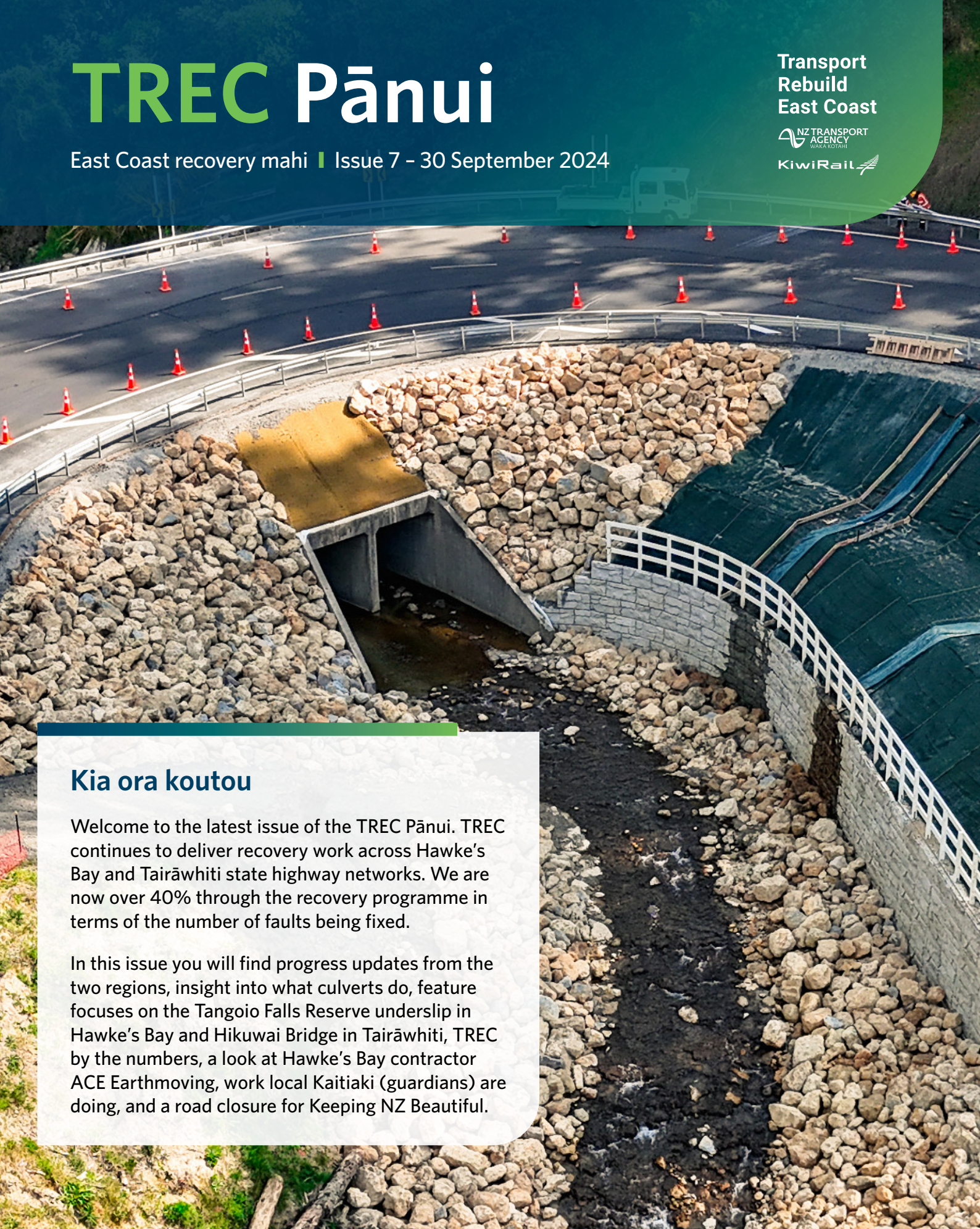
TREC Pānui

East Coast recovery mahi | Issue 7 – 30 September 2024

Transport Rebuild East Coast

NZ Transport Agency Waka Kotahi

KiwiRail



Kia ora koutou

Welcome to the latest issue of the TREC Pānui. TREC continues to deliver recovery work across Hawke's Bay and Tairāwhiti state highway networks. We are now over 40% through the recovery programme in terms of the number of faults being fixed.

