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The Bulletin Kaikōura earthquake update

Thank you from NCTIR



The 14th of November marked three years since the 2016 earthquake, which shook many from their beds and the NCTIR project into being.

The Kaikōura District Council's Community Celebration was a great opportunity to mark the anniversary alongside the local community, who have been so welcoming and hospitable to our NCTIR team.

As the project approaches its final year we would like to acknowledge the amazing patience and support we have received from the community. We know it has been a long process, but the end is in sight!

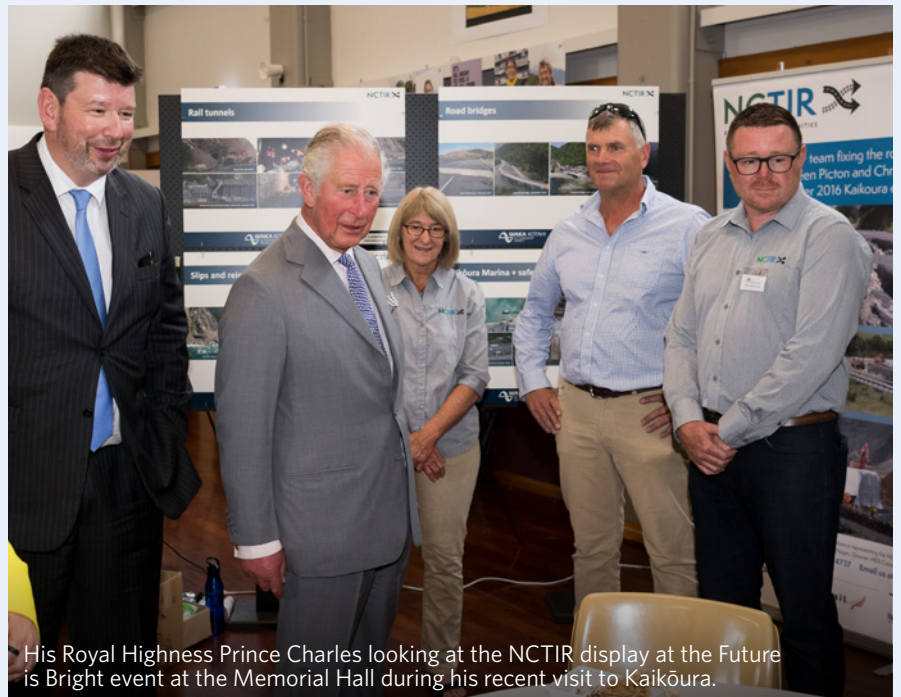
Long after the project is done and NCTIR is gone, we hope that the community will enjoy journeying along a resilient coastline and be proud of their part in supporting the rebuild effort.

Ngā mihi nui,

Tony Gallagher
NCTIR Project Director



Royal welcome



His Royal Highness Prince Charles looking at the NCTIR display at the Future is Bright event at the Memorial Hall during his recent visit to Kaikōura.



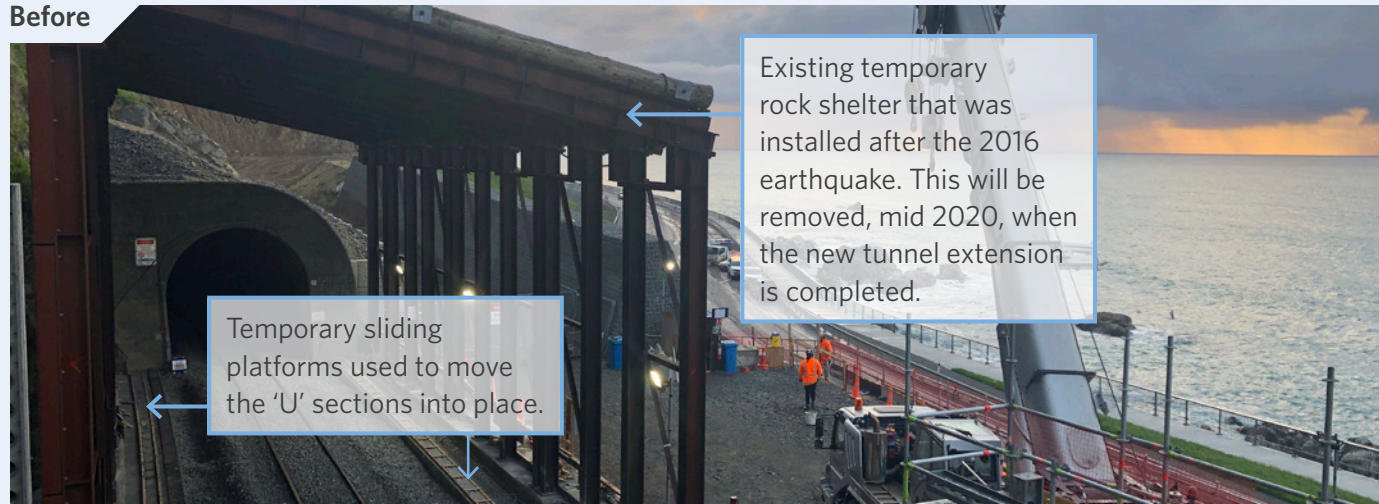
Meeting the NCTIR welcoming party at the Takahanga Domain.

