

KAIKOURA EARTHQUAKE UPDATE

KAIKOURA EARTHQUAKE UPDATE - no. 29

11 August 2017

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. We're keen to hear your questions about our work, or any feedback on this bulletin. Drop us a line via email at info@nctir.com or give us a call on **0800 NCTIREQ** (0800 628 4737) – we'd like to hear from you.

MILESTONE: RAIL CONNECTED

Tuesday 8 August 2017 will go down in New Zealand history as the day the Main North Line between Picton and Christchurch was reconnected, nine months after the Kaikoura earthquake.

Track repairs have been rapidly progressing from the north and the south and finally met at a site near Half Moon Bay north of Kaikoura. Reconnecting the tracks was celebrated with welding the rails together at a special ceremony. The ceremony gave the whole team involved time to pause and reflect as well as recognise the enormity of the task they achieved. More than 1500 people have been involved in reconstructing the transport corridor.

The seaside ceremony started with a waiata from Te Runanga O Kaikoura followed by the actual welding of the final section – a precise and timed operation watched by those gathered to witness the event from an elevated pile of ballast.

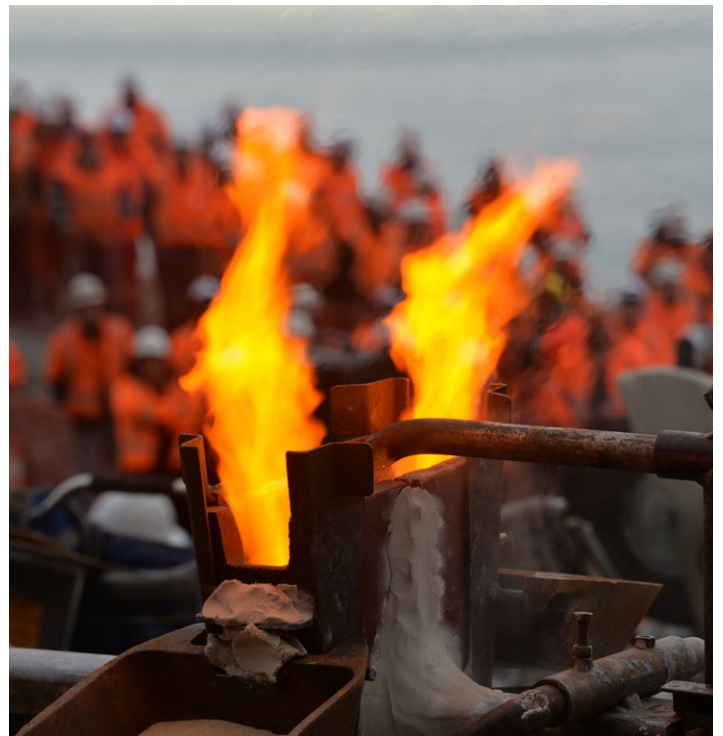
For KiwiRail ganger (foreman) Paul Jones, it was an emotional day, 'It actually brought tears to my eyes,' says Paul whose grandfather and uncle also worked on the railway. Paul spoke at the ceremony about the memory he had after the earthquake taking a helicopter ride to see the devastation and how upsetting it was for him and 'my gang.' A Kaikoura resident for ten years, Paul was congratulated after his speech by Peter Reidy (pictured together following page), Chief Executive of KiwiRail.

Achieving this milestone means freight services are now expected to begin operating within a month after all the commissioning process is complete. The initial freight opening will be a restricted one, with low-speed, low-frequency services. There is still a lot of work to do to return the line to its pre-quake state and freight services will initially run only at night so that work on the rail and road networks can continue during the day.

The Picton to Christchurch section of the Main North Line carries about one million tonnes of freight every year, so this achievement means the pressure will be taken off the alternative Picton to Christchurch route which has been the main route to shift freight since the earthquake.

The completion of the rail also means work to repair and rebuild State Highway 1 north of Kaikoura can now move into another gear as worksites will be less congested and work trains can be used to move equipment and material between sites.

As most of the slips have now been cleared, efforts are now moving from earthmoving to road construction. This vital highway is expected to be open to traffic before Christmas, though work will continue after it opens.