In this issue you will find progress updates from the two regions, insight into what culverts do, feature focuses on the Tangoio Falls Reserve underslip in Hawke's Bay and Hikuwai Bridge in Tairāwhiti, TREC by the numbers, a look at Hawke's Bay contractor ACE Earthmoving, work local Kaitiaki (guardians) are doing, and a road closure for Keeping NZ Beautiful.

"Ehara taku toa i te toa takitahi, engari he toa takitini"
Success is not the work of an individual, but the work of many

TREC Pānui is a monthly newsletter from the Transport Rebuild East Coast (TREC) Alliance updating communities across Te Tairāwhiti (Gisborne) and Te Matau a Māui (Hawke's Bay) about the recovery work on state highways and rail networks impacted by Cyclone Gabrielle.

Making it happen - *progress updates*

Thank you for your patience and for helping to keep our people and other road users safe while this essential work is done.

35

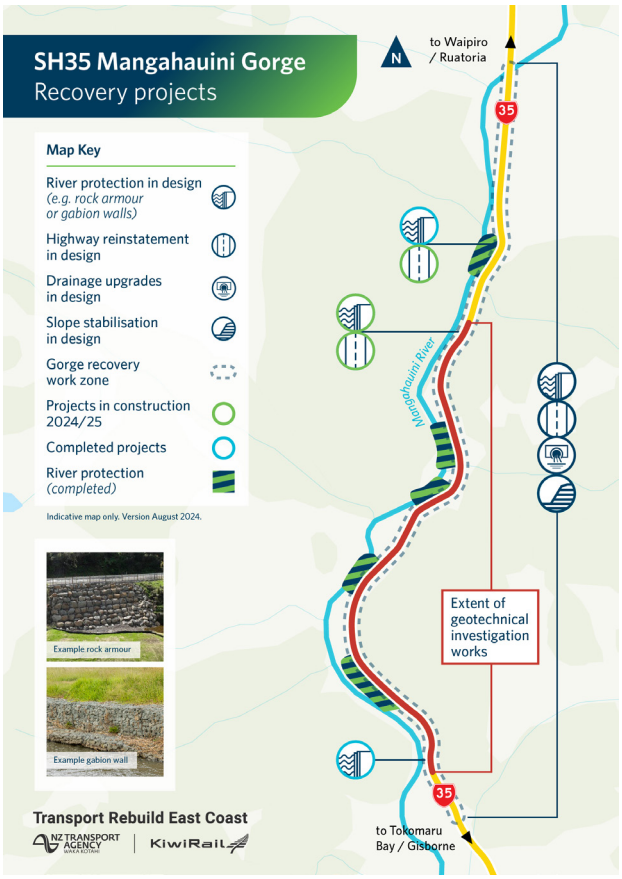
Mangahauini Gorge

Ground investigation work (drilling) will be starting soon to help with the design of additional improvements on State Highway 35 (SH35) through Mangahauini Gorge.

To gather essential information about ground conditions, crews will be drilling 100mm diameter boreholes to approximately 20-metres deep at around 17 locations along the road during October. Each hole will take 2 to 3 days to complete using a truck-sized drilling machine. Excavators and digging crews will also be assessing the ground and drainage conditions under the road.

Also, over the following months there will regularly be engineers in the gorge, inspecting roads, drainage and structures, and surveying locations and levels using drones and traditional handheld equipment. To create space for this work we may need to close one lane of the road at times.

This map shows ongoing work on SH35 including these geotechnical ground investigations along the red line. This is where around 17 boreholes will be drilled, pits excavated, and engineers will be inspecting the below-ground conditions.



2

Steady progress on Otoko Hill

Progress to strengthen State Highway 2 (SH2) through Otoko Hill is tracking well with TREC having ticked off three of nine sites planned for the area.

These projects will strengthen and stabilise the areas around the state highway and help guide water away from the road. This will help prevent slips and road closures in the future.

We've staged these projects to minimise disruption on Gisborne's main route north. A project that has just started is one of the larger sites where we're repairing a significant dropout. The area is operating under a one-way system with traffic lights and should be completed in November.

A further three sites are planned to start before Christmas and the final site will get underway next year.

Check out our video [bit.ly/3MYnQKo] to find out more about the type of work underway at Otoko Hill.

