

KAIKOURA EARTHQUAKE UPDATE

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14 July 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: MOMENT OF TRUTH FOR THE HISTORIC CLARENCE RIVER BRIDGE

Six months of repairs to the severely-damaged rail bridge over the Clarence River was about to be tested by a work train pulling 1000 tonnes of ballast. The engineer and train driver shook hands; and the train horn blew, being heard for the first time in this remote valley since November's earthquake.

Built in 1939, the bridge is one of the longest on the South Island's Main North Line at 480m. It sits near a fault line and sustained damage during the earthquake.

'This (northern) end of the bridge moved about 150mm laterally,' says Graham Boorman, a senior structures engineer for KiwiRail. 'It broke the bearings off the base, so we had to jack the bridge up, realign it and put in temporary bearings. Today we're checking the movement of the bridge.'

Small cakes of Blu Tack are placed between beams under the bridge. 'It's a simple product to use. If it squishes, we know the bridge is moving.'

Everyone takes their places, clad in orange and wrapped in scarves to keep out the bitter cold - KiwiRail and NCTIR crews, rail safety officers, and the engineers.

The horn sounds again as locomotive engineers Murray Hewetson and Geoff McFadden roll Work Train 73 forward, on to and across the bridge. The train makes three slow passes back and forth as the engineers gauge the bridge's performance.

When Graham and his colleagues move in to inspect, smiles break out. There are handshakes all round. 'There doesn't look like there's been any movement at all. That's exactly what we wanted to see.'

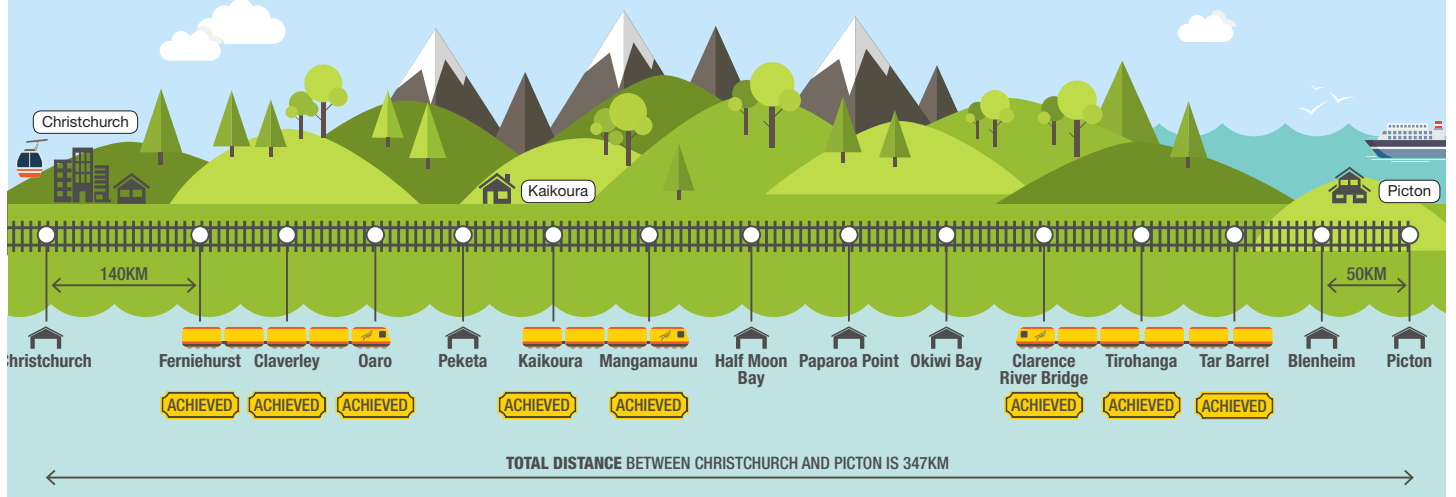
There's now less than 10kms of rail track to be laid between Picton and Christchurch before work trains will be able to operate over the whole length of the 348km Main North Line. Those 10km include some of the toughest jobs left to do, and the Clarence crossing on 9 July was one of them.

