

# CONSTRUCTION UPDATE

## Season Update

This season on the project we are attempting something that's never been done in New Zealand before – to move up to 4 million cubic metres of earth in just one earthworks season. *That's traditionally between October and March, when we usually have warmer and dryer weather.*

Aside from the heavy rain we had building up to Christmas, 2019 has provided some great weather for production and progress. When we talk progress it is so much more than just moving dirt there's; rock blasting, subsoil drains, culverts, bridge building and much more.

The new year has brought some long sunny days and warmer weather with more anticipated in the coming months. This combined with good day to day planning and a passionate workforce will help us achieve our overall targets by the end of the season.

### SNAPSHOT OF THE NUMBERS SO FAR THIS SEASON

**1.8million**  
cubic metres of earth cut

**487,000**  
hours worked

**FIRST** bridge beams installed

**18** rock blasts

**1,800m**  
of culverts installed

**80** piles constructed  
**360mm** of rain



**UP TO**  
**4 MILLION**  
CUBIC METRES

of earth to move across the project.



### WE HAVE A **HIGHLY SKILLED WORKFORCE**

who are passionate about what they do and committed to building a world-class motorway.



New years briefing at Designation Road compound.

## Project open day

Our second Project Open Day will be held on Sunday 31 March. This year visitors will get the opportunity to see the inner workings of the project and some of our big kit in action.

Tickets to the event will be available online from Wednesday 27 February. We will share the link on our project **Facebook page** and on the **project website**. If you do not have

online access, you can contact us directly (after 27 February) and we will post the tickets out to your chosen address.

NORTHERN  
ROUNDAABOUT

Warkworth



Central North – with the help of the ‘big kit’ some of the project’s most significant ‘cuts’ are progressing well in the Central North area. Here’s a sneak peak of what it’s like driving through the ‘CN7 cut’.



North – Ground improvements continue in the north. Installation of wick drains are now visible from the roadside near the SH1 / Kaipara Flats Road intersection and at the Woodcocks / Carran Road intersection.



Central – December saw the arrival of the girders for Tapuwae o Kahumatamoemoe (Moir Hill bridge) which will form the base of the structure. The girders were delivered from Napier in six pieces and then lifted into place over a five day period. This was a great effort from all involved and has really brought the shape of the new bridge to life.



Central South – The area between Pūhoi and Watson’s Road (Site Access Point 7) is beginning to take shape as we make good progress on moving the 1 million cubic metre target in this area. As we have opened up new cuts rock blasting has been required to break through the layers of rock. Read more about this process on page 4. <https://youtu.be/ENiKyGsPICE>

MOIR HILL  
BRIDGE

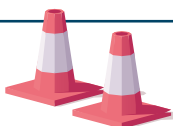
Pūhoi



South – Arawhiti ki Ōkahu is the first viaduct drivers will experience as they travel northbound on the new motorway from the Johnstones Hill tunnels. To date there has been over 530m<sup>3</sup> of concrete poured for this bridge. Due to the size of some of these pours, the team has needed to begin works at 5am. This is for two reasons, firstly at this time of the morning traffic is a lot more reliable for the concrete trucks and secondly this allows us to complete the majority of the pour before temperatures rise as the day goes on – which can impact the curing of the concrete. <https://youtu.be/teUuUo4YkAs>

## KEEPING SAFE

Some construction activities will be visible from the roadside and may look rather interesting, but **please don’t get distracted** when driving past.



JOHNSTONE’S  
HILL TUNNELS



## Meet the team

Meet Haydn Bradfield a surveyor with many talents working in our Survey team, based in the North.



In his spare time Haydn is also behind many of our great project videos- combining his drone flying skills and passion for technology to give an understanding of what's happening across the job. Check out his latest video – **Big little toys**.

### What were you doing before this job?

I spent two years on a warm tropical island in Vanuatu, where we constructed the Lapetasi Multipurpose Wharf. I was a site engineer, part of the earthworks and civil team. During this time, I was responsible for the dredging, marine & land earthworks, revetment constructions and the pavement layer works. Due to the remote nature of this project and therefore the limited support structure, I had the opportunity to extend my responsibilities and take on the material testing, surveying, machine control maintenance and modelling, quarry management and weighbridge co-ordination.

