the proposed design at Ohau Point as at the date of publishing (2017-10-05) and is subject to change.

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.





This visualisation is an artistic impression of the proposed at Irongate Stream design as at the date of publishing (2017-10-05) and are subject to change.

North of Kaikoura, seven of the 10 major slips that came down after the November 2016 earthquake are cleared and work continues to clear the final three. This work should be completed by next month. Getting the slips cleared was the critical first step to make it safe for workers to begin building kilometres of seawalls, realigning the highway, and building/repairing bridges and retaining walls.

The work we're currently doing at some of these critical sites is listed below. Over the next few weeks we look forward to keeping you up to date on progress at all of the sites we are working on to get the road open.

North of Kaikoura:

Site 1 (Mangamaunu) - now that the slips have been cleared, final road construction is underway.

Site 2 - (Irongate) - a 144m long bridge is being built here, along with a retaining wall, seawalls and a new road alignment (see visualisation).

Site 6 - (Ohau Point) - this is the most challenging of the projects requiring retaining walls, seawall construction and road realignment (see visualisation next page).

Site 7 - (Paparua South) - another large seawall is being constructed here.

Site 8 - (Waipapa Bay) - this is one of the final (and the largest) of the slips that needs to be cleared. The warmer weather will allow clearing of this slip to ramp up and then a temporary road realignment will be completed.

Site 9 - (Wainui) - final slope stabilisation and road construction is underway.

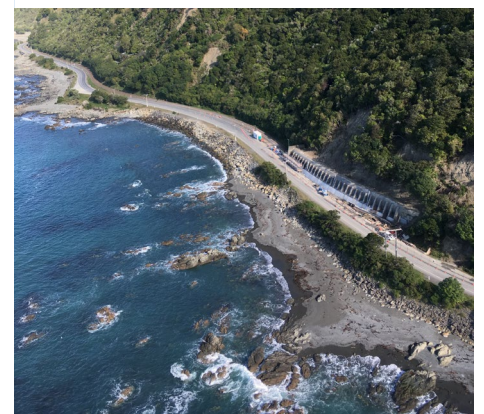
Pines and Sandpit - These two areas of SH1 have required major work to rebuild retaining walls as well as repairing this section of road which was lifted by up to four metres by the earthquake.

Tirohanga - major work is underway to construct new road and rail bridges and the associated earth embankments for the approaches.

South of Kaikoura:

Raramai and Parititahi road tunnels - work will soon begin to widen both tunnels at each location.

Slips 14 to 20 - Abseilers are working hard to place anchors and protective mesh to stabilise these massive slopes. Bunds are also being constructed at the foot of some of these slopes.



Work at Irongate Stream to build a 144m long bridge is going well. This page features historical photos of the site including the months after the November 2016 earthquake.



Irongate in January 2017



Irongate 1911. Photo credit: Kaikoura Historical Society



Irongate 1911. Photo credit: Kaikoura Historical Society



Irongate in March 2017



Irongate Bridge September 2017

BEAMS ARE BEING TRANSPORTED FROM ALL OVER NEW ZEALAND TO KAIKOURA FOR BRIDGE CONSTRUCTION ON STATE HIGHWAY 1 NORTH OF THE TOWN.

WATCH OUR PROGRESS BELOW...





TEAM WORK AT TUNNEL 6

Tunnel 6 is a rail tunnel located between the Goose Bay and Raramai road tunnels south of Kaikoura.

As a result of the November 2016 earthquake, the tunnel was displaced between 50 and 100mm seaward. In response to the damage, the design approach included 127 anchors, concrete repairs, and an external buttress.

This multicultural crew from New Zealand, the Pacific Islands, the Philippines, the United Kingdom, France, and Australia, have been working together as a team; 100% of rock anchors and about 90% of concrete repairs, and 55% of the buttress work has been completed at this stage.