'It's been a brilliant day. It's a milestone for us,' says KiwiRail's field asset engineer Andrew Robson. 'There was an awful lot of damage here – the bridge sits very close to a fault line, so the approaches north and south were badly damaged, as well as damage to the bridge itself. A lot of people have put a lot of work into this, and I'm proud of them.'

Further, more permanent repairs to the bridge will continue. The northern work train is now moving towards Kaikoura, with the aim of reopening the Main North Line as quickly as safely possible. Please watch out for trains, especially at level-crossings.



We are making progress and work trains are running



WORK IS RAMPING UP AT THE KAIKOURA HARBOUR

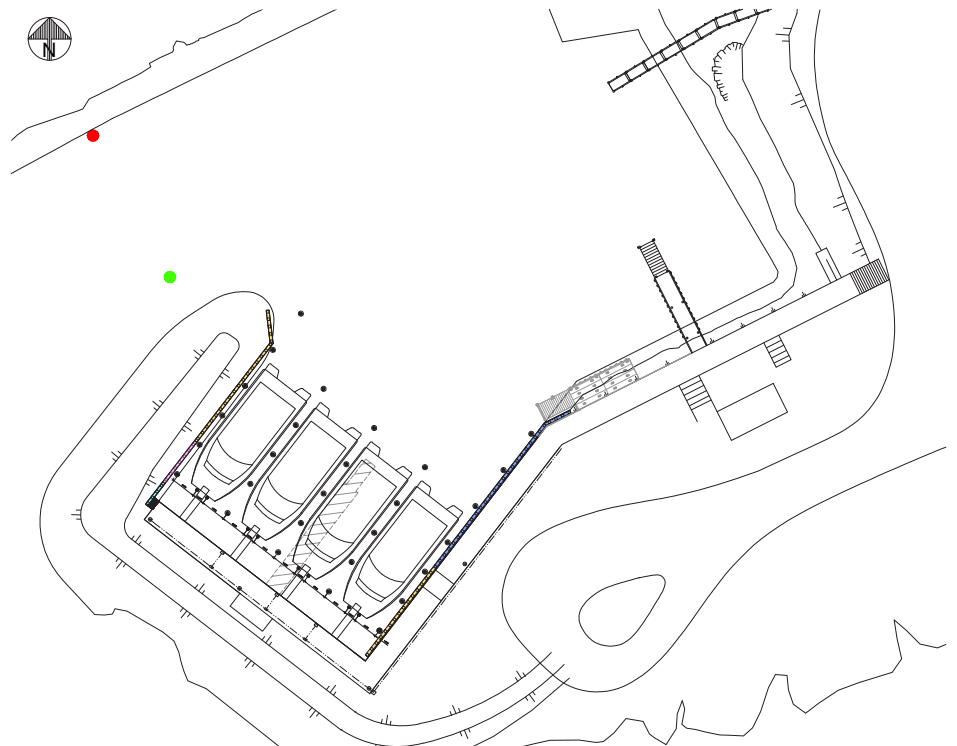
Great progress continues to be made at the Kaikoura Harbour. The berthing area is now completely dry and temporarily filled with material that has created a 'hard stand' working area (platform, pictured) from which the 50-tonne crane, a drill rig and an excavator can operate.

Getting this machinery in place is critical to installing the piles which will form the promenade retaining wall along the eastern edge of the harbour (see harbour design drawing below).

The first phase of creating this working platform reused the excavated marina floor material. Additional fill was used west of the promenade wall to extend the working platform that will enable machines to access the groyne.

The work on the retaining walls is one of the most challenging parts of the harbour project because to build them, the rock groyne has to be lowered on the harbour side, effectively stepped down several metres to water level. This will protect the work area from rocks falling in. The 35 piles will then be drilled into place along the groyne to form the wall.

Whale Watch has now moved to dry docking its boat and using the boat ramp to launch and the north pier to load and unload visiting tourists until the new harbour berths are ready.