The weld was a hot process (2000 degrees celsius) that took about 90 minutes and involved installing a mould and then sealing the gaps with special putty. The rails were then preheated so that they could be fused together. A bucket of 'one shot thermic weld' was put on top of the mould and ignited starting a very hot chemical reaction. Flames spouted out the top of the bucket as the liquid metal got super-hot and then flowed into the mould. Once cooled the mould was then knocked off and the metal ground flush (see above and photos on the following page).



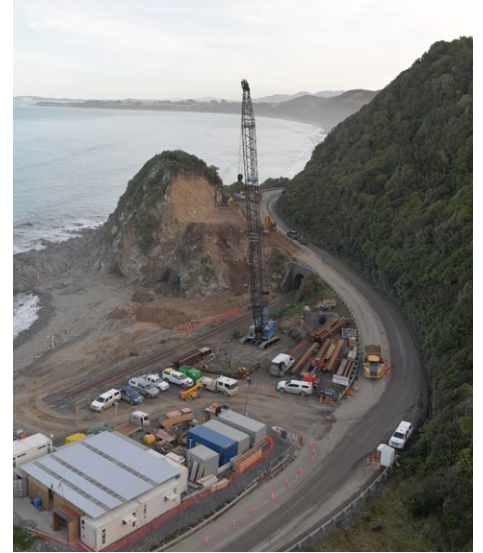
IRONGATE BRIDGE

A new bridge being built at Irongate north of Kaikoura is progressing well and is on track to be completed by Christmas.

Structures Manager David Wyeth says he's had to build bridges quickly before and he is confident his team can pull this one off. As the picture shows, the rock bluff above the rail tunnel has been dug out using an excavator and a rock saw to create a 60-degree slope where the southern bridge abutment (where the bridge meets the road) will be built.

The crew is currently halfway through excavating the bluff to road level and a piling rig will be moved to the site next week. Following this, construction will start on the bridge columns and the pier heads. To meet deadlines, plans are for up to five pier heads and columns to be worked on at the same time, on which will rest the bridge deck of 900mm deep precast hollowcore beams.

David says his team of 50 working on the 80-metre bridge will have it completed for the planned reopening of State Highway 1.



PROGRESS AT SLIPS 1 A AND 1 B NORTH OF KAIKOURA

An enormous amount of work has been completed at Slip 1A and Slip 1B, the first of the major slips along this section of State Highway 1 just north of Kaikoura.

Both road and rail realignments have taken place at the site and in some areas realignment of the rail has had to be brought up by as much as four metres (see photos). This has created a large embankment, and for the last couple of months a crew has been building the coastal protection for this embankment.

Site engineer Josh Gardner says: 'the sea wall is made up of three layers; first a filter fabric that stops sediment coming out from underneath the railway which would undermine the embankment, then a layer of smaller rocks, and finally a layer of boulders.'

In the last month, 8000 cubic metres of boulders have been added to the embankment to prevent erosion. This layer of boulders is known as rock armour, and it protects the embankment, which provides coastal protection from wave action.

The Vodafone fibre cable that runs the length of the South Island is also situated between the rail and road at sites 1 A/B. As the alignment for the road and rail has changed, this cable was moved as well. This presented an interesting challenge for the crew as great care has to be taken to avoid any damage to the cable or disruption to the services.

The crew recently completed the roading subgrade for the site which will allow them to put the final layers of the road on soon.



WAIMA BRIDGE UPDATE

The Waima Overbridge, located just a kilometre south of the Ure River, has provided an interesting challenge for the work crew in charge of the site.

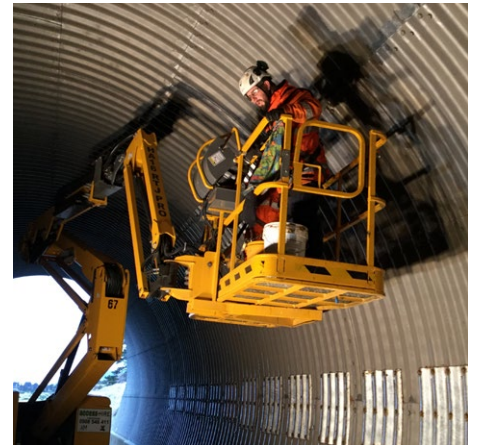
In the earthquake, the southern half of the multi-plate culvert that creates a road over rail overpass was pushed over, leading to significant kinks in the seams. Basically, it was bent badly out of shape, and the culvert repair required to fix the damage had never been done before.