‘Some of the many challenges we face at tunnel 6, are ground conditions, weather, accessing material supplies, and road closures,’ says Tunnel Manager Rafael Ballen. Despite setbacks, the crew is committed to the task, and now, they are back on track to reach their milestone of finishing tunnel 6 by the end of November.

‘Planning and coordinating with other teams is essential in order to achieve our common goal of getting the road open by Christmas,’ says Site Engineer Sunny Kalidas.

‘The performance of this tunnel team has been extraordinary,’ adds Rafael.



UP TO THE CHALLENGE AT TUNNEL 18

Tunnel 18, located in Half Moon Bay, north of Kaikoura, had no record of a fault running across it.

During the November 2016 earthquake the tunnel was separated into two parts, lifting the north end of the tunnel 500mm and shifting it 180mm seawards.

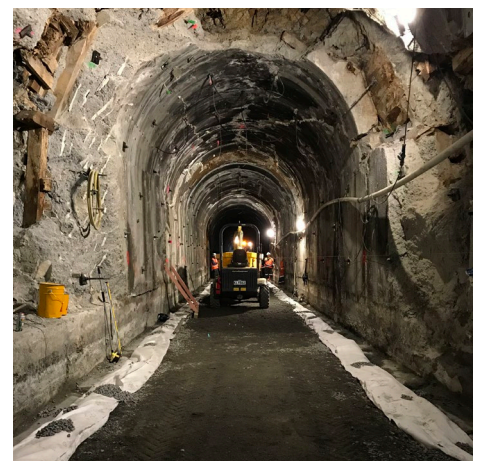
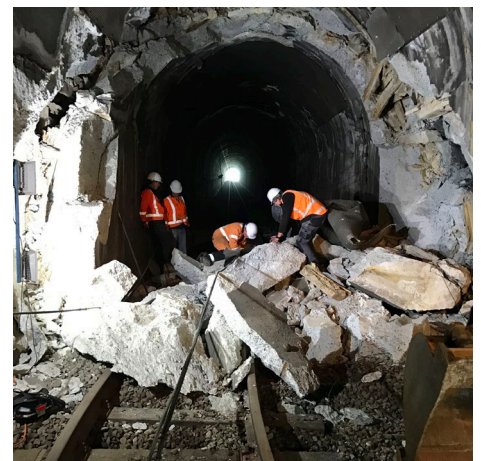
‘When we came to inspect the tunnel, it was obstructed by large pieces of concrete lining from the walls and roof, and rail that had been twisted and thrown out of alignment,’ says tunnel manager Rafael Ballen. This tunnel was one of the most seriously damaged tunnels in the earthquake, along with Tunnel 6, 13, and 16.

‘Our first response was to clear the tunnel in order to assess the damage. Subsequently we came in with a design and methodology to repair and strengthen the tunnel,’ Rafael says.

After debris was cleared, repairs began, with 230 anchors are being installed and concrete repairs. The tunnel was lowered, in order to create space for trains to pass through again by 1 July 2017.

‘Future works include reshaping the concrete lining and constructing new lining inside the tunnel around the fault zone. Every metre between the steel ribs, we will place reinforced concrete,’ says Project Engineer James Thompson.

‘It will be challenging to do the work in between trains running, but we are up to the challenge,’ says Rafael. Tunnel 18 repairs will be done around the live rail corridor schedule.





WAIAU BLUFFS WORK UPDATE

Significant work is taking place at Waiiau Bluffs, just outside of Hanmer Springs during early October.

A team has drilled almost 300 steel bars into the rock face over which 5000m² of safety netting will be installed. Another team is installing a 130m long concrete beam on which new guard rails will be bolted replacing the old and broken wooden sight rails. A crib wall at the site is also being removed and replaced with a 130m³ gabion retaining wall, along with repairs to a retaining wall damaged in the earthquake.

The existing road surface for the westbound lane will be rebuilt and resurfaced. It is being dug up to install the concrete beam and the gabion wall. All of this work is scheduled to be completed by the end of October.