Upcoming: Road closure Rotokautuku Bridge 35

Rotokautuku Bridge on SH35 will be closed Monday 7 October from 12pm to 12.30pm for work to be undertaken.

While the bridge remains structurally sound, repairs to the bearings and cross bracing are needed to restore the damage caused by Cyclone Gabrielle and to improve its strength. TREC crews will be raising the bridge by a few millimetres to carry out this work.

Three more 30-minute bridge closures are required in late October and November with the dates and times to be communicated in the next few weeks.

Making it happen - *progress updates*

Thank you for your patience and for helping to keep our people and other road users safe while this essential work is done.

Hawke's Bay

Making progress at Devil's Elbow

Devil's Elbow is an extremely hilly and winding section of SH2 in Hawke's Bay that was massively damaged during Cyclone Gabrielle. Blocked and damaged stormwater culverts and drains, overslips and underslips make it a complex site consisting of more than 11 recovery projects (see map below).

Check out our video [bit.ly/4eyRDVV] to find out more about the extensive repair work underway.

Repairing an underslip at White Pine Bush

Take a look at our video [bit.ly/3XGoLE6]showing some of the work to get SH2 at White Pine Bush, north of Napier, back to two lanes after a major underslip collapsed the road's shoulder and a metre of the road.

Most of the work has been happening out of sight from the road. Our team has been installing anchors to stabilise the ground beneath it. This is followed by work to rebuild the shoulder, repave the road, and install the guardrail.

Recently, we started work on White Pine Bush North, another recovery site just up the road from the underslip repair. This involves building a retaining wall to repair a dropout.

Upcoming: Working at night to keep you moving during the day

SH2 at Waikare Gorge is scheduled to be closed overnight on Monday 30 September and Tuesday 1 October, 9pm to 5am both nights. There is no detour.

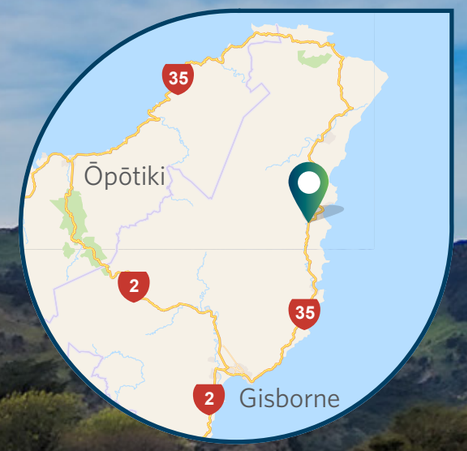
We need to close the Bailey bridge to replace the decking. This will make the bridge safer by reducing the risk of skidding, especially in bad weather.

We know a full closure is disruptive, which is why our crew are working at night when fewer people travel. We'll make the most of the closure by doing other work on SH2 and Devil's Elbow at the same time.

Emergency services will be assisted through the site as safely and quickly as possible.

Dates are subject to change based on weather or other issues and we advise you to check Journey Planner [journeys.nzta.govt.nz/journey-planner] to plan your travel during this time. See the Facebook post [bit.ly/3XUJbKY], and the traffic bulletin [bit.ly/4dm5X2Z].

35 Hikuwai Bridge



Cone Penetration Testing (CPT)

Specialist equipment is used to investigate and analyse potential geo-technical challenges.

A cone is pushed into the ground and an adjoining cable sends information to a computer at the surface, including data on the strength of the ground.

Alignment

The new Hikuwai Bridge No.1 will follow the same alignment as the previous bridge.

Bailey bridge

Temporary Bailey bridge installed post Cyclone Gabrielle. Spanning 85 metres, the Hikuwai Bailey bridge is the longest in the country. This will be removed following the construction of the new bridge.

Test Pits

These pits/ trenches are used to help identify the rock level of the area between 1-4m deep.

Electro-seismic surveying

The surveying covered the length of the new alignment and also included use of a boat on the water to gather data.

Bore holes

Seven bore holes will be made up to 25m deep as part of the geo-technical investigations and to serve as pilot holes for installing piers.
[Indicative locations]

Environmental controls

Silt socks, a stormwater sediment and filtration control, are in place at each excavation and test point area. This includes the test pits, CPT machine and on top of the drilling point for boreholes.