‘Normally these culverts are built once and that’s it,’ says site engineer Cam McKie.

Before plates could be bolted together to reform the culvert walls and arches, a lot of work had to be done to prepare the site. In the last month, work has really progressed and the crew have begun bolting plates up along the seams to provide additional strength and push it back into shape.

Work trains are now able to pass through the site, and the road has been dug out to allow work on the culvert to continue to take place. The old State Highway 1 alignment is being used as a detour for work site traffic, with a temporary rail crossing in place so that the remaining work can be completed.

Once work on this culvert is complete, the pavement surfacing and guardrail will be reinstated over the repaired structure. Traffic will continue to be detoured around this work area until the work is complete.



CONWAY BLUFF UPDATE

Three days worth of scaling and air-bagging work has been completed at Conway Bluff on the Inland Road (Route 70). This involved inflating a bag with a compressor to remove rocks where there were some bigger ridges between the rocks and the embankment, to make the rock shelf fall off. A further two weekends of work is planned.

Geologists continue to assess and monitor the rock face while this work is underway; part of their task is to measure the velocity of the rocks coming down from the embankment. The information gathered is assisting the design team to ensure the final and permanent design solution for the rock stabilisation work is adequate.



EM80 TRACK RECORDING CAR EVALUATING THE RAILWAY AHEAD OF FREIGHT TRAINS RECOMMENCING

This cute little track machine (pictured) may look like a train from the outside but it is actually a special piece of high-tech equipment that is kitted out like the inside of an office – even with tea and coffee facilities.

Officially called a Track Geometry Measuring Car, the EM80 is the only one in New Zealand and has recently been travelling along the Main North Line for engineering inspections of the track ahead of freight trains operating on the line.

The machine is a rail vehicle that applies a load onto the rail to create the effect of a train going over the track. By applying pressure it helps identify geometry faults and where the rail fasteners aren't holding well. It also takes a lot of data (13GB), measures track geometry, videos track conditions and marks spots requiring attention. This is something that a person on foot with a rail gauge would take a very long time to do.

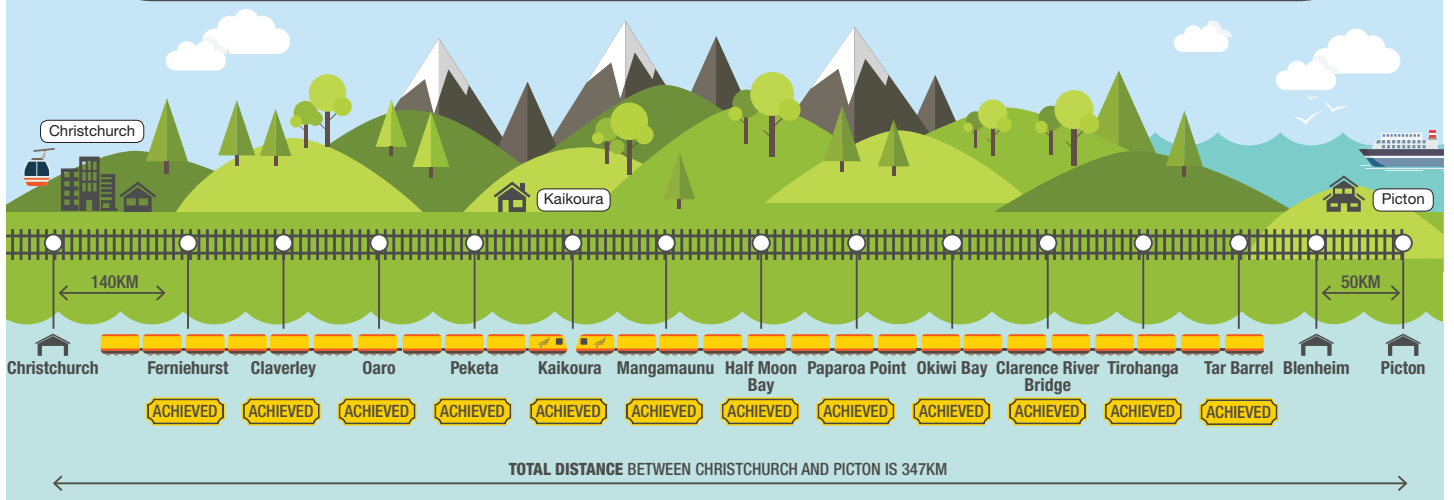
Stephen Holloway, NCTIR Quality Advisor for Rail says, however, that it is a necessarily uncomfortable ride. There can only be a small amount of suspension so that the machine can get the necessary feedback from the track.