Travellers are being asked to allow more time into their schedules for delays associated with completing this work.



REMOVING SEALS FROM CONSTRUCTION SITES - THE NEW NORMAL



Thousands of seals have been moved off construction sites and to safety during the rebuild of State Highway 1.

For most of this year, construction crews have been working to make Ohau Point safe, sluicing the slip sites and clearing debris, and now building a new road. During this time, professional seal handlers have moved 4500 seals away from the construction zone to the safety of the sea.

Senior Seal Handler, Simon Childerhouse (pictured) has more than 20 years' experience as a marine biologist and is a seal specialist. He has a PhD on NZ Sea Lions to prove it.

As one of the country's seal experts he has been heading up the work on site to help keep seals and their pups safe. He's one of a handful of people on the project who are permitted to physically move the protected fur seals.

'We have a huge amount of construction activity on the door step of New Zealand's largest fur seal colony, we're simply shifting them to safety so they can spend their day resting on rocks and we can continue to build a new road nearby,' Simon says.

There are about 2000 seals in the colony. Every day the handlers can move between zero to 100 seals, depending on how close they get to the work site.

'Sometimes we have to move the same seal several times in a day; they can be quite stubborn at times,' he says.

Simon and the seal team's work isn't just restricted to Ohau. Further down the coast at Irongate, 'Sammy the seal' has been keeping a watchful eye on construction activity all year.

'He's been there since the beginning, so he's seen it all,' says project manager Greg Burns. 'He has a favourite rock that he likes to watch the crew from. He has a nosey nature but still keeps his distance.'

Simon says 90% of the seal team's job is building and maintaining relationships with the crew. As soon as a wayward seal is spotted, the seal handler team receive a tip off from the crew member so the seal can be safely moved off the work site and construction can continue.

'The construction crews have integrated the seal handlers into their teams. They've been really supportive, even when we are stopping their work so we can safely shift seals,' says Simon.

Ohau Point is such a special place with a rich history, and Simon can easily see why.

'It's an amazingly vibrant place and as seal handlers we really feel like we are making a contribution.'

He says as the most viewed seal colony in New Zealand, the seals were used to lots of people and haven't been too bothered by the work.

'They have a huge personality and can have a bit of attitude with each other. I admire them a lot,' Simon says.



CREW GIVE THUMBS UP TO RESILIENCE WORK AFTER RECENT SPRING STORMS

Despite wet spring weather dousing the worksites on SH1 south of Kaikoura in recent weeks, the NCTIR crews keep smiling.

Bad weather put the hand-brake on some work, but it also tested the new rock face and slip resilience work to help NCTIR review how it performed. And they're giving it the thumbs up.

Project Manager Ruth Bullen says as expected, further rock falls (which closed the road) happened during the heavy rainfall where safety barriers had yet to be installed. But where resilience and reconstruction work had been completed, the sites held up well. 'That's great news for everyone.'

The crews continue to give their all to get SH1 reopened by Christmas. While slower progress is made on days when this narrow strip of coastal highway is open for public travel (some sites even come to a standstill), the crews increase their work by as much as 50% on days the road is closed to traffic. This is particularly on sites directly above the road (like the one pictured bottom right next to the Parititahi tunnels).

Last week's planned five-day closure enabled the crews to further stabilise rock faces through extra scaling to get loose material down. As loose material falls to the road below, a lot of this work can only happen when there are no vehicles travelling by. The loose material on the most recent weather-induced slip which now has containers in front of it, was also tackled last week.

Ruth says in all, the closure enabled the 100-plus crew to get stuck in to 23 of the 32 slip sites in this section of SH1.

She says they know it's tough for locals on the days they can't freely drive back and forth along this narrow stretch. However, thanks to ongoing community support, encouragement and patience, NCTIR is making solid progress in this challenging section of the highway.



