



The Bulletin Kaikōura earthquake update

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A LASTING IMPRESSION

A new feature to the Kaikōura coastal route is edging closer to completion. From Irongate Bridge to just north of Ōhau Stream, 2.5 kilometres of seawalls are being built – more than 10 metres high in places. Work started on the seawalls in March 2017 when crews had to work around the tide to construct the foundations.

Over the past year the seawalls have been built on top of the foundations; capping blocks are now being placed to top off the walls and a durable structural concrete shared pathway is being poured adjacent to the walls. 'We completed the shared pathway a couple of weeks ago at Site 2, just north of Irongate Bridge,' says coastal route alignment construction manager, David McGoey. 'It was a proud moment for all of us involved. We are pushing ahead with the rest of the sites and are looking forward to being able to use the route as motorists, cyclists and pedestrians when it is all finished.'

Along the seawalls, the road remains unsealed at the moment but drivers can expect to be driving on a sealed road by the end of July. 'It's a weather dependent goal, but we are hoping to have the seawalls completed by June, the road sealed and rockfall protection fence installed by the end of July,' says David.

Having been designed and built for the unique coastal and mountainous environment, the seawalls offer long term sustainable protection to the road and rail transport corridor north of Kaikōura from the coastal elements and seismic activity. 'We have designed the seawalls to last 100 years and withstand the predicted natural events, which they could face,' says senior geotechnical engineer Charles McDermott.

Designing the seawalls was not just limited to pure structural engineering – it was also about creating an experience using the natural curvature of the coastline for a safe, enjoyable trip along this world class scenic route. 'The seawalls are now a feature of the drive, offering a new experience with the coastline and once completed will offer drivers, cyclists and pedestrians an opportunity to experience the beauty of this part of New Zealand,' says Charles.

Learn more about the design and build of the seawalls on page 4 and 5.



The seawall and shared pathway taking shape at Site 2 north of Irongate Bridge

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.





ON TRACK TO WIN

The reopening of the Main North Line railway between Blenheim and Christchurch in just under ten months after the Kaikōura earthquake has taken out a prestigious trans-Tasman award.

The Main North Line Earthquake recovery project was announced winner of the Rail Technical Society of Australasia's Biennial Project Award for its work reinstating the line following the 7.8 November 2016 quake.

The judging panel described the KiwiRail led project as an 'inspiring example of how railway people respond energetically and successfully to the most severe challenges.' They also noted that the line was opened for freight trains three months ahead of schedule, reconnecting communities and taking heavy trucks off vulnerable inland routes while work on State Highway 1 continued.

KiwiRail's Earthquake Recovery Project Director Walter Rushbrook, who accepted the award, says the win is recognition of the determination and dedication of all those involved. 'We are enormously proud to be recognised by the Australasian rail profession for the tremendous work that was done.

'This is the result of an outstanding team effort by our KiwiRail team, our project partners the New Zealand Transport Agency and the NCTIR Alliance, central and local government and the local community, who were incredibly supportive and patient while the work was carried out. 'As we head into the second winter since the earthquake, the award is just the boost we need to finish off the remaining recovery works on both road and rail.

'The earthquake recovery project was the fastest paced and largest job any of us were ever involved in, with more than 1700 people involved at the peak. Not only did we 'move mountains to reconnect communities' but we managed to get the rail line operating again three months ahead of schedule.'

The RTSA is a joint technical society of Engineers Australia and Engineering New Zealand (formerly IPENZ), established to further the interests of the railway industry and advancement of railway technology and management in Australasia.



Rail Design Manager, Daniel Headifen and KiwiRail's Earthquake Recovery Project Director Walter Rushbrook accept the award in Australia



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Some of the team behind the rail rebuild project gathered for the final weld reconnecting the Main North Line in 2017



REAPING 24/7 REWARDS

On 30 April 2018, for the first time since the November 2016 earthquake, full access from

Picton to Christchurch was given, and along the corridor local businesses and residents were delighted.

David and Jo Gilmore are especially happy about the 24 hour access to State Highway 1. 'It is an amazing achievement in such a short time,' says David, 'and we are grateful to all the people involved. It is a truly incredible engineering achievement.'

The couple travel from their home in Ward to Christchurch farmers' markets, where they sell their home grown, hand-crafted Flaxbourne olive oil and hazelnut pesto. 'We won't have to rush home from Christchurch at lunchtime any more, says Jo, 'we can have a rest after the market and take our time.'

The Gilmores have 400 olive trees and 180 hazelnut trees, and they were hit hard by the earthquake.