Tunnel 19 extension slides complete



Crews at Tunnel 19 south of Ōhau point have recently finished sliding a number of concrete sections against the tunnel mouth to form an extension. This will act as a permanent rockfall protection measure. This is similar to works underway at Tunnel 11, south of Kaikōura, except here crews need to work around the existing rockfall shelter. See below for an example of the process.

Before



Existing temporary rock shelter that was installed after the 2016 earthquake. This will be removed, mid 2020, when the new tunnel extension is completed.

Temporary sliding platforms used to move the 'U' sections into place.

During



Scaffold set up on either side of the railway line. Each concrete 'U' section is made up of two sides and a 13 tonne top beam, which is lifted alongside the scaffold and then connected together. These sections were then slid, three at a time, into position under the temporary rock shelter.

DoubleE exciting news



The inaugural Engineering New Zealand ENVI Awards were held earlier this month. These awards look for organisations that have been involved in outstanding engineering projects that demonstrated excellence in engineering in ways that benefit society and the environment.

NCTIR, the NZ Transport Agency, and KiwiRail were proud to be finalists in three categories for our work in Kaikōura: Partnership, Impact, and Innovation. With 120 applications received across the eight award categories, Project Director Tony

Gallagher says, 'These awards are recognition of the wider Kaikōura community's involvement in NCTIR and their support of the rebuild efforts.'

On the night, we were delighted to win the Impact Award, jointly with Auckland Council, Fulton Hogan, Boffa Miskell and AECOM for the Te Auaunga project.

The icing on the cake? Receiving the Supreme Award. 'This was a great honour for us to receive, and recognises the huge effort that went into re-opening the road and rail networks. The NCTIR team is diverse

and exceptionally talented. I'd like to thank all of our crew members, past and present, for their hard work - we couldn't have achieved what we have without them. To date, over 8,000 people have worked to restore the road and rail networks and make them safe and resilient for the future.'



Hidden work under Hāpuku Bridge



It's not immediately obvious from the road, but there is a hive of activity taking place under the Hāpuku Bridge. Site Engineer Florent Giffon describes it as a challenging project, but says that work is well underway.

The main work involves jacking the bridge at each of the ten piers to remove and replace the bearing pads. The 30km speed restriction and one-way traffic lanes currently in place help to reduce the impact of the traffic loading on the bridge.

Minimising inconvenience to the public was paramount - so every Monday night the team close SH1 for ten minutes while they lower the bridge onto the previous weeks' repaired pier, then for another two hours from midnight while they raise the bridge and complete work on the next pier.

'We use four jacks at the same time - and the purpose is to jack the bridge evenly to prevent any damage. It's an old bridge that has been partially damaged by the earthquake so we need to take care of the weight,' says Florent.

'We are allowed to jack a maximum of 10mm of displacement, but most of the time we are only jacking the bridge to 6mm, which is enough to remove the bearing pad.'

The team raise the bridge slowly using a number of small lifts across each 100 tonne jack to ensure each is raising evenly in increments of about 5MPa (MPa stands for Megapascal, a unit of pressure) and no more than 2mm of displacement at a time.



Project Manager Fred Witton and Site Engineer Florent Giffon have both been involved in the weekly midnight lifts to repair the Hāpuku Bridge.

'We do ten pumps using a hand pump connected to the jack, before stopping to measure the displacement and record the pressure.'

'From the beginning to maximum displacement the process takes about 40 minutes, we then take a bit of time to place the secondary catching system, and also we have to lower the bridge to minimise the weight we have to match the existing level of the bridge with the new level.'

The next day the team break the hard mortar pad beneath the pier and reinstate a new mortar pad with a strength of 30MPa.