Reminder: The new 'normal' open/closed schedule:

- Friday to Monday - open 7am-7pm to the public (closed overnight)
- Tuesday to Thursday - open at 7am, and then again **for one hour** between 6pm-7pm for the local drive-through (closed the rest of the day and overnight)

Plan Ahead: The next full week closure is Monday 16 to Friday 20 October. The road will reopen to the public midday on Friday 20 October for Labour weekend travellers.

Another full week closure is scheduled for Monday 6 to Friday 10 November.

There will be local drive-through each day both of these weeks, with the Inland Road (Route 70) available for travel when SH1 south of Kaikoura is closed.



CONNECTING IN CLARENCE

As work in the north continues to ramp up ahead of the reopening of State Highway 1 north of Kaikoura, the isolated communities of Clarence and Kekerengu are preparing for an influx of traffic.

Last Saturday about 40 locals came together to hear from the construction crews working between Mangamaunu and Clarence.

Earthquake support navigator Chris Wilson (pictured) says the meeting turnout was a good cross section of the community from Kekerengu and Clarence.

'It was a chance for everyone to catch up, to see video and photos of progress and to be reassured the road is still opening before Christmas.'

He says directly after the earthquake there was a lot of frustration in the community due to the road being closed, but things are getting better.

'The earthquake caused a major impact on lives and livelihoods. Gradually people have adjusted to their new reality and I think now they are quite proud of the work going on with the road and rail crews working extremely hard.'

Sharon Brechelt recently moved to the area and says she will miss the lack of traffic when the road does open.

'I'm living off the grid right now; the road is so nice and quiet, and it's great,' Sharon says.

Local resident Donna Foster (pictured at the left in the top photo) says it's great to see what's going on, describing the progress as 'awe inspiring'.

'It's a huge job to get the road reinstated and rail running again.'

Like the rest of the community and New Zealand, she's looking forward to the end of the year.

'I can't wait to drive the coastal corridor again; it's going to be fantastic and it will be a godsend for the community to get the road open again,' Donna says.



'It was a chance for everyone to catch up, to see video and photos of progress and to be reassured the road is still opening before Christmas.'
CHRIS WILSON





LOCAL INVENTOR GETS INTO THE SWING OF STOP/GO

The job of a traffic controller (TC) means working close to moving traffic in narrow spots. You need your wits about you. Particularly if a 'stop-runner' ignores or misses the stop paddle to keep driving through a site. That puts everyone in danger.

But our legendary TCs on the alternate Picton to Christchurch route now have an extra reason to wave and smile. Kiwi can-do is seeing a newly invented 'stop/go' tool on the road making sites even safer for crew and drivers.

'The Gibney' stop/go barrier arm helps the TC remain well away from moving traffic. The 'go' looks pretty much like a standard 'go' - a sign on a pole. The big difference is the 'stop'. The 'go' is swung out of view while a barrier arm with a larger than normal 'stop' swings in to the middle of the lane directly in front of the driver (see photos).

This new invention is the brainchild of Mike Gibney (pictured above), a man with

a constant eye for safety and a background in the safety-conscious aviation industry. After 11 years in traffic management with Fulton Hogan, Mike had seen many 'near misses'. He says he wanted to do something to help better protect everyone near work sites.

After showing his prototype to colleagues, the NZ Transport Agency and road control authorities through initial trials and adjustments, Mike refined his idea and successfully applied to have it endorsed as a standard tool within the very strict NZ Code of Practice for Temporary Traffic Management.

Regular drivers of the northern section of the alternate Picton to Christchurch route will have seen 'the Gibney' being trialled over recent weeks. Project Director for the crew in the area Gavin Stobie, says the Gibney has really helped improve safety and he is looking forward to using more on the roads during the busy summer work season ahead.

While Mike is pleased to see his invention become standard practice, including interest from Australia, what makes him most proud is the enthusiastic response from his traffic teams feeling safer on the job. 'The other day I had a new young traffic controller come back to me and say 'this is magic!', and that's what it's all about.'



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