Having the road re-open in December 2017 was a huge relief to them, as it reduced their travel time from over seven hours to three, and now that travellers can journey anytime day or night, they look forward to many of their customers stopping by to see them. 'We are just picking up our feet again. We have had a very good year so far, and we've got a good harvest coming on,' says Jo.

Full access from Picton to Christchurch offers travellers flexibility which has not been available for over a year, and the Gilmores are excited about what it means for business.

'We sell from our door, and lots of our customers from Christchurch will call in when they come to visit friends and family in Marlborough, so for us, the more people who are travelling on SH1, the better.'

UPCOMING NIGHT CLOSURE, SOUTH OF KAIKŌURA



Our team will be removing up to 16 of the temporary shipping containers near the Parititahi Tunnels overnight on Monday, 28 May. Crews have been working on widening the southbound tunnel at this location. To enable us to finish the northbound tunnel, the containers need to be removed so we have access to finish the widening work. Further night closures are planned in June to move more containers and concrete blocks that have been serving as rockfall protectors. Closure dates will be publicised as soon as they are confirmed to give as much notice as possible to drivers and the community.

SH1 between the SH1/Leader Road intersection (north of Cheviot) and Peketa will close **at 10pm on Monday 28 May and reopen at 6.30am on Tuesday 29 May.**

During this time access to and from Kaikōura from the South will be via Inland Road, 24/7.

SH1 north of Kaikōura will be open.

For more information please visit www.nzta.govt.nz/media-releases/night-closures-planned-for-sh1-south-of-kaikoura/

To stay up-to-date with real-time travel information please visit www.nzta.govt.nz/p2c or call **0800 4 HIGHWAYS** (0800 44 44 49). Thank you for your support and patience.

SEAWALLS: REBUILDING A COASTAL ROAD

State Highway 1 and parts of the Main North Line railway, between Irongate Stream and Ōhau Stream, were decimated by the 2016 earthquake when about 350,000 cubic metres of material fell onto the transport corridor. The steepness of the Kaikōura ranges and the swells of the Pacific Ocean presented constraints and challenges which needed us to design a sustainable solution for protecting the transport corridor. The earthquake pushed up the ground along the coastal route providing more land on which to rebuild the road away from the vulnerability of slip prone slopes. Different design solutions for the narrow corridor able to withstand the natural elements were investigated, including bridges, embankments and seawalls. We went mainly with seawalls and embankments which we decided were more suitable for the coastal environment we were working in.