'Thankfully the seats are sprung and padded for users comfort,' adds Stephen.

All the valuable information recorded then goes to the assessment team to determine where track faults need to be corrected. Some areas of the track currently have temporary speed restrictions at the moment while repairs continue.



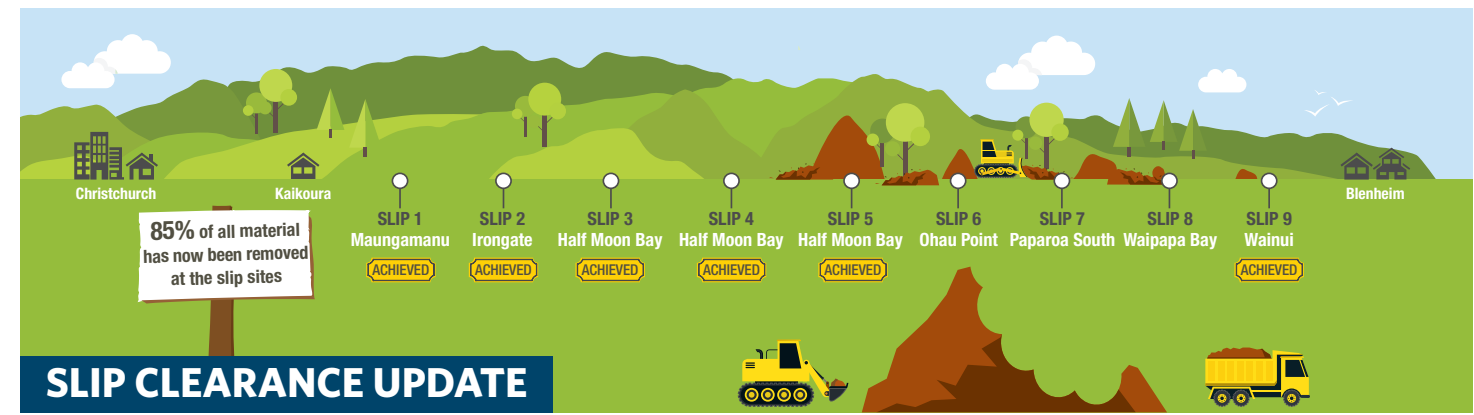
We did it! Work trains are now running between Blenheim and Christchurch



We're making great progress to the north

INTRODUCTION

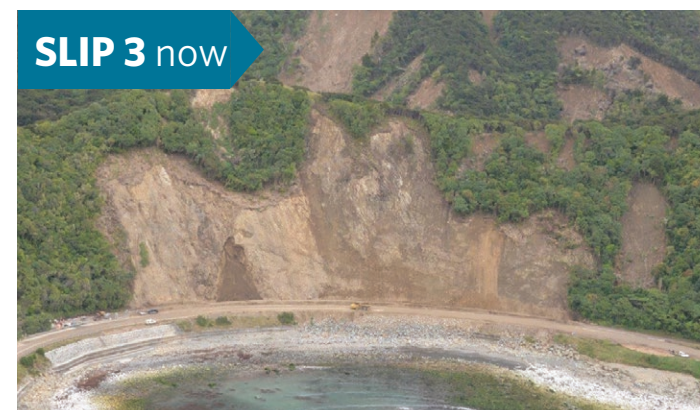
Nine major slips north of Kaikoura have kept earthworks teams busy since the November 2016 earthquake. The amount of work and challenges associated with clearing these slips in such a narrow corridor has been incredible. Hundreds of trucks have worked, sometimes around the clock, to move the mountains of material from State Highway 1 and the Main North Line. Six of these slips have now been cleared (85% of the total earthworks) and work on the remaining three is not too far off completion. The pictorial feature below showing progress at sites 1, 2 and 3 reveals just how much work has been done in the last nine months. Over the next month we will highlight progress at the other six sites.