A total of 88 mortar pads from ten piers and two abutments will be replaced. The work is expected to be complete by late December.

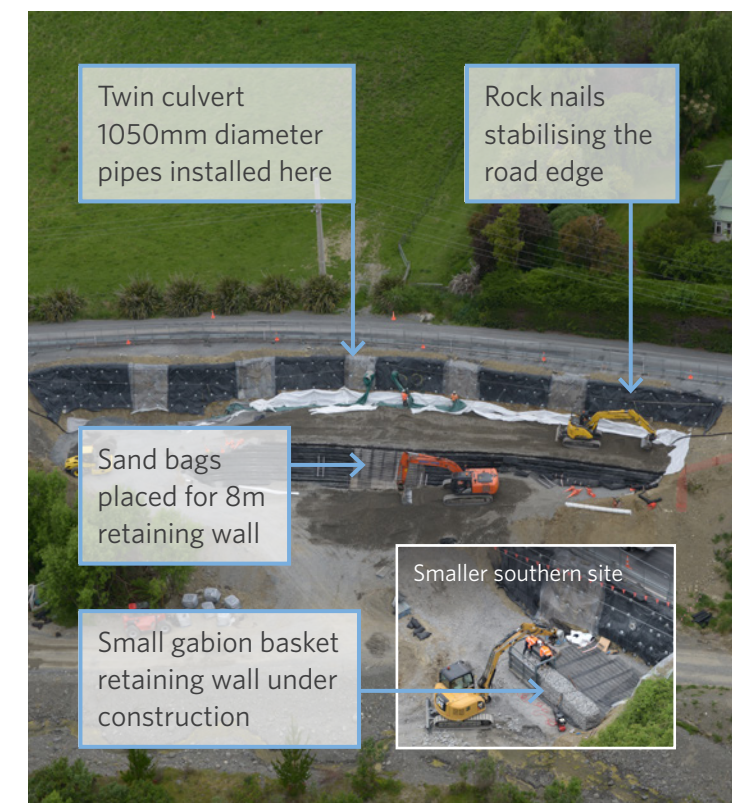
Cyclone Gita repairs at Oaro to be completed by Christmas



The work at the twin culverts site on SH1 at Oaro is on target to be completed. The road will be sealed and back to two lanes before the Christmas holidays.

On the larger northern site the retaining wall is being constructed by hand. Instead of using gabion baskets the wall is being constructed of sandbags, containing 95% sand and 5% cement. Placing each sandbag by hand takes slightly longer, but makes for a more resilient structure, as hand placed sandbags have a 100-year guarantee, instead of the standard 50.

When the 8m high retaining wall is complete, and the twin 1050mm diameter culverts installed, the western side of the road will be backfilled to match the road height. Traffic will then switch onto this newly constructed lane while the culverts are installed on the eastern side. The road will then be stabilised and sealed ready for Christmas.



Twin culvert 1050mm diameter pipes installed here

Rock nails stabilising the road edge

Sand bags placed for 8m retaining wall

Small gabion basket retaining wall under construction

Smaller southern site

Clarence River Bridge final pier pour



Crew at Clarence River Bridge recently hit a milestone, strengthening the last of the bridge's piers by pouring a 92m³ concrete 'jacket' around the existing Pier B structure. The pour lasted around six hours, with two 6m³ capacity concrete trucks taking turns to pour and then refill at an on-site concrete plant. Crews will now begin removing the river diversion, with work expected to wrap up before Christmas.



Blue Duck Corner – signed, sealed, delivered



Following months of road stabilisation work, crews at Blue Duck corner have sealed and line marked the road and returned traffic to two lanes. 'This seal is literally the icing on the cake,' says Project Engineer Wendy Heynen. 'It's the finished layer of the whole project.'



Tunnel 11 rail tunnel extension



The 28th and final concrete 'U' section has recently been placed on the Tunnel 11 rail tunnel extension between the

Raramai and Paratitahi tunnels south of Kaikōura. Crews are now focussed on backfilling work, and will begin installing rock anchors above the tunnel in the new year, with work expected to wrap up in April 2020. Traffic will return to two lanes over the Christmas break.



Realigning Ōkiwi Bay



Work is progressing on the southern end of Ōkiwi Bay where the road is being realigned to smooth out the curves, and to move the flow of traffic further from the rock face. Approximately 98% of the material to form the embankment has been placed, with 85% of the rock revetment completed. This project is scheduled to wrap up in late May 2020.



July 2019



November 2019

Your questions answered

What is being done at Māngamāunu with regard to the shared use path?