Rebuilding Hikuwai Bridge No. 1

We are working with local contractors to build a new permanent Hikuwai Bridge No. 1.

Cyclone Gabrielle caused significant damage to SH35 and washed it away cutting off communities in Tokomaru Bay and further north.

What's happening now?

To build a permanent and resilient bridge the TREC design/engineering teams need to know what lies beneath the surface of Hikuwai river. Early investigations will help with the new bridge design.

A Gisborne based company is using electro-seismic surveying techniques to map out the geology of the land below the river and any obstacles, which might exist.

This technique involves using a boat to send gentle seismic waves into the ground. These waves travel through the water and the ground, and when they hit different types of materials, they create electrical signals.

These early investigations also include some drilling to be undertaken by another local contractor. This will take up to approximately three weeks to complete.

What's the next steps?

It is expected construction on the new bridge will start early next year. We will keep the community up to date with what is happening on this project and will continue to work closely with Iwi/hapū, landowners, council, and local contractors as we design and deliver the project.

You can keep up to date with this project on our website [bit.ly/4enKNmn].

2 Tangoio Falls Reserve

Hawke's Bay

Timber crib wall

We will remove this section and install nine 7m anchors and fourteen 4m anchors. Then shotcrete at the bottom of the timber wall.

Traffic management

Vehicles will be stopped before the site under stop/go.

Closed lane

Mortared rock wall

We will drill through the existing rock wall with about forty 7m anchors and thirty seven 4m anchors, followed by shotcrete.

Concrete crib wall

This crib wall was not damaged in Cyclone Gabrielle and will remain as it is.

Steep worksite

It is 30m from the road to the stream and the cliff face is at a steep 50-60 degree angle.

Waterway protection

We will install funnels halfway up the cliff to collect any debris or grout that may fall out of the drill sites. A bag will be under each funnel and cleared every day. This will prevent it falling into Te Kareaara stream below.

Bird nests

Before the work starts, we will check the area for nesting native birds. If we find any, we set up an exclusion area around them.

A Steep Job - Stabilising Tangoio Falls Reserve Underslip

On SH2 about 25km north of Napier on the road above Tangoio Falls Scenic Reserve, one of the last recovery projects in the White Pine Bush recovery section will start mid-October.

This will be one of our trickiest recovery jobs because it is steep, narrow and difficult to access.

What's happening?

Two retaining walls on this steep slope were damaged: a small timber crib wall on the left in the photo and a mortared rock wall, hidden behind vegetation.

We will stabilise sections of two damaged retaining walls with ground anchors and shotcrete. Much of this will be done by abseiling crews. They will use the guardrails to abseil off to be able to construct the works beneath the road.

The road will be down to one lane under stop/go traffic management so the team can access the site safely and machinery and drilling equipment can be stored.

We will be working hard to get this back to two lanes for Christmas.

Geology - More about papa rock

The type of rock at this site is mainly a combination of pale blue-grey mudstone and sandstone, commonly called papa. When this rock gets wet, the surface becomes very slippery – this will be a challenge for our crews.

The name papa is derived from the te reo Māori word Papatūānuku. This 'young' rock was deposited on the sea floor over the last ~5 million years, then later uplifted. It is relatively 'soft' or weak rock in engineering terms, as it was never deeply buried or compacted.

The design of this project aims to reduce ongoing weathering or 'slabbing' of the rock face, which could undermine the reinforced retaining walls.

Digging deeper: TREC 101

Under road resilience: culverts

After intense weather events in 2023, New Zealand's most Googled definition was 'culverts'.

Culverts are widely used with New Zealand roading infrastructure as an option to manage water and prevent road damage as they channel and drain water away from the road.

Culverts are a critical part of New Zealand's state highways given the country boasts around 425,000km of rivers and streams in which flows will ebb and intensify depending on the weather. The rule of thumb for the country's nearly 11,000km of road is a culvert about every 100 – 150m.

Working on culverts has been a feature of TREC work across Hawke's Bay and Tairāwhiti as the intensity of water and debris flows caused by Cyclone Gabrielle wore away at the land supporting the culverts and state highways.

