



The Bulletin Kaikoura earthquake update

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KERBING IT UP AT SITE ONE

The new highway to the north of Kaikoura is starting to take shape.

About 2.5 kilometres of new kerb and channel will be poured at four sites (Site 1, 2, 6 and 7), where State Highway 1 (SH1) is being realigned.

The first 380 metres of new kerb and channel was poured on Friday 29 September at Site 1, the new highway beginning to look like a road for the first time since the earthquake last November.

Scottish project manager Greg Burns, who moved to Kaikoura in March, remains enthusiastic about the progress in spite of the wet weather throwing challenges at the recovery effort.

'We have been working non-stop and we've accomplished a tremendous amount of work. Getting so close to sealing the road is exciting,' Greg says.

About 1.5 kilometres of kerb will be laid before Christmas. With the kerb and channel in place, Site 1 can be prepared for chip seal, which will be finished before Christmas as well.

'My favourite time of the day at the moment is when I get to site at 6.30am and the sun is rising, there's a short peaceful moment just before we all get into full swing when the first trucks arrive at 7am,' Greg says.

'After sealing the new highway at these sites, I am most looking forward to seeing the capping blocks lifted into place on the new seawall at Irongate; there is surely going to be a lot of action leading up to the reopening before Christmas.'

Site supervisor Michael Scott is proud of his team being able to keep the traffic flowing along this northern side of SH1, enabling crews to reach the northern slip, while work continues to get the road reopened.



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.





REMINDER: CHANGES TO OPEN/CLOSED SCHEDULE FOR SH1 SOUTH OF KAIKOURA

Plan ahead upcoming closures:

- Monday 16 October to midday Friday 20 October (The road will reopen to the public midday on Friday 20 October for Labour weekend travellers).
- Monday 6 November 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.

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)

Travel safe

Before starting a trip, plan your journey to understand road conditions, travel times, and where to take a break to reduce fatigue for a safe and enjoyable drive ahead.

If you have any questions, we would really like to hear from you. Please contact us on **0800 NCTIREQ** (0800 628 4737) or email **info@nctir.com**.

Thank you for your patience and support while our crews work to reopen SH1.



24/7 CONCRETE

At the Hapuku River mouth, a 24/7 concrete operation is underway to get State Highway 1 reopened before Christmas.

No matter the hour, a steady stream of trucks are being loaded up, one-by-one, before heading north to Irongate and Ohau Point.

Each truck is carrying a load of no-fines, a type of concrete invented during World War II. No-fines is made from aggregate which has no dust or sand in it, creating a porous building material, a little bit like rice bubble cakes.

The no-fines is coming in handy in more ways than one. At Mangamaunu (Site 1), it is being used as a drainage layer at the very bottom of a new road which is being constructed away from two large landslides. While at Irongate, Ohau Point and Oahu Stream, it is being used as backfill to lock in the seawalls.

While attempts were made to recycle landslide material for use in building the new highway, it didn't perform well enough under scientific testing to be used as structural fill.

More than 40,000 cubic metres of no-fines is needed to be packed behind seawall blocks between Irongate and Ohau Stream for the road to be built on.

Coastal Alignment Construction Manager David McGoey says the concrete will perform well in the event of another earthquake and because it's porous, there is less drainage work required behind the seawall.

While other plants are producing traditional concrete for building structures, such as the new 144-metre-long Irongate Bridge, there are five pug mills along the coastal corridor, (one each at Hapuku and Rakautara and three at the Clarence River) turning river material into no-fines concrete.



'We're producing 1000 cubic meters of no-fines concrete every day; it's a huge operation and part of a major push to reopen the road before Christmas.'

Excavators feed extracted rock aggregate between 8mm to 22mm in size into the pug mill, where water and cement are added to produce building material, like no-fines concrete and a cement stabilised aggregate called AP65.

It takes about five minutes to load each truck before these head off on an hour and a half round trip. Rather than using traditional concrete trucks, which are too slow to unload, about 60 bigger road trucks and articulated dump trucks are transporting the concrete to site. These take only a third of the time it would take to unload a traditional concrete truck.

The aggregate coming out of river quarries is of good quality, it's already been weathered and the silt has been washed out. It's an ideal aggregate for the job at hand. Each truck carries more than five cubic metres of concrete, thousands and thousands and thousands of truckloads will be needed to finish the job, David says.



CLARENCE RIVER BRIDGE

The Clarence River Bridge sustained significant damage during the earthquake which has required a redesign of the superstructure.