INLAND ROAD IMPROVEMENTS - CONWAY BLUFF

Upcoming improvement work over three weekends on Conway Bluff will temporarily reduce the road to one lane. Stop/go traffic control will operate at each end with traffic delayed no more than 25 minutes.

Conway Bluff is located about 160 km from Christchurch on the Inland Road (Route 70).

Conway Bluff needs to be heavily 'scaled' to remove loose material falling on the road below. This involves abseiling teams moving down the bluff and forcing unstable rocks and other materials down the slope.



The work is currently scheduled to take place over three four-day periods to coincide with when State Highway 1 (SH1) south to Kaikoura is open. This will help minimise the impact with most traffic on SH1.

- First section: to start Friday 21 July and run through to the end of Monday 24 July.
- Second section: to start Friday 28 July through to end of Monday 31 July.
- Third section: to start Friday 4 August through to end of Monday 7 August.

At the end of these three weekends the site will be reassessed to determine if any further work is required, and when that might be scheduled in.

Note: all work is subject to weather and other conditions. Any changes to the schedule will be updated in this Bulletin. Thank you for your patience and support while this essential safety work is completed.

SAFETY IS OUR HIGHEST PRIORITY - IT SHOULD BE YOUR PRIORITY TOO

With school holidays here, it's a timely reminder that while safety is our highest priority at NCTIR, it's your responsibility too. The public is prohibited from going on to any NCTIR work site and it's important to ensure children also do not enter or play next to work sites at any time, day or night. These sites are extremely hazardous - even when there doesn't appear to be any work happening on them.

Also a reminder that work trains are now running between Christchurch and Blenheim.

- Stay off railway tracks
- Always slow down as you're approaching a level crossing, and be prepared to stop
- Look out for trains, and obey signs and signals
- Only cross the railway at approved railway level crossing points.

If you have any questions or wish to raise any safety issues with us, we would really like to hear from you as part of our commitment to keeping everyone safe in the community. Please contact us on **0800 NCTIREQ** (0800 628 4737) or **info@nctir.com**.



GREAT PROGRESS ON STATE HIGHWAY 1 SOUTH OF KAIKOURA - SITE 32

Work at site 32 near the Raramai tunnels north of Goose Bay is scheduled to be finished at the end of this month.

A huge amount of material came down at this site during the November earthquake completely covering the Main North Line and blocking the railway tunnel (see before and after photos below), the north-bound lane of SH1 and part of the south-bound lane.

The slopes were first sluiced (helicopters dumping sea water from monsoon buckets) to remove loose material followed by scaling where abseil teams scaled down the cliff and forced unstable rocks and other material down the slope.

A bench was then excavated about 6m above road level to create a work platform as well as temporary fences installed to catch rock falls.

The team has just completed construction of the concrete plinth that will be the foundation for the permanent rock fall fence and looks forward to completing work at the site in the next couple of weeks.



POLAR BLAST AND THE ROADS

The polar blast that swept the country this week, cut off access to Kaikoura from the south and crews worked tirelessly on the Inland Road (Route 70 via Mt Lyford) to keep the road open.

As the snow started to fall on Tuesday afternoon around Mt Lyford, heavy machinery became a constant presence on the road as crews worked to keep the road open as much as possible.

Site supervisor Alistair Gray said the Downer team worked hard to clear snow off the road.

'We have crew working a tractor snow plough, graders and grit spreaders to keep the road open and safe for vehicles' says Alistair.

Along with the rest of his maintenance team, grader operator Mike Pow travelled 150 kilometres of the route, up and down clearing snow throughout the day. 'It was up to 400mm deep in some places, but we did our best to keep the road clear of snow,' says Mike.

It's a harsh environment on the Inland Road and the team haven't had an easy time. Not only have they been repairing earthquake damaged roads, they've had to clean up the flooding from two cyclones and are now faced with freezing conditions. 'Since the earthquake we've had everything thrown at us but we will continue on,' says Mike.