SLIP 1
This is located near Maungamanu.
An update on work being done at this site be found on page 3 of this issue the Bulletin



SLIP 2
This is located near Irongate.
An update on work currently being done at site can be found on page 3 of this issue of Bulletin.



SLIP 3
This is one of three slips located in Half Moon Bay.
An update of work being done at this site will feature in next week's issue of the Bulletin.

WHAT NOW
Earthworks have formed the major part of work programme north of Kaikoura over the last nine months.

As each of the slips was being cleared designers were working behind the scenes on road, rail, bridge, culvert and seawall designs. Geotechnical experts have been responsible for coming up with rockfall protection designs.

As soon as each of these critical design elements for getting the road and rail reopened were signed off construction work began building seawalls, bridges and the road, as well as laying rail tracks and

installed mesh rock protection. Further north of the slips at places like The Pines and the Sandpit which suffered major damage extensive work has been underway for some time to prepare for the road reopening.

Working to reopen the Main North Line early has been critical for the rebuild of SH1. The work trains that can now operate are vital for the reconstruction of the transport corridor by carrying machinery, materials and work crews to and from work sites. While SH1 is

expected to be open in time for the busy 2017-18 summer season, the network will be fragile. We look forward to keeping you up to date on progress along this stretch of SH1.

EXPECT TRAINS

Rail Safety Week runs from 14 to 20 August 2017 and is a community safety initiative that aims to encourage safe behaviour around trains and tracks.

With the recent KiwiRail announcement that freight trains may be able to operate on the Main North Line between Christchurch and Blenheim within the month, this is a timely safety reminder to everyone living, working or visiting the area. Work trains are already operating on the tracks so expect trains at any time, from either direction.

KEY SAFETY MESSAGES FOR PEDESTRIANS ARE:

- Every time you're near railway tracks, be alert.
- Only cross at formed pedestrian crossings or an overpass or underpass.
- Remove your headphones, stop and always look both ways for trains before crossing the tracks.
- Only cross if you are sure there are no trains in sight.
- Obey the warning signs at the crossing - if lights are flashing or bells are ringing it means a train is approaching.
- If a train has passed or is stationary at a station, always check both ways again to make sure another train is not coming. Two tracks might mean there is a second train.

KEY SAFETY MESSAGES FOR MOTORISTS ARE:

- Take extreme care when driving over 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.
- Always ensure there is space on the other side of the crossing for your vehicle.



Rail Safety Week is planned and coordinated by KiwiRail in close association with TrackSAFE NZ, NZ Police, NZ Transport Agency, Auckland Transport, Transdev Auckland, Transdev Wellington, Greater Wellington Regional Council, NZ Automobile Association and local councils throughout New Zealand.

COMMUNITY MEETING KAIKOURA

There was a good turnout of Kaikoura locals at last week's community meeting. Those attending received updates on work being done to reconnect the rail and road as well as the proposed SH1 deviation through the town and proposals to enhance amenities along State Highway 1.

Resident Bud O'Connor (pictured), who has lived in Kaikoura for 70 years, says the regular community meetings are a great chance for residents to hear about progress behind the checkpoints. 'I'm very impressed with the work that has been happening and they are doing a great job,' Bud says.

Anthea Smith (pictured) said she enjoyed seeing the 'amazing progress.' She lives next door to the NCTIR Village and says the rebuild workers are putting in a lot of hard work to rebuild the road and rail network. 'They're great neighbours at the village, considering there are 300 people living there, they are very peaceful,' Anthea says.



HARBOUR UPDATE

Progress at the harbour is ramping up with work progressing on five different areas at the same time.

