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The Bulletin Kaikōura earthquake update



PILING UP

Just south of Ōhau Point, our crews, piling rigs and cranes are constructing a 300-metre-long retaining wall to realign the Main North Line railway.

As a colony of seals laze on the coastline below and traffic rumbles by, our teams have been busy repetitively inserting casings 200 times over and up to 21 metres deep into hillsides created from landslide material.

Material captured inside the casings is then bored out, round steel cages inserted into each of them, concrete poured in and the casings extracted. Then once a reinforced concrete beam is built on top of the piles, the ground in front is excavated and the end result is a bored pile retaining wall.

Design engineer Ryan D’Souza says the retaining wall acts as a supporting system for the future rail realignment and will provide better protection for the road and rail.

‘These piled walls are designed and constructed to move as one, so any loads applied are spread over the entire structure,’ he says.

‘At this site we are highly constrained by space which leads to a lot of congestion as we are rebuilding the road below at the same time, but the beauty of this structure is we can build it efficiently within those constraints.’

On site project engineer Olga Joensuu, who has been working on the project since August 2017, says it has been challenging at times - but rewarding.

‘It’s a pretty unique spot - we’re exposed to the elements and the beauty of this coastline,’ she says.

‘The changing weather is always a challenge while getting resources to site, and making space for the heavy equipment we use can be difficult, but we’re hitting our targets and looking forward to seeing the end product.’

The wall is expected to be completed by the end of July, with the rail then being realigned behind the wall and over a debris flow bridge (which allows any debris coming off adjacent cliff faces to flow underneath the road and rail).

Once the wall is complete, passing traffic will not be able to see the piles and capping beam which make up the wall. Naturally weathering materials able to withstand coastal elements will be used as a finishing over the wall, and will leave a more pleasing, reflective view of the natural environment.

IN THIS ISSUE

- Shipping containers on the move
- Widening tunnels
- Monumental week at site 7
- Winter is here
- Safety this Queen’s Birthday Weekend
- Smooth riding
- 24/7 crewing
- Hidden heroes at site 30



The team on site at Ōhau Point

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.





A section of State Highway 1 south of Kaikōura between Peketa and SH1/Leader Road was closed this week for the removal of 16 shipping containers. The move took place on Monday and Tuesday from 10pm to 6.30am.

The containers had been in place since the early stages of earthquake recovery to protect the road from rockfall. They had to be removed for the tunnels team to complete the widening of the Parititahi tunnel portals, allowing the switching of traffic between north and south-bound lanes.

During the night, Hiab trucks and a 25-tonne crane moved the 16 containers from the north-bound lane south of the Parititahi Tunnels. Reflectors were also fixed on the scaffold around the tunnel.

Site engineer Liam Mulvihill says there was a lot of pre-planning and work undertaken before the containers were moved.

‘Because these shipping containers were in place to protect the road from rockfall where the abseilers were working above, alternative protection was needed,’ he says.

‘In the week before the closure we installed new protection of a 5.5 metre high meshed scaffold fence at the toe of the slope and a MacMat geomat mesh drape that hangs within 20 metres of the road.’

This new rockfall protection is temporary to protect the road until the mesh and anchoring of the slip above it is complete.

Further night closures in the south are being planned for July to move the rest of the containers and concrete blocks. Closure dates will be announced as soon as they are confirmed to give as much notice as possible to drivers and the community.

‘For safety reasons, the work we were doing could only be undertaken during a road closure, so to provide minimal disruption to the travelling public we did this work during the night,’ Liam says.

We understand these closures are inconvenient - thank you to those affected by this closure for your patience and support.