Following the earthquake, Downer reconnected Kaikoura with the Inland Road connection and have been maintaining the road ever since. The team of up to 15 from Downer, Sicon and a number of other key sub-contractors say that teamwork is key to their success.

The Downer 'Ice Palace', based at Mt Lyford (pictured), is a home away from home for the small crew.

Staying at a local lodge five days a week, they have no internet and no cell phones, relying on the radio network installed by Downer following the earthquake for communication. The site is powered by generators to keep the crew warm.



'It's not an easy job to sign up for but we all feel like we are making a difference. There is a great bunch of guys here, it's an awesome team environment,' says Alistair.

What is generally a quiet road has become a lot busier since the earthquake. Anyone travelling to Kaikoura has to come from the south and they often find campervans and tourists heading past their sites, especially when SH1 is shut. Safety remains the team's main priority, so if you are travelling on the road, please slow down and drive to the conditions.



HELI HYDRO-SEEDING - A FIRST FOR AUSTRALASIA



Thanks to some Kiwi ingenuity, the job of covering two hectares of inaccessible cleared slip faces near Half Moon Bay and Ohau Point in grass seeds went from logistically off the Richter scale to achievable.

In May, RST Environmental Solutions, in partnership with Amuri Helicopters, undertook the grass seeding trial in which Bonded Fibre Matrix (BFM) hydroseed was applied to the slip faces with helicopter monsoon buckets.

The main difference between standard hydroseed and the BFM applied is that Vital Polykelp was used as the 'tackifier'. The material is rain fast, with a kelp fertiliser component giving instant-to-medium term soil stabilisation while the grass establishes. Another part of the mix in the BFM was grass seed and a 100% recycled wood mulch.

The grass seed used was a rapid establishing blend that provides medium-to-long term stability while not being overly competitive therefore will allow native plants to re-establish.

Those involved in the trial are heading back to the slopes soon to see how successful the hydroseeding has been.

HEAVY LIFTER ON THE JOB OF A LIFETIME



With 13 years as a crane operator behind him, Craig Ladner is used to lifting heavy things. Which is just as well as Craig will be soon be part of the team responsible for placing more than 7000 concrete blocks (weighing 5 tonnes each) in place around the worst of the 10 large landslides north of Kaikoura.

Last week, he was moving the blocks on to trucks before they were delivered to site, forming the edge of a new road at Irongate.

Craig has been working on four different cranes at four different sites while waiting for work to ramp up on the seawalls. His work has included pile driving at the site of the new debris bridges in Half Moon Bay and back in May his careful crane action made national news headlines when he lifted the trapped train carriages on to trucks. 'It was really good to help get those trains out for KiwiRail' says Craig. This is 'the biggest job of his career' and he is loving every minute of it.

As construction gets underway on the new Irongate Bridge (Site 2), Craig will be there working to lift precast panels into place. It's a delicate operation but crucial to the success of the project. Craig faces additional challenges from Mother Nature. As waves crash around his crane, he carefully moves the sea blocks into place to form the start of a seawall.

A former truck driver, Craig has spent a lot of time driving the coastal route and says once finished the new road alignment will be a great improvement. 'It's special to be part of this project, that's for sure; we're building a legacy for New Zealand.'

TESTING THE SEAWALLS



NCTIR site engineer Tim Dreadon and designer Hugh MacMurray have been tasked with making sure the sea walls meet the design specifications. A mini seawall (pictured) has been built at the Hapuku stockpile site and the pair have been deliberately stressing each block until it breaks.

Hugh MacMurray says testing the wall to destruction is a crucial part of the job. 'It's a physical test to make sure the wall is behaving just as it should be.'

Using a special machine, the friction between the soil and the block is tested to determine the level of force required to pull the wall to pieces.

A plastic strapping mesh, used to connect blocks to the gravel wall behind it, is pulled until a fibreglass reinforced plastic dowel that it is connected to it snaps in half and the concrete around it crumbles.

Hugh says the good news is the walls are working even better than expected.