There has been some discussion around this topic in recent days. We want to be clear, we have no intention of building the shared path south of Blue Duck at Māngamāunu. This decision was made following judicial review, in December 2018 after discussions with the local Te Rūnanga o Kaikōura and the Surfbreak Protection Society. We have formally withdrawn the consent for the 800m around the Māngamāunu Bay area. Through ongoing discussions with iwi, we have also removed further sections of the shared use path from Māngamāunu Bay to Blue Duck.

What is happening with the rest of the shared use path?

As a result of our continued kōrero with Te Rūnanga o Kaikōura, NCTIR/Waka Kotahi NZ Transport Agency is working to find a resolution that will link up the sections of shared use path already built. The Transport Agency has proposed an alternative design to the current shared use path.

The intention of the alternative design is to ensure access to and views of this rugged coastline are maximised, and to ensure that the shared use path does not impinge archaeological and culturally sensitive areas.

What is happening with the guardrails?

Feedback and concerns over the introduction of safety guardrails from Te Rūnanga o Kaikōura, advisory groups and some members of the community encouraged the Transport Agency to review the locations of the guardrails in relation to the level of risk. As a result, there will be reductions in the initial proposed scope of the guardrail both north and south of Kaikōura.

- South of Kaikōura (between Peketa and Oaro) some guardrail that has already been installed will be removed (includes both rail and sea side). Some will also be repositioned to allow more parking areas. There will still be guardrail installed in the high-risk priority locations to improve safety outcomes.
- North of Kaikōura there will be reductions from the original scope but this still in progress, as it is tied to decision-making around the shared use path.

What engagement has been undertaken with iwi?

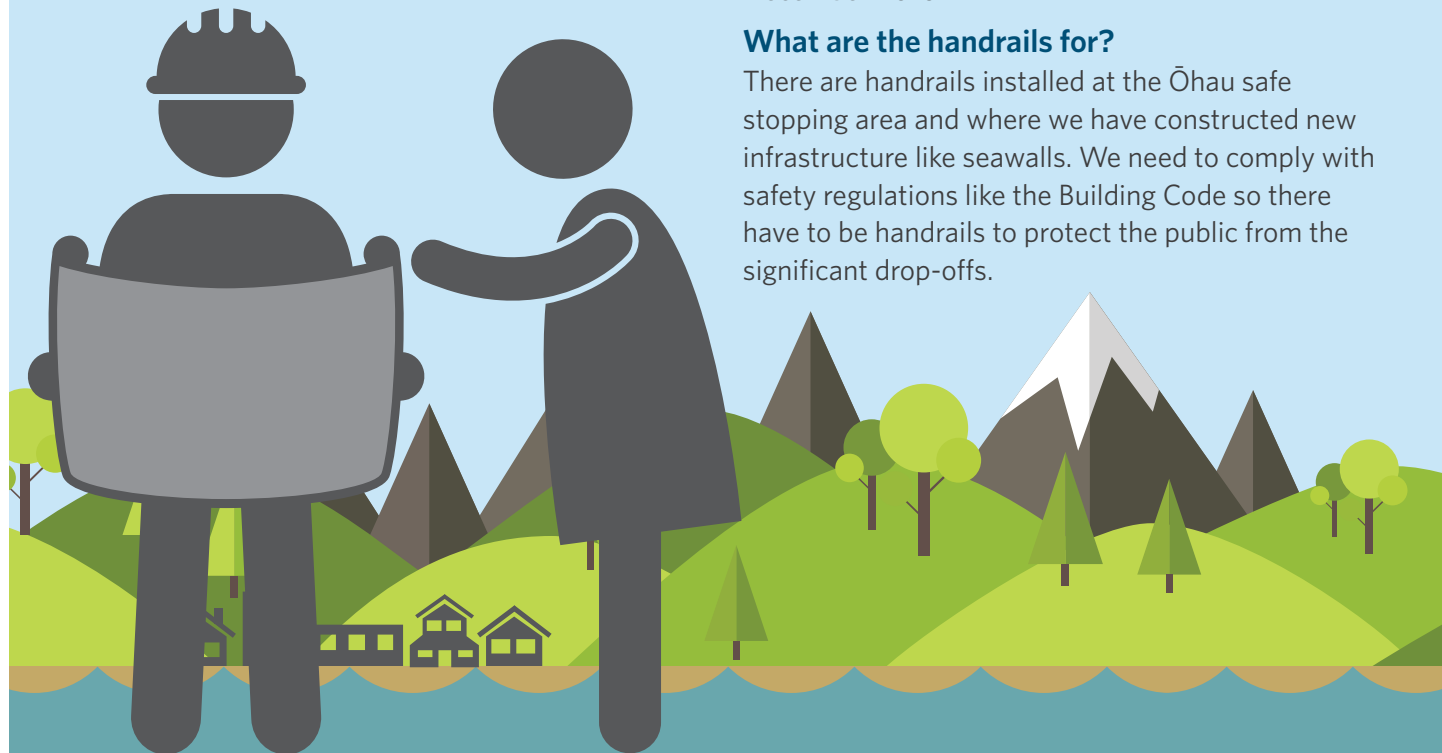
Since December 2016 we have worked with the Restoration Liaison Group, which includes an iwi advisor representing Te Rūnanga o Kaikōura and a representative from Te Rūnanga o Ngāi Tahu.