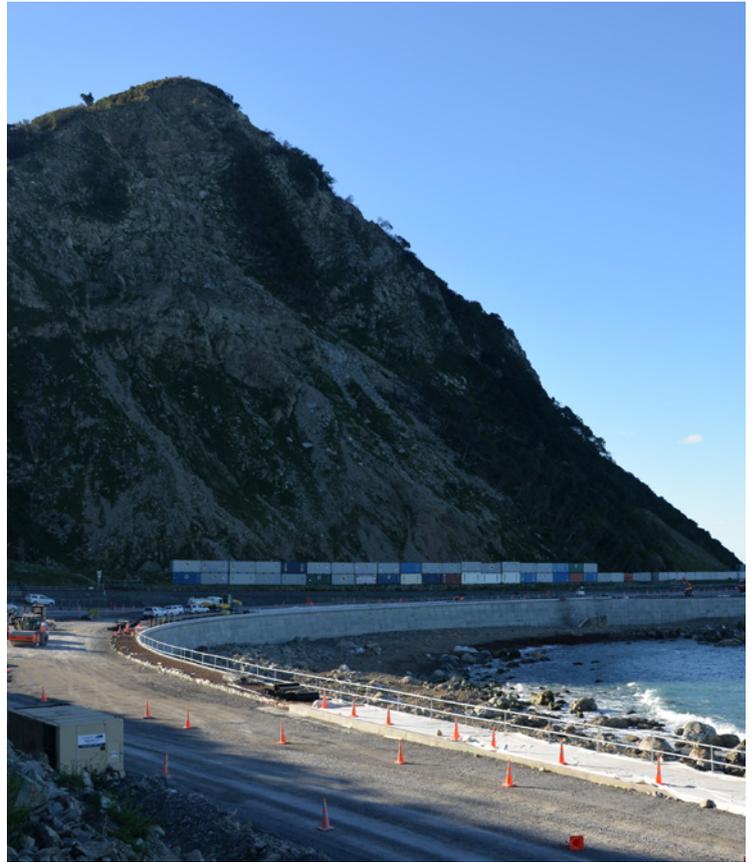
MONUMENTAL WEEK AT SITE 7

Our site 7 team has been celebrating their achievements just north of Ōhau Point.

Project manager Clark Butcher says last week was a very significant week for the crew because of the culmination of three significant events. 'We have completed our construction up to a standard where the seals' environment is able to be returned to them, and our interaction with the seals will be minimal moving forward,' says Clark.

The team also finished night works this week. Clark explains: 'Some activities were only able to be undertaken at night, such as the import of materials at volumes which weren't able to be brought in during the day, along with the removal of slip materials that would have caused significant traffic interruptions. And, these have now been completed'.

But it is the finishing of the seawall which Clark says is the most significant of these events. 'On 24 May, the last of seawalls required to open the road for Christmas finally reached its full height. This has been both an impacting and emotional experience for our staff who have made many sacrifices along the way while investing in this community,' he says.



WINTER IS HERE

As cooler winter weather was felt across the country in the past couple of weeks the Inland Road (Route 70) received a dose of fresh snowfall. Driving in winter can pose some challenges – visit

www.nzta.govt.nz/winter-driving for information about how to safely prepare for journeys in wintery conditions.





GOING AWAY THIS QUEEN'S BIRTHDAY WEEKEND?

For those of you heading off for a break this long weekend please take the time to check real-time travel information before you head off and be prepared for increased traffic volumes.

Drivers have two options for travel in the upper South Island between Picton and Christchurch.

- SH1 via Kaikōura is now open 24/7 but construction is ongoing (north and south) with delays and some single lanes.
- The alternate Picton to Christchurch route via the Lewis Pass is open 24/7.

Both routes will be busy so whichever one you choose the NZ Transport Agency advises you allow plenty of time for your trip, especially if you are catching a ferry or are on a tight schedule.

The NZ Transport Agency encourages everyone heading off for a break to 'know before you go' and check the holiday hotspots map: www.nzta.govt.nz/hotspots. The map collates data from previous Queen's Birthday Weekend journeys and advises on the best time to leave to avoid the rush.

With the change in season it is also time to prepare for winter driving to stay safe:

- Take the time to check your vehicle is in good condition - tyres/spare tyre, indicators, windshield wipers, lights.
- Be prepared when travelling with warm clothes, food, water and a charged cell phone.
- A flat battery is the most common cause of winter breakdowns. If it's more than five years old it may struggle in the cold. Get it checked and replaced if necessary.

And remember, over holiday periods many drivers are on unfamiliar roads, so please be patient as we are all in this situation at some stage.

How to stay up to date:

- Plan your journey between Picton and Christchurch and get real-time information via www.nzta.govt.nz/p2c or call **0800 4 HIGHWAYS** 0800 44 44 49. We recommend checking at least two hours before you travel and while on your trip
- Check the **MetService** weather forecast before you head away





WIDENING TUNNELS

The Raramai and Parititahi Road Tunnels to the south of Peketa were built over a century ago. These road tunnels were not significantly damaged in the November 2016 earthquake, but were in need of improvements. The NZ Transport Agency's plans to upgrade and enlarge this row of tunnels is now underway.