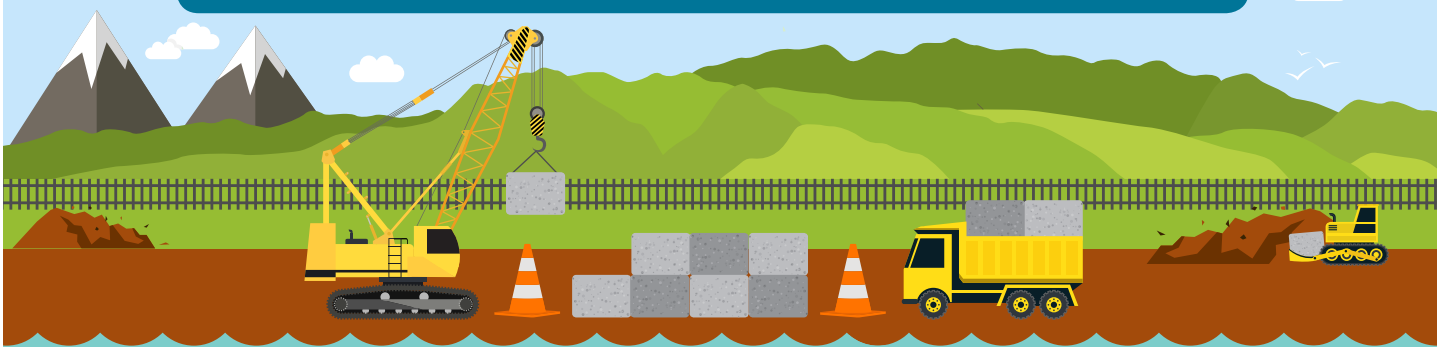
'The bar is breaking at a much higher load than we designed it to which is perfect,' he says. The test is a close representation to how the wall will work.

A fibreglass reinforced plastic dowel is being used as the walls are designed for a marine environment and steel dowels would rust away compromising the integrity of the walls.

It's unusual for engineers to get the chance to carry out real world testing, but it is proving to be reassuring for the entire team. 'Normally design projects rely on manufacturer testing, it's slightly unusual to do it ourselves but essential so we get this project right the first time. We are working fast and it's important we are building quality products as quickly and safely as possible,' says Hugh.

We're making progress – sea walls are being built

AS OF JULY 2017



Seawall heights range from **5m - 10m+**

Each seawall block measures **2m long x 1m wide x 1m high**

35% of work to build a seawall is in preparing the foundations

7000+ blocks needed to build the seawalls north of Kaikoura

Each block weighs **5 tonne**

The blocks are being made in **4** locations: Rolleston, Rangiora, Hornby & Renwick

2.5km of sea walls being built north of Kaikoura

The first seawall blocks were laid on **July 6**

KEEPING NCTIR GREEN

Kaikoura locals Peter Smith and his wife Gwenda took over Kaikoura Waste Service just before the November 2016 earthquake and are now a vital part of keeping NCTIR green.

Peter's job is to collect rubbish and recycling from all of the work sites and offices and deliver it to Innovative Waste Kaikoura, a community enterprise that is focused on getting Kaikoura to a goal of zero waste.

Peter is pretty much a one-man band supported by Gwenda as he drives some of the challenging roads between worksites to collect the rubbish and recycling.

Business has been tough since the earthquake, but Peter has picked up servicing most of NCTIR's work site offices as well as the NCTIR Village. 'NCTIR is really committed to recycling what it can; it is great to see that happening from a large operator in our community,' says Peter.



CLARENCE ACCOMMODATION

The population of Clarence Valley is growing with rebuild workers moving in. Thirty crew members are now staying at new temporary accommodation at the front of the former Woodbank School. Housed in accommodation surplus from the Christchurch earthquakes, these workers are quickly becoming part of the community.

Genevieve King has been running her pop-up café out of a food truck and is helping to feed the crew staying at the facility. With local support from Jordy Marsh and Salome Chapuy, Genevieve is selling her food to locals during the day before moving down the road to the workers' accommodation at night to whip up their evening meals.