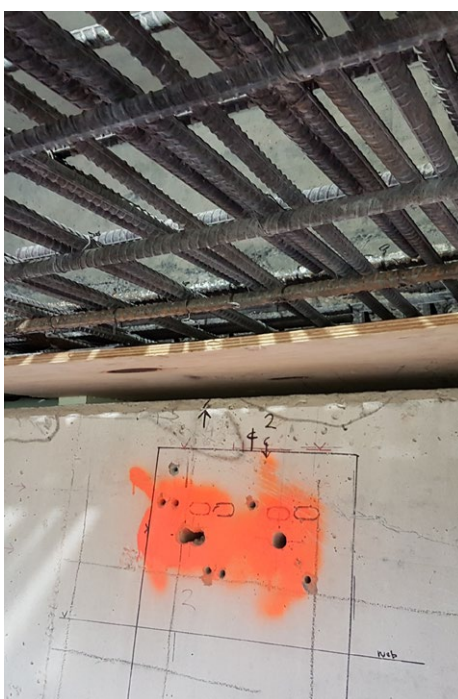
The superstructure or hollow box that runs the length of a bridge and directly receives the live load, moved up and down at the abutments, which led to punching through the underside of the box.

The settlement slabs at both approaches to the bridge also shifted significantly during the earthquake, causing a major bump for approaching vehicles.

'Initially, a temporary system was installed with wooden blocks and temporary hold down bolts,' says Site Engineer Cam McKie. The temporary works allowed for construction traffic to pass on a daily basis but were insufficient to open two lanes at 100kmph.

Permanent repairs include pouring a new beam inside the superstructure and securing the hold down bolts from the top of the beam to the face of the abutments via new brackets. These tasks need to be done before the bridge can be returned to 100kmph. 'So far, we've broken out the floor of the box girder and poured a new floor to go underneath the new beam.'

'Next we've got to pour the beam and re-level the settlement slabs,' says Cam. 'That's our main priority at the moment.'





THE PINES UPDATE

At The Pines, the team recently completed the Box Culvert at Mounseys Creek just in time for the two largest flows seen through the creek since February. This scoured a 3m deep by 7m wide trench through the beach making its way to the ocean.

The wet weather did not hamper the construction teams. They have completed the 65 placement (the first layer of roading aggregate) over the 1.6km stretch of The Pines passing lane that was up thrust more than four metres in the earthquake. This has been a great effort from all involved. The pressure isn't off though as we still have to place the final layer of aggregate called M4/40, followed by a cement stabiliser that will combine the M4/40 with cement to provide a stronger surface in order to complete the job.



THE SANDPIT UPDATE

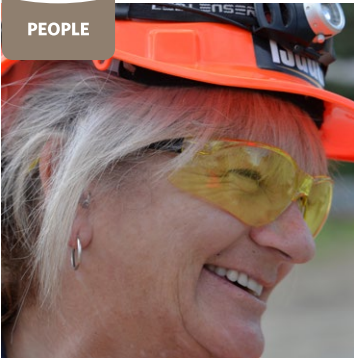
At The Sandpit, 1km south of the Clarence River, the southbound lane was displaced by two to three metres for about 650 metres. Earthworks have been completed at the site along with the installation of gabion baskets at four of the five sections. About 150 metres of the fifth section remains to be completed. Section five is challenging because of the ground stability and the walls being between three and six metres high. This makes the walls more difficult to access, but everything is going well so far. When the gabion baskets are completed, the next step is to start laying the 750 metres of road. This work will happen concurrent with the completion of the fifth section.