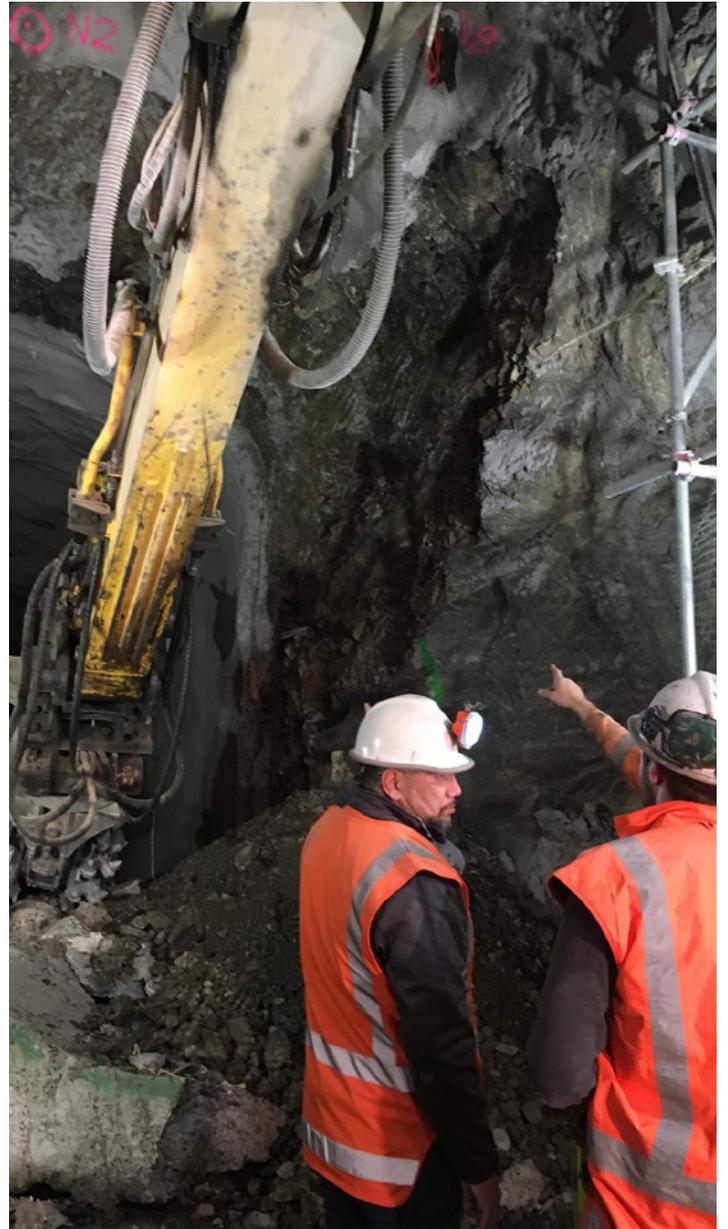
In order to complete works on the tunnels, without causing further delays to traffic, the tunnels team proposed a construction methodology allowing traffic to flow freely through one tunnel while the other tunnel undergoes improvements.

'The upgrades require the use of special equipment, including milling heads, which are double-barrel rotators that reshape the surface of the tunnel, and a shotcreting robot. This milling and shotcreting of walls, shoulders and crown [100mm] of the existing tunnels will complete Stage 1,' says tunnels manager Rafael Ballen.

'Stage 2 will include a further 150mm layer of concrete to finish the walls and 150mm of shotcrete to finish the shoulders and crown, which will complete full ground support. These processes will bring the Raramai and Parititahi Tunnels up to their new specifications. In order to achieve this amount of work by the set deadline, the tunnels teams are working both day and night shifts,' says Rafael.

'Getting up to speed and setting up the site for mining regulations was a great challenge that we overcame,' says site engineer Innes Duncan.

The widening of the tunnels will improve the clearance and safety inside the tunnels for vehicles - particularly large freight trucks. And will allow for a new fibre optic cable route through the tunnels.





FINAL PIECE OF THE PUZZLE

At Punchbowl, just south of the Parititahi Tunnel, a final piece of mesh has completed a full protective wraparound of the point's rock face.

Abseilers have installed 9250 square metres of mesh and more than 400 anchors across Punchbowl's two sites - 22 and 23 - since November last year to slow falling rocks and prevent them from falling on State Highway 1 below.