Genevieve says the food truck is becoming more and more popular. 'There has been a steady increase in customers and the venison sandwich is a best-seller,' Genevieve says.

Her policy is buy local first, whether it's using locally-grown produce or hiring workers within the community to help her. At the time of the earthquake she launched her first cookbook, Valley Gatherings, showcasing the people, lifestyle and produce of the Clarence Valley.

With the road being closed between Kaikoura and Clarence, Genevieve has used the proceeds of 1500 copies sold to set up her food truck so she can once again connect locals and workers to good quality locally-made food.

'It's been an amazing opportunity to kick-start my own business right here at home while being a small part of the build,' she says. When the road reopens, Genevieve plans to take her food truck and special Clarence-style food to events around the South Island.

To purchase a copy of her cookbook visit her website: www.somethingbeginningwithg.com. \$3 from every book sold will go towards the rejuvenation of the Clarence Valley community.



UPDATES FROM THE MINISTRY FOR PRIMARY INDUSTRIES

Consultation on the PAU3 and PAU7 fisheries, and the fisheries closure around Kaikoura/Cape Campbell, has closed. MPI is now analysing submissions and will prepare advice for the Minister for Primary Industries. The Minister is expected to announce his decisions in early-September.

Ministry for Primary Industries
Manatū Ahu Matua



The proposals for PAU3, PAU7, and the closure stem from major concerns regarding the sustainability of fisheries following the November 2016 earthquakes. These earthquakes have had significant impacts on the marine environment. Paua live in separate habitats and at different depths at different ages. Paua of all ages, and the different habitats that they live in, have all been affected by uplift. It's going to take time to allow the habitat to recover and the paua to move back in and keep reproducing.

MPI wants to implement changes to fisheries management that will facilitate recovery of the earthquake-affected areas, and also protect adjacent fisheries that may suffer from increased fishing pressure due to effort displacement from the closed area. MPI is aware of the profound importance of the marine environment to the communities along the Kaikoura and Cape Campbell coastlines, and wants to ensure people are able to keep using this resource, which brings so many enjoyment, sustenance, and wealth, well into the future.

All stakeholders share responsibility for the future rebuild of this shared resource. It is critical that the fishers, divers, and communities show stewardship of these stressed fisheries where they remain open, only fishing for a feed, and not filling their paua bag too often. Bag limits are a limit, not a target, and this is especially important to remember while we make space for the marine environment along Kaikoura and Cape Campbell to recover.

Research is underway to assess the effects of the earthquakes on paua and other species, and MPI looks forward to working with the research providers, Te Korowai, and the Kaikōura Marine Guardians to share information and results as they become available.

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 meetings - 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



KEEPING IN TOUCH

Thank you for your ongoing support and patience as we continue our essential work to reconnect communities affected by the November 2016 earthquake. This work is by nature a dirty, dusty and sometimes noisy operation. Please contact us if our work is causing problems for you. We remain committed to resolving issues wherever we can.

Keep up to date on progress. Subscribe to our weekly project updates by emailing info@nctir.com (bulletin in the subject line).



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.

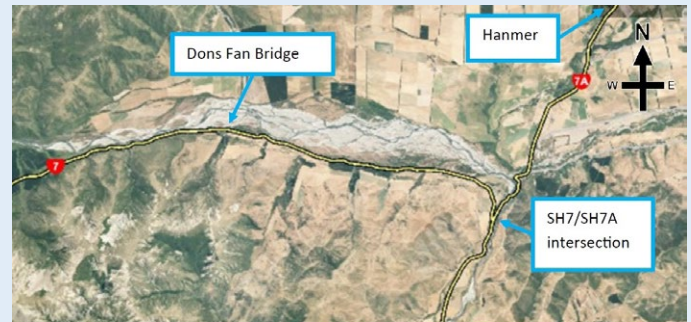
REMINDER: OVERNIGHT BRIDGE REPAIRS = DELAYS

Temporary repairs to Dons Fan Bridge on State Highway 7, around 8km west of the Hanmer Springs turnoff, are scheduled to be completed overnight this Saturday 15 July.