In addition, as of August 2018 we formed a specific Cultural Advisory Group, with representatives from both Te Rūnanga o Kaikōura and Te Rūnanga o Ngāi Tahu.

We have had cultural monitors and an archaeological team of up to 30 people working on the project since December 2016.

What are the handrails for?

There are handrails installed at the Ōhau safe stopping area and where we have constructed new infrastructure like seawalls. We need to comply with safety regulations like the Building Code so there have to be handrails to protect the public from the significant drop-offs.



New home for native skinks



New Zealand renowned herpetologist and wildlife ecologist Marieke Lettink has been working with NCTIR to rehome native skinks from upcoming work sites. Initial surveys found a population of South Marlborough grass skinks at the Waiiau Bridge that needed to be removed before construction to repair the bridge could begin. 'They'll have to strip all the vegetation off the slopes here, and obviously the lizards will be affected by that. So the easiest thing to do is to go in and move them,' Marieke said.

'First the site engineer has to wait for us to clear the lizards. Once we're done they get the go ahead that the lizards are all gone, and they're able to maintain this as a construction site.'

Marieke said there are over 110 species of native lizards and all are absolutely protected by the Wildlife Act – so mechanisms for their protection are a legal requirement.

Marieke uses tinned pear to bait the skinks into the traps before she catches and bags them for removal. 'They will be released at a site in Lottery Bush that has been prepared with a network of predator traps, which will protect the skinks from predation by things like mice and rats.'

'It's about making sure the animals are protected and that they get released in the best possible place.'



Megan Brown and Marieke Lettink trapping lizards at the Waiiau Bridge.



A female South Marlborough grass skink.

Seal of approval from Kaikōura Primary School



NCTIR Environmental Advisor Elisa

Chillingworth has been visiting schools in the district to tell pupils all about Kaikōura's seals and the steps being taken to protect them at NCTIR work sites. Her talk covers seal biology, behaviour, and the variety of different seals that call New Zealand home.

Elisa is part of the environmental team and is one of the

environmental specialist seal handlers who relocate seals from unsafe areas in the rebuild.

The preferred rocky habitat of New Zealand fur seals puts them at risk of construction works along the coastal route, and the specialised team has moved over 14,000 seals from harm's way since work began.

Here are some of the thoughtful questions asked by Kaikōura Primary School children at one of Elisa's talks:

Q: Can seals see underwater?

A: Yes, their eyes have an adapted round lens (similar to a fish) that lets them see clearly underwater.

Q: How long can seals stay underwater?

A: Their average dive time is 11 minutes to around 100-200 metres deep.

Q: How long do seals live?

A: NZ fur seals live to around 16 years old.



Elisa showing off her seal handling gloves.



The Kaikōura Primary School pupils had plenty of questions about the seals

NCTIR teams visit the Marae



Te Rūnanga o Kaikōura invited the NCTIR whanau to be welcomed on to the Takahanga Marae with a pōwhiri and to learn about the history of the whare. An added highlight for the NCTIR team was getting an overview of the Cultural Artworks Package and understanding the stories behind the design work.

The Cultural Artworks Package came from a November 2018 hui between NCTIR and the Cultural Advisory Group about the stories that should be told along the coastal corridor at seven formal safe stopping areas.

Te Rūnanga o Kaikōura executive member Maurice Manawatu gave an insightful presentation on the unique symbolism used at each site - on buildings, furniture, concrete pathways, and carved pouwhenua. For example, Rākautara, north of Kaikōura, has long been known for its kai moana.