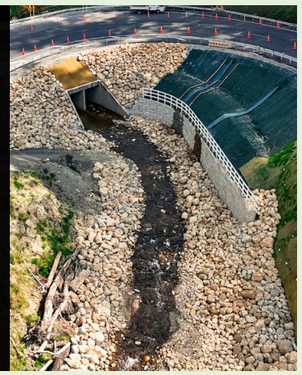
This photo shows a twin box culvert at Devil's Elbow after Cyclone Gabrielle. The intensity of the water and debris being carried by the water flow wore down (scoured) the earth and embankments surrounding the culvert at both ends. You can see the earth under the road carved away by the water and debris flows. The road was severely weakened and at risk of falling away further without repairs. The culvert itself was still functional and did not need replacing.

What culverts do

Culverts channel water with the aim of protecting the road above them and the land supporting the road from excessive water damage. The water is then diverted appropriately or maintained e.g. at Devil's Elbow culvert the water flow is maintained through the culvert. The area around culverts is engineered to ensure it is stabilised and can better handle intense water flows and debris. When culverts become blocked with debris it can cause flooding and potential dropouts resulting in road damage.

Types of culverts

Generally, in New Zealand we use round culverts with a diameter of up to 2.1m and box culverts for larger flows, such as the one at Devil's Elbow or corrugated metal culverts for some of the largest flows. Most will be ordered 'off the shelf' but some of the larger culverts will be built on site. The life span of a culvert is between 75 to 100 years, depending on the materials they're constructed from.



At the inlet of Devil's Elbow a retaining wall and rip rap (large rocks) have been put in place to protect the road and the embankments surrounding the inlet. At the outlet we have strengthened the embankments with a combination of concrete block retaining walls and reinforced aggregate covered with scour proof geo-fabrics, and rock lining. This will improve the resilience of the road across the stream.

Where are they used?

After Cyclone Gabrielle there was much damage at Devil's Elbow culvert and Captain's Culvert as they became blocked, and water and debris damaged the surrounding areas and the state highways. We did not have to replace the culverts, we cleared them of debris and stabilised the areas around them.

Stabilising work can include putting in gabion baskets (baskets filled with rocks), retaining walls, reinforced aggregate, scour proof geo-fabrics, and rock lining.

To protect the culverts and road above them we have installed debris catchers to prevent the culverts from becoming blocked and water and debris being pushed up over the road. Maintenance and operation teams will regularly check and clear the debris preventing large build ups.

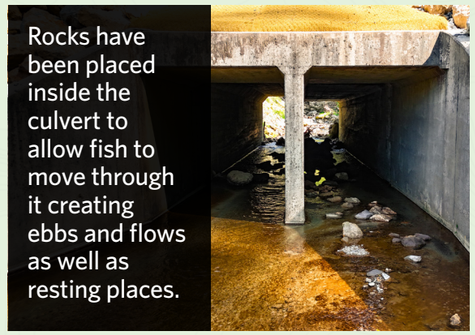
We are replacing smaller culverts where needed across both regions where they are damaged, and a larger culvert is needed for the potential water flows.

Environmental protections

Allowing aquatic life to move through culverts is important. For new culverts, we create a natural floor by burying the culvert below the stream bed to align it with the natural channel.

Inside the culvert we aim to create a natural environment for aquatic life to move through by using rocks and other materials to make ripples and resting places.

For repaired culverts, we aim to maintain or improve fish passage at the inlet and outlet of the culvert using rock rip rap and by fixing perched (overhanging) culverts, for example we were able to fix the overhanging culvert apron at Devil's Elbow culvert which was a barrier to fish.



Rocks have been placed inside the culvert to allow fish to move through it creating ebbs and flows as well as resting places.

TREC by the numbers

118 Local subcontractors worked with

3341 People inductions

514 Plant inductions

More than 40% of faults fixed

674 Soil anchors installed

36 Projects with construction complete

17 Community events

1 School visit

5.2km of soil anchors

66m³ of grout used

15 Relocated fish species

Of those, **6** species are At Risk - Declining

2,985 fish from **11** sites

Iwi partnership essential to good outcomes for TREC

Working in partnership with local Iwi and hapū is critical to the work TREC does across Te Matau-a-Māui and Tairāwhiti.

Kaitiaki (guardians), from Te Matau-a-Māui and Tairāwhiti Iwi and hapū, are an essential part of TREC's recovery work as Mana Whenua play a significant role for the TREC projects to consider a Te Ao Māori perspective.