1. Promenade wall

Now that the piling is complete, great progress is being made on the 10-metre sections in between the piles of the promenade wall. Workers are digging down to the bottom of the harbour and lowering in a mobile temporary protective steel barrier (trench shield). These areas will then be infilled with concrete.

2. Rock groyne

Work is well underway, with a drill rig and piling crane on site and 8 of the 35 piles along the rock groyne now installed.

3. Dolphin Encounter jetty

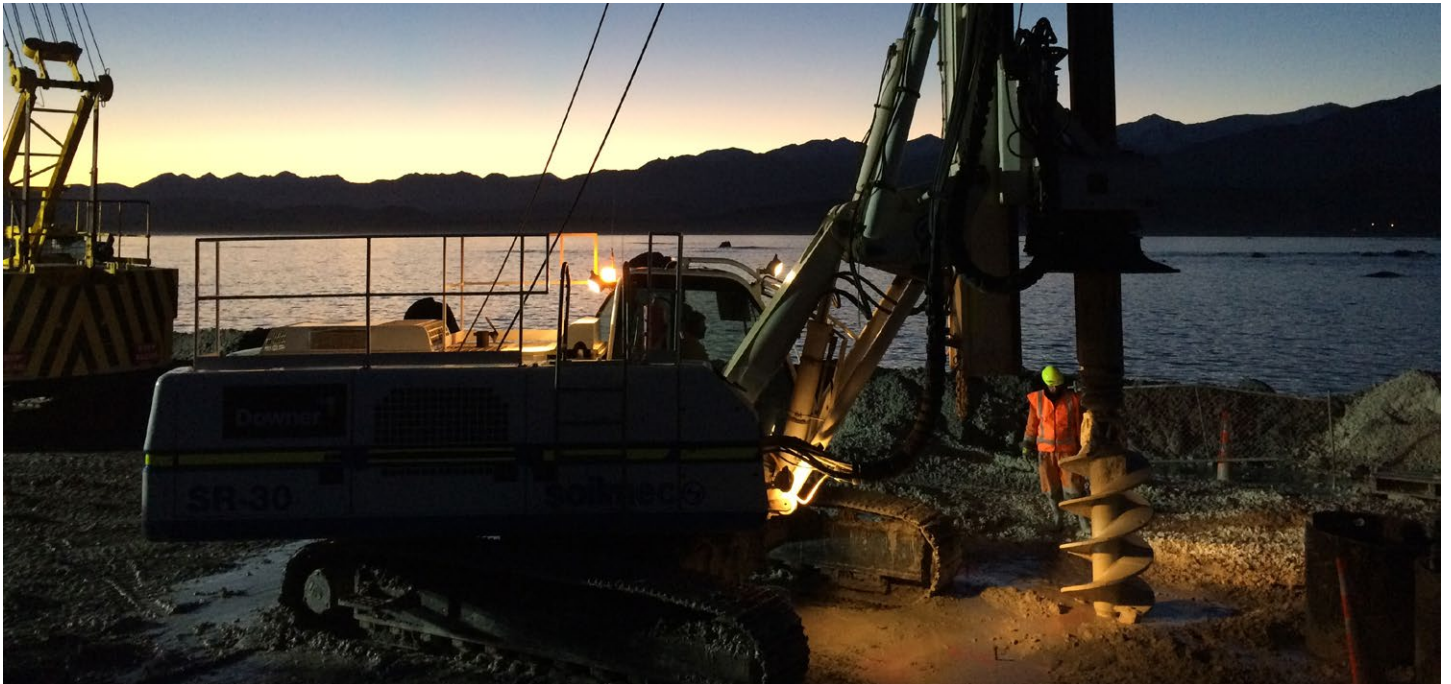
Six piles are now in place to which the prefabricated steel frame jetty will be attached. The next step will be to install the jetty walkway.

4. Tender (small boats that ferry people from cruise ships to shore) jetty.

The tender jetty designs are complete and decking panels are being made at the NCTIR pre-casting facility. Once complete they will be transported to the harbour to be installed alongside the promenade wall.

5. Boat ramp

The manufacturing of giant one tonne sandbags that will be used to create a seawall around the harbour boat ramp have begun. Once these are in place, water will be pumped out to create a dry area for repair works.