ŌHAU POINT: September 2017



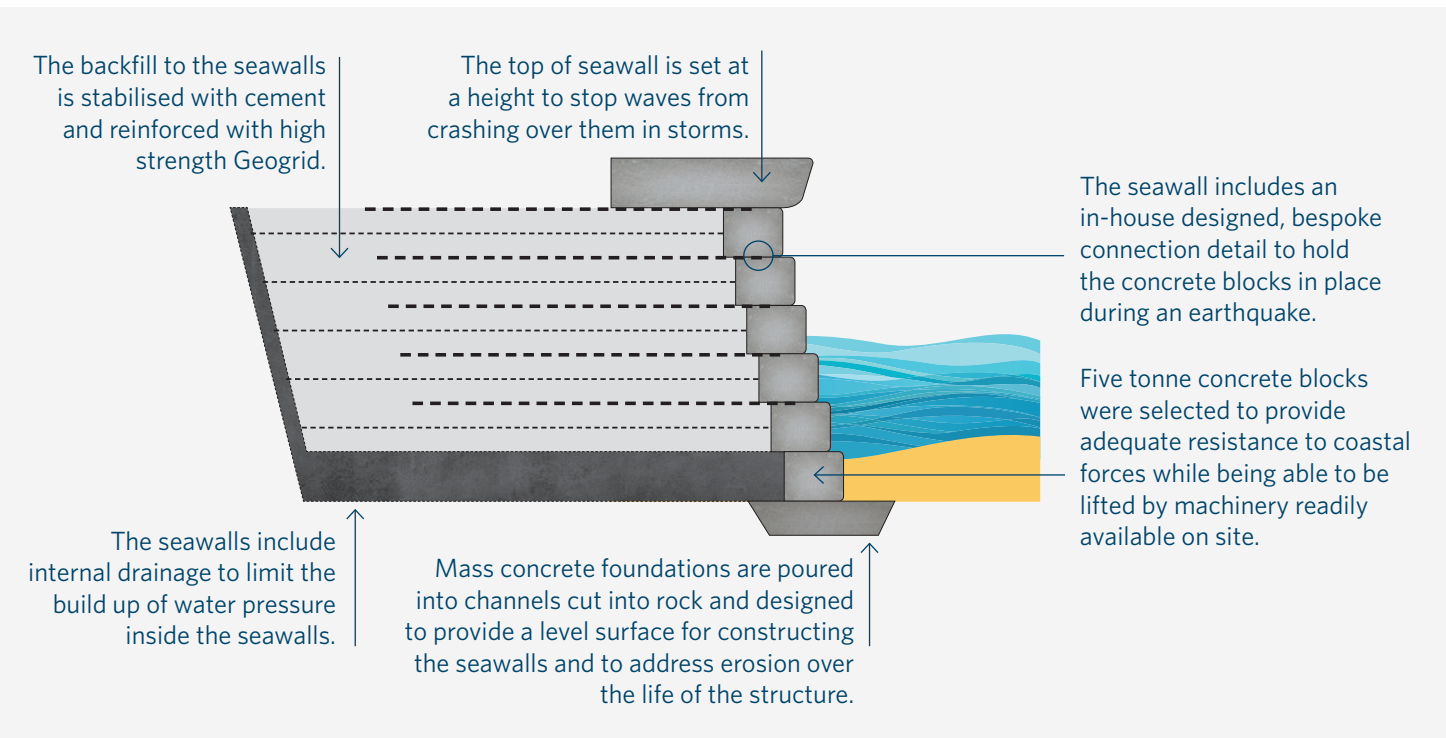
ŌHAU POINT: May 2018

Why seawalls?

The seawalls fit within the surrounding environment, are made from locally sourced materials where possible and have a reduced impact on the ecology of the coastal marine area when compared with other solutions. Seawalls also fit the narrow space in which we were working while offering protection to our crews who were working in what was at times an aggressive environment. It is also possible to retrofit the seawalls in the future to address additional sea level rise.

What do the seawalls do?

Seawalls protect the newly built transport corridor from the erosion forces of the Pacific Ocean and are engineered to move as one withstanding seismic activity minimising travel disruptions. The coastal protection provided by the seawalls, in the first instance, protects the road but is, by extension, a defence for the railway too.



Constructing the seawalls

Many of the foundations for the seawalls sit under the high tide mark along the coast. This meant timing the pouring of the concrete foundations with the changing tidal movements took perfect planning. The seawalls have stretched resources across New Zealand with the concrete blocks being made in Christchurch and Blenheim before being transported to site. Cranes were unsuitable for the narrowness of the corridor, so the five-tonne concrete blocks were designed to be put in place by 20-tonne diggers.



A drive to remember

The seawalls meant we could open SH1 on 15 December 2017. If you drove over the unsealed road across the seawalls before Christmas you were driving at a lower height than if you were to drive the same part of the road today. We have continued building the seawalls up since the road opened.

Behind the design of the seawalls is a focus of creating a safe and pleasurable journey along this stunning part of New Zealand's coastline, whether driving or using the yet-to-be-completed shared path.





WINTER IS COMING

It's time for drivers to start preparing for winter driving, says NZ Transport Agency Network Operations Manager, Tresca Forrester.

Before travelling on State Highways between Picton and Christchurch, drivers should plan ahead to stay safe. Both available routes can become treacherous in extreme weather conditions and this means pre-planning is essential. Extreme weather conditions, such as ice, snow, fog and wet weather, can hit quickly so people need to be prepared and keep up-to-date with the latest weather reports.

'In the event of adverse weather, we may close the road as a precautionary measure – this can happen day or night. Drivers need to allow plenty of time for their trip and check on real-time travel information through www.nzta.govt.nz/p2c or by calling **0800 4 HIGHWAYS** (0800 44 44 49). We recommend checking at least two hours before travel and during your trip,' says Ms Forrester.

SIMPLE RULES FOR SAFE WINTER TRAVELLING:

- allow extra time
- ensure your vehicle is safe for winter driving
- drive to the road and weather conditions
- slow down and be prepared for unexpected hazards
- allow greater following distance between you and the vehicle ahead
- make sure your cell phone is well charged, check the car charger too
- have blankets, snacks, bottles of water ready in case of emergency or a breakdown

HOW TO STAY UP TO DATE:

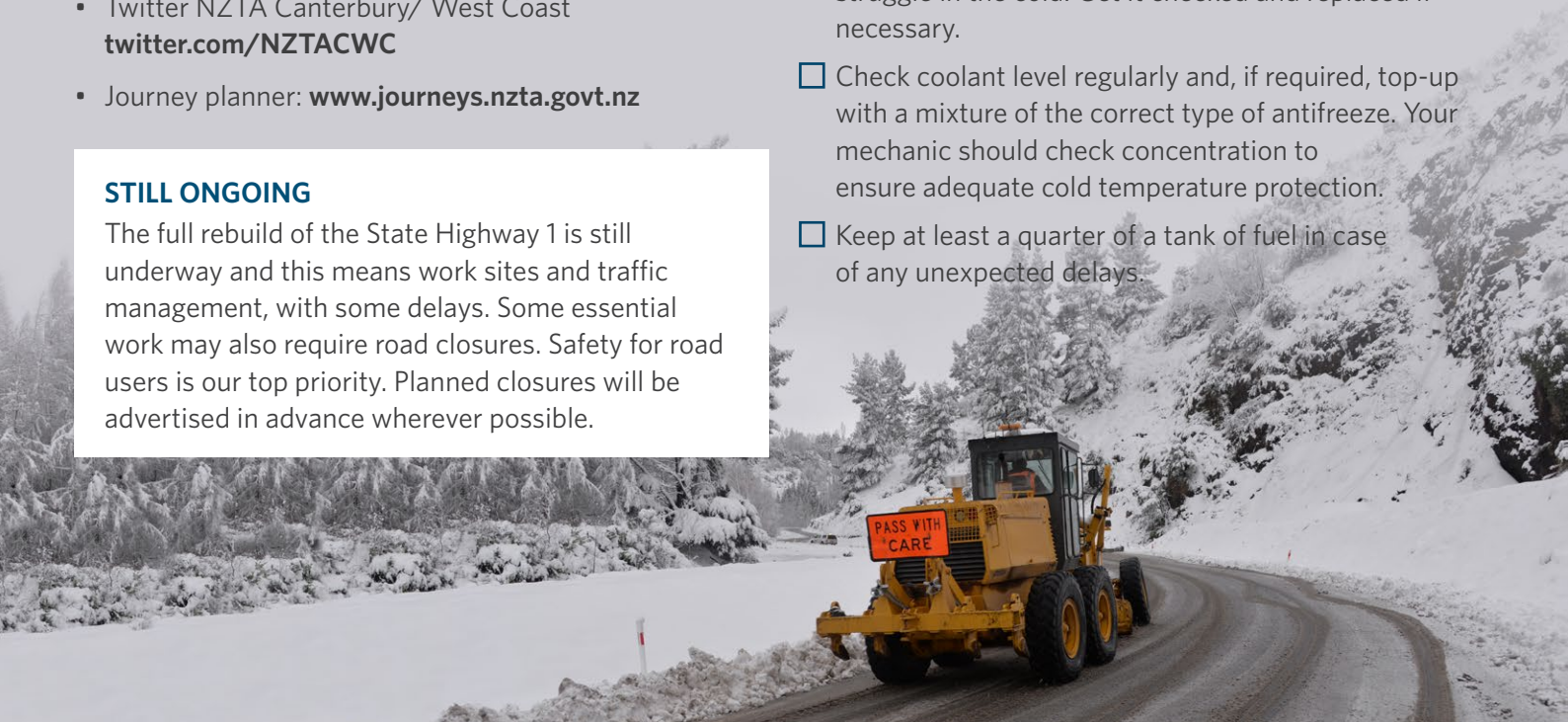
- **0800 4 HIGHWAYS** (0800 44 44 49)
- Picton to Christchurch route and Kaikōura www.nzta.govt.nz/p2c
- www.nzta.govt.nz/traffic
- Facebook www.facebook.com/nztasouthisland
- Twitter NZTA Canterbury/ West Coast twitter.com/NZTACWC
- Journey planner: www.journeys.nzta.govt.nz

STILL ONGOING

The full rebuild of the State Highway 1 is still underway and this means work sites and traffic management, with some delays. Some essential work may also require road closures. Safety for road users is our top priority. Planned closures will be advertised in advance wherever possible.

VEHICLE CHECKLIST GUIDE:

- Check tyre treads. You should have at least 3mm of tread for winter driving. Consider winter tyres for improved safety. Check pressures at least every fortnight.
- Check brakes are in good running condition.
- Check your lights all work – low and high beam. Check and clean all lights regularly to make sure you can see and be seen clearly.
- Check your windscreen wipers and replace worn wipers.
- Clean windscreens, inside and out, to reduce dazzle from the low sun and ensure you have good visibility.
- It is recommended you carry snow chains and go to www.nzta.govt.nz/winterjourneys website which has a video link to show you how to put them on your tyres. In some areas chains cannot be used and the road will either be open or closed until it can be cleared.
- 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.
- Check coolant level regularly and, if required, top-up with a mixture of the correct type of antifreeze. Your mechanic should check concentration to ensure adequate cold temperature protection.
- Keep at least a quarter of a tank of fuel in case of any unexpected delays.