Site engineer Florence Blondeau says the job was made easy by having the same Avalon abseiling crew on the two sites.

'Managing one team on two sites has been time efficient and I'm really proud of what we've achieved together.'

Site supervisor Christophe Bourgeois says installing the connecting piece of mesh was a great moment for his crew of 10 abseilers.

'It was a bit of a jigsaw puzzle putting in the final missing link, but it's now completed and looking good.'

Site engineer Florence Blondeau and site supervisor Christophe Bourgeois in front of the joining piece of mesh.



SMOOTH RIDING

Drivers can expect a smoother ride through Jacob's Ladder, which was damaged by 200,000 cubic metres of material coming down off the neighbouring hillside during the intensity of ex-cyclone Gita in February this year.

Our crews, with their high-vis winter layers, were out on the road last week laying down 100mm of roading gravel. Once the team had distributed the gravel across the road a roller soon followed compressing it tightly to create a smooth top layer.

'We got the roading gravel down in two days and then it is just a matter of waiting for a solid section of dry weather to lay the chip seal,' says roading supervisor Glenn Cattermole.

The team is expecting to have it completed by next week. Glenn says the difference in the quality of the drive will be significant. 'I travel this road nearly every day and it will be much smoother going and much more enjoyable.'

24/7 CREWING



It's been over a month since State Highway 1 (SH1) has been open 24/7 and thanks to the mild, calm weather conditions, traffic has been running smoothly.

With worksites along this stretch of state highway and night-time traffic, it is essential safety controls and inspections are in place - not only for the crews, but also for the travelling public.

Grant Keeble, who has eight years working along the route, is one of the supervisors responsible for the patrols which monitor the area along SH1 north and south of Kaikōura.

'It's all about keeping the traffic flowing and safely between the Picton and Christchurch route,' says Grant.

'We have two patrols operating, one in the north and one in the south of Kaikōura. The teams of two work shifts between 6pm and 6am, 24/7.'

These patrol trucks are the 'eyes and ears' undertaking a variety of jobs including pothole repairs, maintaining culverts, attending to traffic incidents, cleaning traffic signage and clearing roadkill off the road.

The patrol teams keep in close contact with the traffic supervisors, monitoring the traffic lights across the network.

For those travelling at night please be patient, follow all traffic signs, instruction and light signals.



Patrol crews fix a variety of issues along the route.

We have 11 sets of night time traffic lights operating north and south of Kaikōura along State Highway 1. Manual traffic control changes to a lights system when light fades around 5-5.30pm. These lights control traffic through one-lane sections. All the lights are either vehicle activated or use timers. The two longer sites in the Hundalee Hills are on timers with an approximate eight minute delay. Please do not run any red lights as it is dangerous for oncoming traffic and there is limited space to turn around.



Be prepared for delays over the next week near Ōhau Point as we undertake sluicing work. For more information please call **0800 628 4737** or visit **www.journeys.nzta.govt.nz**





HIDDEN HEROES AT SITE 30

Looking up from the passenger seat driving south of Rosy Morn, it is impossible to see the top of one of the largest sites on State Highway 1 south of Kaikōura; Site 30. From the road, only the lower section is visible, but above, there is a bigger slip area, where the works are mostly happening.



Each morning, crew members take four-wheel drive vehicles up the steep path to the top of the escarpment, and unbeknownst to travellers below, head down by foot to a bench before putting on their harnesses for work to begin.

Abseilers work down the sides of the damaged mountain to install anchors using drill rigs, then apply mesh netting lowered down in pieces by helicopters, and finally, nuts and plates secure the mesh to the anchors so any material which might be prone to come loose is secured to the cliff face. While completing the work, quality checks on the cables and all of the components are ongoing, to ensure the work will last.

The geometry of the actual site is varied and complex. It is a very large area and as well as a steep slope, the surface is very uneven.

'Safety is a huge priority,' says site engineer Florence Blondeau.

'A lot of thought and planning went in to making this a safe work site. They've even carved a bench at the top for the team to have a flat area to have lunch and be able to prepare material without having to be in their harnesses.'

'The site includes the largest area we've meshed south of Kaikōura, about 8900 metre squared,' says Florence.

'Work has been underway here since June 2017, and today is the last day on site for the team of abseilers. It's an exciting day!'