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 your local newspapers for details.
- Follow us on Facebook, see: NZ Transport Agency - South Island www.facebook.com/nztasouthisland/ and KiwiRail www.facebook.com/kiwirailNewZealand/
- For travel information about road conditions, see: www.nzta.govt.nz/traffic/regions/11

ALTERNATE ROUTE NEWS

The closure of State Highway 1 (SH1) and the Main North Rail Line between Picton and Christchurch following the November 2016 Kaikoura earthquake means traffic now needs to use an alternate route via the alpine Lewis Pass. This route is, in parts, winding, narrow and challenging and has seen a four-fold increase in traffic which it wasn't designed for. A \$60m Government investment has been made to make this route safer and more resilient.

IMPROVEMENTS HELPING SAFETY AND FLOW AT BUSY SPRINGS JUNCTION

At Springs Junction where weary travellers often stop for fuel and a bite to eat work is underway on some safety improvements. Kerbing is being installed along the highway to provide vehicles and pedestrians with clearer guidance around where to drive, where to pull over and park, and for those on foot, where to cross the road safely. With up to four times the normal amount of traffic along parts of the alternate Picton to Christchurch route since the closure of State Highway 1, this latest piece of work will support a better overall flow of traffic and improve the safety of everyone moving through this area.

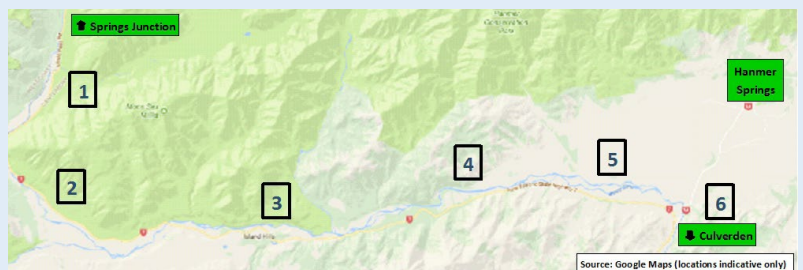


MULTIPLE WORKSITES = MULTIPLE WORK TYPES

While all stop/go work sites might look the same when driving through them, you can't judge a book by its cover. Behind that army of orange road cones along the alternate Picton to Christchurch route is a huge diversity of projects which make up the \$60m Government-funded improvement package.

In North Canterbury alone, there is a variety of safety, resilience and maintenance work underway:

1. Boyle River Bridge - pavement repairs
2. West of Engineers Camp - road widening
3. Glynn Wye - retaining wall replacement
4. Dons Fan - drainage work
5. Lewis Pass Road, west of SH7a
Hanmer turnoff - tree felling
6. SH 7A Waiiau Bluffs - rock face stabilisation



With stop/go in operation, speed limits and delays (a common feature for drivers), the Downer crews completing this work - particularly those on site - would like to thank road users for their patience and helping to keep everyone safe during this important work.

As the weather starts to warm up, this work will significantly ramp up with a busy summer programme of further improvements and maintenance scheduled to get underway. Your ongoing support is appreciated.