BRIDGING OUT

While full access was restored to State Highway 1 between Picton and Christchurch on 30 April, works continue full steam ahead to finish required repairs on the rail, road, tunnels, and bridges along the corridor.

The 43m-long Needles Bridge and the 65m-long Flaxbourne Bridge are located one and two kilometres, respectively, north of Ward. Both bridges were built in 1952 and sustained substructure damage during the November 2016 earthquake requiring pier bolstering and abutment retrofitting.

Repairs on the bridges started in October 2017 and have continued to be used safely during most of the works with restricted speeds of 30km/h. With closures required during the Needles Bridge abutment repairs, the team built a temporary structure spanning the river that is being used to detour traffic. For the Flaxbourne Bridge the abutments were excavated from the top down leaving a large hole at the beginning and end of the bridge. Crane mats were placed across the holes and allowed vehicles to cross them.

Hard work and dedicated planning have kept the teams on schedule and the Flaxbourne Bridge is now operational at full speed, with Needles Bridge expected to be operational at full speed by 1 July.



MADE AND MINTED IN HISTORY

Re-establishing State Highway 1 and the Main North Line railway has made its mark with NZ Post launching a stamp collection dedicated to the rebuild project.

Following a site-visit in September last year, NZ Post Head of Stamps Simon Allison says the work that was done to reconnect the South Island was almost Herculean. He was awed by the scale of the operation, the feats of engineering being used and the incredible resilience shown by the workers and community alike.

Like so many businesses, NZ Post experienced the immense challenges caused by the shattered transport infrastructure, both immediately following the earthquake and during reconstruction. To combat a broken highway and rail corridor, NZ Post chartered flights to restore mail and courier services to Kaikōura so essential items could be delivered. With SH1 and the rail out of action, all mail travelled the alternate route adding an extra 280 kilometres to the journey.

The Reconnecting New Zealand commemorative series illustrates the determination behind the NCTIR project to literally move mountains and reconnect communities across Hurunui, Kaikōura and Marlborough after the 14 November 2016 earthquake.

Six stamps have been designed featuring the new seven-span bridge over Irongate Stream, geotech teams and abseilers working on cliff faces warning crews below of landslides, earthworks teams moving landslide material, the building of seawalls, KiwiRail's temporary rail bridge 131, and the first freight train travelling the Main North Line.

The stamps are on sale now at www.nzpost.co.nz/reconnectingnz



24/7 SAFETY



State Highway 1 (SH1) is now open 24 hours a day and safety is our number one priority as vehicles use the route 24/7. In the event of predicted heavy rainfall the NZ Transport Agency may close the road as a precautionary measure – this can happen day or night. For real-time travel information about SH1 visit nzta.govt.nz/p2c or call **0800 4 HIGHWAYS (0800 44 44 49)**.

What to expect when travelling SH1 at any time:

- Passing by or travelling through construction sites where works continue
- Stop/go areas controlled by traffic lights
- Single lanes in place with speed restrictions
- Unsealed road and loose gravel in places
- Trains travelling in either direction from Picton to Christchurch
- 'Danger - rockfall zone - no stopping' signage for safety
- Signposted stopping areas - the ONLY places to safely pull over for a break
- Sharing the road with freight vehicles and construction vehicles



Watch out for cones and reflectors when travelling at night.

Here's what you can do to make sure your journey is safe:

- Obey all instructions, signage and only travel in designated areas
- Drive to the conditions: the weather, the road you're on, the vehicle you're in, the traffic around you, and your level of experience
- Obey traffic lights
- Make sure everyone in your vehicle is wearing their safety belt
- Check weather and travel conditions before you start on your trip
- Be prepared when travelling with warm clothes, food, water, and a charged cell phone
- Be aware of your environment:
 - Be patient, cautious and courteous
 - Follow all traffic signs and any instruction given by road crew
 - Obey speed limits to keep all road users and workers safe
 - Keep fresh by taking breaks and supporting communities on the route



If you're cycling, travel during the daytime for your own safety

Rail safety for drivers and pedestrians:

- ✓ Expect trains at any time, from either direction
- ✓ Take extreme care when approaching 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
- ✓ If there is a queue of traffic, before you drive over a railway crossing always ensure there is space on the other side for your vehicle to fully cross the tracks
- ✓ Trains travel faster than they appear and can't stop quickly. Always check both ways at level crossings before proceeding

Allow plenty of time for your trip and check the status of the road by visiting www.nzta.govt.nz/p2c or calling **0800 4 HIGHWAYS (0800 44 44 49)** at least two hours before travel.