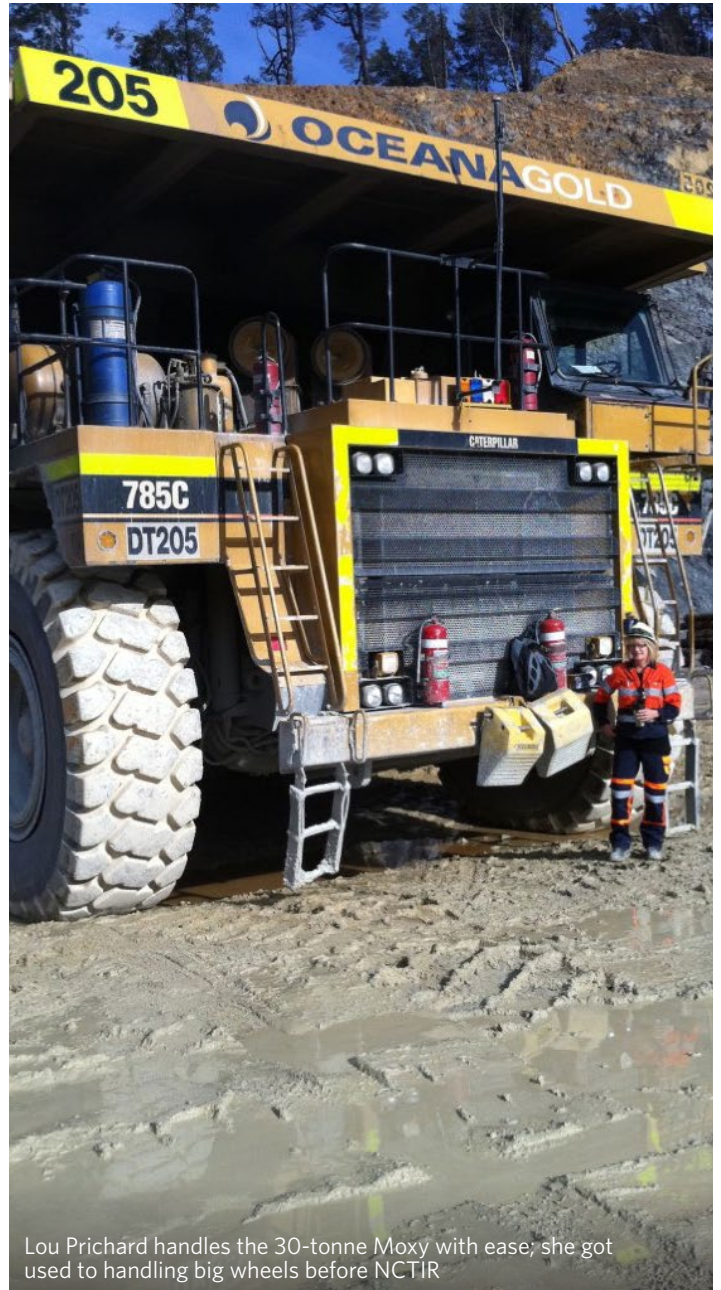
PROGRESS DAY BY DAY

PEOPLE



Lou Prichard has been driving dump trucks for 16 years and has now been on the project for six months working for the company Isaac. She handles the 30-tonne Moxy with ease. 'I brought up my kids myself from when they

were seven and 10, and when they were grown I started off pumping fuel. An opportunity came up to drive, and I thought, go for it Lou. I haven't looked back since,' she says. 'I've seen heaps of progress since I've been here. A transformation is really happening. When I started driving here, it was on a very bumpy work road, and now we are driving on the actual road,' Lou says. When asked what she loves most about being part of the project, she said: 'the people, especially the locals. It's great being part of the team to help Kaikoura get back on the map for everyone who lives here, and I love seeing the progress that is happening day after day.'



Lou Prichard handles the 30-tonne Moxy with ease; she got used to handling big wheels before NCTIR



We are making progress – Slips north of Kaikoura are being cleared

AS OF SEPTEMBER 2017





SCIENCE AT WORK

Huddled in a laboratory a small group of scientists is carrying out vital tests.

There are no white coats, instead orange high-vis is the garment of choice.

'We're not mad scientists but everyone's eccentric in the lab,' says Laboratory Technician Richard Williamson.

Sections of roading infrastructure are being re-built or newly built throughout the coastal corridor and it's important that these meet strict requirements in order for the road to carry high levels of heavy traffic. Crews have been using layers of recycled slip material to form a base, but the stronger upper layers of the road are built using aggregate mined from rivers and processed to meet specific criteria.

Samples of extracted and processed aggregate are being compacted by machines inside the laboratory to make sure they are perfect.

'It's got to be exact; if it's too dry it won't compact and if it's too wet it won't compact. Ideally the target density will be 2.34 t/m³ which is just perfect for building roads.'

The tests aren't just happening indoors, field technicians use various instruments, including a nuclear density gauge on site to make sure the new road construction complies with client and design specifications.

Richard enjoys getting out and about on site: 'I really enjoy the testing, it's quite fun and entertaining learning about what's underneath the different sections of road. I enjoy being curious.'



Laboratory Technician Richard Williamson



Getting the Kaikoura Marina ready for the first berth



Welcome home Whale Watch!



THROUGH THE EYES OF A PROFESSIONAL DRIVER

While extremely picturesque, the alternate Picton to Christchurch route is also challenging to drive with many narrow and winding areas as well as an alpine pass. It was never designed for the current traffic volumes, nearly four times more than before, including heavy vehicles now using it since the closure of earthquake-damaged State Highway 1 through Kaikoura.

Alternate Route Asset Manager Adam Humphries (left), is in the team finalising the summer work and recently spent a day with one of New Zealand's biggest names in freight, Toll. Going from Christchurch to Blenheim with drivers Marcus and Richard (on right), Adam reinforced how valuable it was to see the route through their eyes.

'Throughout the day they provided informative commentary, including where earlier challenges have now been resolved, and problem spots and issues, particularly around road width, roughness and also delays at work sites. This sort of information enables us to better focus our efforts as we continue to maintain and improve the route through the coming summer,' says Adam.

Toll management says they welcomed the opportunity to show the team what their professional drivers deal with on a daily basis and why there is a real need for the \$60m investment programme to continue to improve safety on the alternate route. Toll reinforces that it's about how everyone uses this route while waiting patiently for the re-opening of SH1. All road users - whether tourists, locals or truck drivers - need to be cautious, slow down, keep alert, look carefully when going around corners, and stay safe.



The students and staff at Kaikoura's Creation Care Studies Programme send their

love to everyone working on the NCTIR Project.

Programme Director Courtney Wilson says, 'You've done a great job, keep up the good work! Thanks for the long hours.'



Site 1a, north of Kaikoura

Before - March 2017

After - October 2017



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- 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/
- For travel information about road conditions, see: www.nzta.govt.nz/traffic/regions/11

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