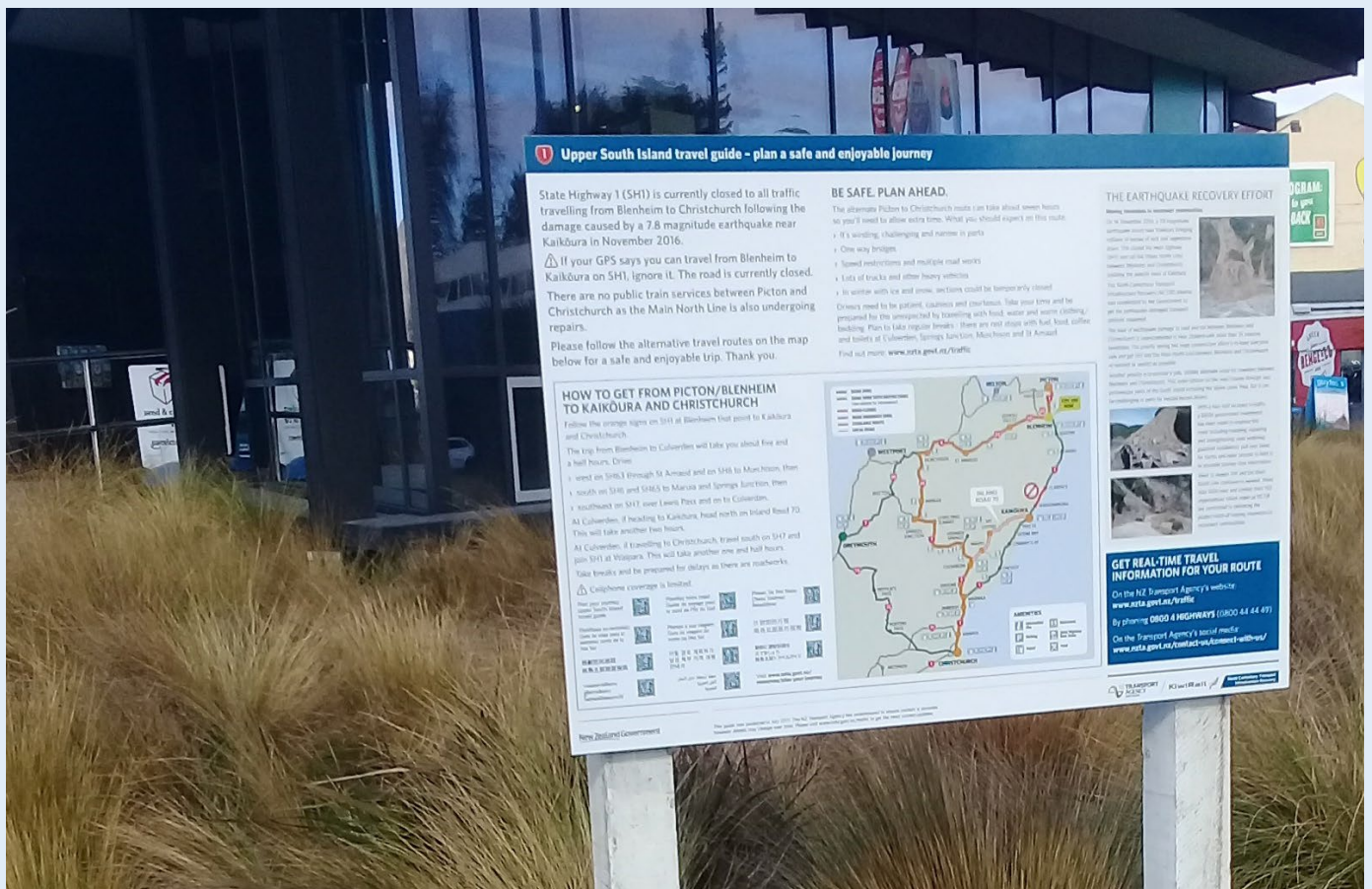
NEW SIGN AT I-SITE HELPING VISITORS TO TRAVEL SAFELY

Although winter is a quieter time for visitors to our shores, there are still plenty of people driving our highways, enjoying a winter holiday. Of those who stop in to see the friendly team at the Blenheim i-SITE, there are also plenty of visitors – both local and international – who are unsure of what roads are open or closed in the Upper South Island since the Kaikoura earthquake.

A new sign installed at the i-SITE has been designed to help support safe and enjoyable journeys for visitors. The sign provides a status of the roads, encourages travelers to allow for safe journey times and outlines the challenges of the alternate Picton to Christchurch route. As well as online and 0800 contact details, the sign also includes QR codes so visitors can scan and download the NZ Transport Agency's Plan Your Journey – Upper South Island Travel Guide brochures, which are available in 11 languages.

Blenheim i-SITE Manager Amy Swain says the sign is a great addition to help people understand their travel options. 'It's also a perfect solution for afterhours as tourists can take a photo of it as a useful reference while travelling'.

The sign is just one of the ways to help visitors access accurate travel and route information. There is also a billboard at the Wellington ferry terminal, digital advertising and brochures being distributed through tourism and rental vehicle operators.



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/