The work will be carried out from 9pm to 6am when traffic is at its lowest volume to minimise impact to travellers. As the repairs are in the middle of the bridge across both lanes, it does need to be closed. However, the crew will reopen it briefly every hour on the hour for waiting traffic to cross.

Note: all work and timings are subject to weather and other conditions. If unable to be completed on Saturday night, the work will be rescheduled for this Sunday 16 July. Visit www.nzta.govt.nz/traffic for the latest details.

Thank you for your patience and support while this essential repair work is being done.



Map 1. Location of the work, Source: Canterbury Maps.

BATTLING THE ELEMENTS TO WIN THE SNOW WAR ON THE ALTERNATE ROUTE

While many people were tucked under blankets Tuesday night as the sleet fell steadily, the dedicated 24/7 crew were out in force battling tough conditions in the Lewis Pass on the alternate Picton to Christchurch route (SH7).

The first closure was put in place late that night to keep everyone safe while crew worked in snow, ice, rain and with limited visibility to get the road reopened as quickly as possible.

While trucks and other vehicles waited patiently on each side of the pass, other drivers were encouraged to wait at Culverden and Murchison where they had easy access to food and other services not readily available at the closures ahead.

The main issue was ice and Wednesday late morning a few heavy trucks were let through the Lewis Pass to break this up as part of the ice management plan to reopen the road.

A second storm with severe ice and snow build-up late Wednesday forced another closure although the crews were able to reopen the road late Thursday morning to the patiently waiting traffic.

A tough start to the winter, but also a big thanks to the hard working crew who put in a big effort, supported by the dedicated Police team in the area.

NCTIR journey manager Tresca Forrester says the efforts involved good collaboration between everyone involved and impacted by the weather including NZ Transport Agency, NCTIR, police and the freight industry.



WINTER WORK GETTING A HEAD START ON BUSY UPCOMING SUMMER PROGRAMME

Summer is very much on the mind of the team designing the next stage of the road improvement programme along the alternate Picton to Christchurch route.

More than half of the \$60M allocated for improvements on this route were committed over the last summer. However, this upcoming summer will be just as busy as crews continue with road widening, installing safety barriers, building safe pull-over areas and surface improvements.

While wet and cold winter conditions prevent most major road works, like road sealing to be completed, that's not stopping the crews. They're getting as much done as they can on as many projects as they can for a head start on summer. For regular drivers on this route, this may mean seeing pockets of activity where initial construction is done, then some sites looking deserted and incomplete. What's really happening behind the scenes is crew watching the weather and counting the days until conditions are warmer and dry enough to get back in for any final work – such as sealing the road surface.

One such improvement project underway is the slow vehicle bay near Maruia (pictured) – one of seven currently programmed for this route. With up to a four-fold increase in traffic in some parts, traffic can quickly build up and drivers become impatient to pass slower vehicles. This can result in poor decisions and crashes. Once completed, these bays will provide slower vehicles – typically trucks, buses and campervans – with a place to safely pull over and let traffic pass.



JOIN US AT THE 'NCTIR VILLAGE' OPEN DAY!

Come and check out the temporary accommodation and join some of the team for a BBQ and a chat.

There will be food, music and fun activities for the whole family.

WHEN Sunday 23 July 2017, 12-3pm

WHERE NCTIR Village, 2 Mount Fyffe Road, Kaikōura

TRANSPORT There is no parking onsite. Free buses will run between the i-SITE and Village every 20 minutes (from 11.45am)

Any questions? Contact info@nctir.com
Due to the nature of the site,
please wear flat, closed-toe shoes.

New Zealand Government

NZ TRANSPORT
AGENCY

KiwiRail

North Canterbury Transport
Infrastructure Recovery

GET REAL-TIME TRAVEL INFORMATION FOR YOUR 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/](http://www.nzta.govt.nz/contact-us/connect-with-us/)