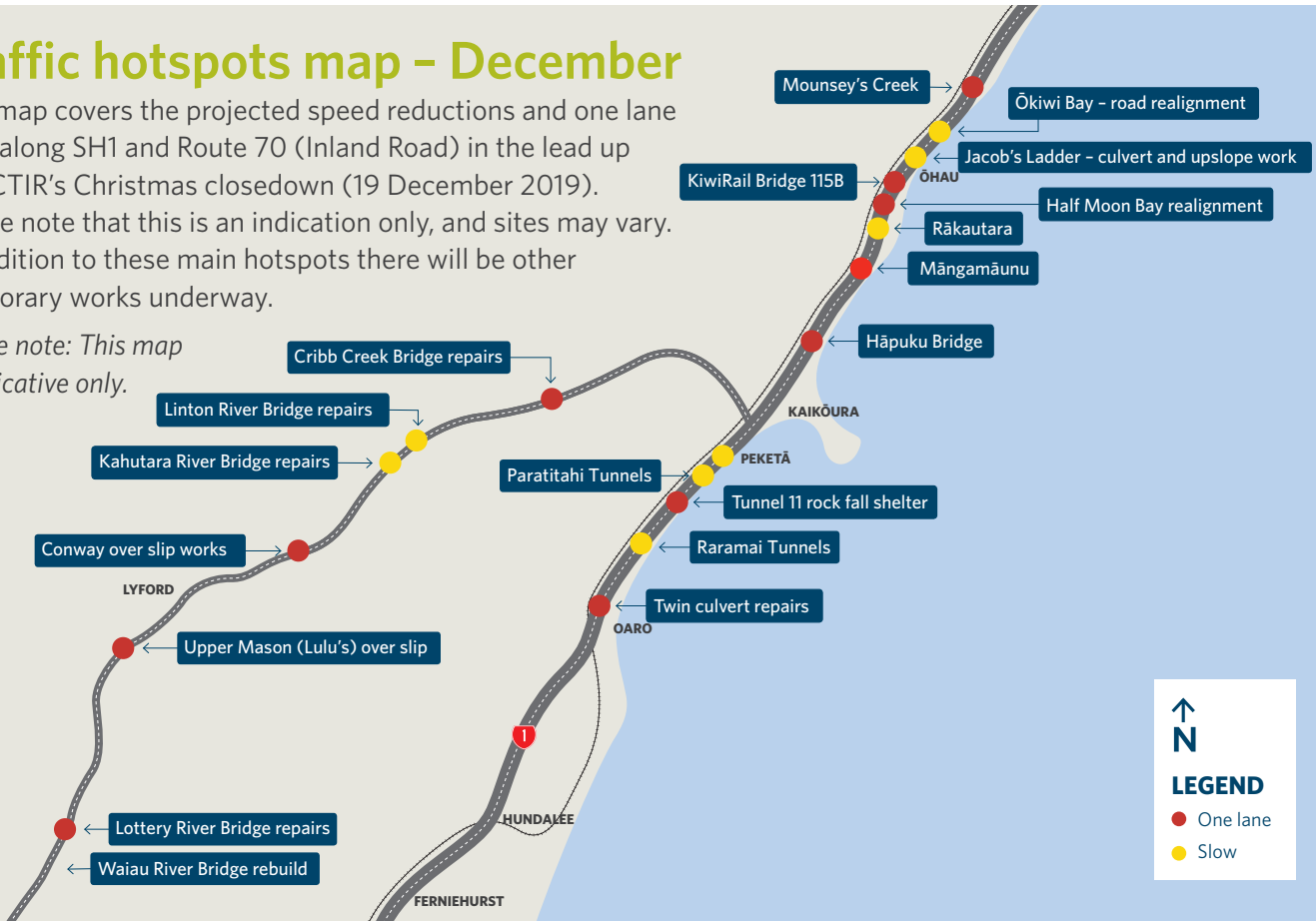
NCTIR Project Director Tony Gallagher says the visit to the Marae was very special. 'Such beautiful people who made us all feel so welcome, shared their own stories, built the story behind the Cultural Artworks Package which we will have the privilege of building. I was so proud to be part of the team and deeply appreciated the way we participated and came prepared to learn.'



Traffic hotspots map - December

This map covers the projected speed reductions and one lane sites along SH1 and Route 70 (Inland Road) in the lead up to NCTIR's Christmas shutdown (19 December 2019). Please note that this is an indication only, and sites may vary. In addition to these main hotspots there will be other temporary works underway.

Please note: This map is indicative only.



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LEGEND
● One lane
● Slow

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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.