Appointed by Iwi, the Kaitiaki provide cultural monitoring and environmental oversight on TREC projects within their respective rohe. TREC works with 21 Iwi and hapū across the two regions; 13 in Te Matau-a-Māui and eight in Tairāwhiti.

Kaitiaki from Te Aitanga-a-Mahaki (Mahaki) are working with TREC project teams within the Mahaki rohe – along SH2 north of Tūranganui-a-Kiwa (Gisborne). Bringing comprehensive local knowledge and history Kaitiaki from Mahaki have spent time on site with TREC team members including ecologists to discuss approaches for minimising the effects on the environment and potential ongoing impacts proposed TREC works may have on culturally significant land, such as urupa. They are involved in cultural monitoring, Cultural Impact Assessments and identify potential issues pertaining to the environment.

Mahaki is one of eight iwi groups in Tāirawhiti with a connection to the recovery corridor where TREC is working.

Te Aitanga-a-Mahaki (Mahaki) Kaitiaki, Morehu Pewhairangi

(l-r) TREC Pou Cultural Advisor - JJ Solomon, Planner - Sarah Heritage, Pou Arahi Mahaki - Nancy Tarawa, Kaitiaki Morehu Pewhairangi, and Project Manager - Nick Reid.

Logan Nicholls, ACE Earthmoving

At just 28 years old Napier local, Logan Nicholls, is the director of ACE Earthmoving based in Pakowhai, Napier working on TREC projects.

He started the company about 18 months ago with a little 3.5 tonne excavator and has slowly built up the business to four excavators and five staff including himself.

"All I have really done is earthmoving and saw the opportunity to go out on my own. I thought if I am not going to do it now then when, so decided to have a crack," says Logan. "It's been a roller coaster of a ride but a good one."

Early Days

Work began on residential sites, subdivisions and subcontracting for larger civil construction firms before he signed up to work with TREC.

His company has worked on State Highway 2 at Sandy Creek, an underslip at Kotemaori just north of Tūtira, along with other truck work. Through TREC work he has expanded his skill set and knowledge for bigger civil projects particularly for processes and documentation.

"The TREC project managers have been really good to deal with and have helped out with any queries," says Logan.

Being a local and having lived through the wrath of Cyclone Gabrielle and the aftermath, Logan is pleased to be supporting the region by helping out with the recovery of the state highways.

Local pride, local commitment

"It's good to be able to be part of the project and I hope we can help out more," he says. "The work and number of projects around is interesting. I have never really seen as many projects as there is through TREC."

For him the work is rewarding. "It's impressive to see something you have built and move so much earth in such a small amount of time. You walk away from a completed job with a sense of pride," says Logan.

Logan hopes to keep expanding ACE Earthmoving and bring on some more experienced project managers to keep the established team, which is relatively young, learning and expanding their knowledge.

"It's been a bit of figuring it out as I go and a big learning curve, but I have had a mentor I used to work for and support from people across the board," he says.

ACE Earthmoving plant on site

Think community

Clean up Central Hawke's Bay SH2

Keep New Zealand Beautiful clean up week for 2024 happened last week. As part of New Zealand's largest clean-up event SH2 between Waipawa and Waipukurau was closed on Sunday 22 September for a community clean-up.

The road was closed between 9am until 1pm and about 80 volunteers pitched in from the community for the clean-up session, planting new plants alongside the road, and clearing weeds in the area.

The event was hosted by Central Hawke's Bay District Council.

While the road was closed our TREC crews pitched in to get other planned work, including wire rope repairs, weeding and road sweeping done.

Ka pai to all those involved! And thank you to all road users for your patience with the detours which were in place.

Whakapā mai • Get in touch

Visit our website
nzta.govt.nz/trec

Email us
info@trec.nz

Stay up to date with our monthly newsletter
Scan the QR code or go to bit.ly/3WI4kaQ

Call us
0800 80 TREC (0800 80 8732)

Connect with us on LinkedIn
linkedin.com/company/east-coast-trec

We value your feedback. Please get in touch if you have any questions or thoughts for the team.

This newsletter provides the latest information about the recovery work on state highways and rail networks damaged by Cyclone Gabrielle in 2023. TREC Pānui is produced by the Transport Rebuild East Coast (TREC) Alliance.