### How did you get to be a surveyor?

As a Site Engineer, I have always overseen aspects of surveying and in some cases, had the entire responsibility of surveying for the project. Having a keen interest in data collection and operational analysis I was intrigued by the vast potential that the survey technology had. Understanding that surveyors get to have all the fun with technology it was a natural choice to focus my strengths on surveying and discovering what we could unlock with emerging technologies.

### How do you think technology is changing the construction world?

Construction technology is developing faster than we can comprehend and tech companies around the world are investing an incredible amount of time and money. From drones, artificial intelligence, telematic solutions and driverless construction equipment, the future sees technology collecting more data than we thought existed and seamlessly turning it into powerful metrics. Solutions that provide a true, transparent and holistic views of any project. This is a future that gives the construction teams the freedom to move away from paperwork and get back to their passion: back to actual construction.

### What 'next big thing' are you excited about/ what do you think will be the next big game changes?

The use of Artificial Intelligence (AI) and Machine Learning will change the way we collate our construction data. Machine Learning allows computers to learn from data without being explicitly programmed. A typical construction project can have thousands of unnoticed safety, environmental and production issues. Now imagine a smart assistant who can analyse every camera and photo on the project and alert you about the top 10 critical things that need your attention today? The point is, we will have an infinite number of objective eyes consistently monitoring our activities. Giving us thousands of records that AI, not us, will automatically analyse to develop meaningful trends and document exactly what is happening on our construction sites. We will move into a proactive era of construction decision making.

## Haydn in Las Vegas

In November last year Haydn was selected by Trimble\* to be a presenter at their **Dimensions Conference** in Las Vegas. Here he highlighted some challenges construction engineers face and how, through the incorporation and development technology and data analysis, we can develop systems and workflows that unlock the potential in operational metrics. The conference showcased the latest in all construction technology and gave him insight into what the construction future holds. A trip that can definitely be labelled a success.



Haydn presenting at Trimble conference in Las Vegas

\* Trimble Inc. – California-based developer of Global Navigation Satellite System (GNSS) receivers, laser rangefinders, unmanned aerial vehicles (UAVs), inertial navigation systems and software processing tools.

## Women of Pūhoi

Women make up approximately 18% of staff across the project – a fact that was celebrated with a morning tea in December. Sarah Heke, the projects only female Leading Hand said a few words encouraging women interested in progressing into leadership roles to step up to the challenge. With construction generally being known as a male dominated industry it was refreshing and motivating to see the variety of different roles women hold on the project.



Sarah Heke, Leading Hand addressing the group.

## Stakeholder Satisfaction Survey – Now Live

The NX2 Stakeholder and Communications Team are working hard to ensure project neighbours and the community are kept up-to-date with what's going on across the project, and we're keen to get your feedback on how we're doing. Our previous survey gave us some great insights into areas for improvement and we look forward to hearing from you again. The survey is now live and will be open until Friday 1 March.

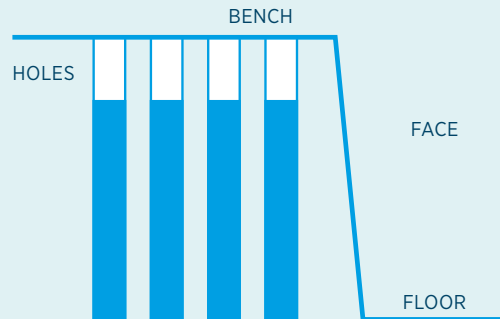
Click the link to take part in the survey:  
<https://www.surveymonkey.com/r/Z8NYSPZ>

# Rock blasting update

Across the project alignment there are areas of rock which need to be excavated. Before we can excavate the rock, we need to fracture it, and the most effective method is by completing controlled blasts. The blasting process is outlined in the diagram (below)

## Key steps in the rock blasting process

- Prepare the area and mark out the blast holes
- Drill holes approximately 8-12 metres deep
- In each hole, place detonators with boosters, then load explosives (shown in blue) and aggregate (shown in white) to contain the blast energy when initiated
- Connect all holes to apply sequenced detonation
- Clear the blast area and fire the blast
- Complete post blast inspections before excavation



If a rock blast area is near the roadside, we use what we call a 'rolling block'. This is where an attenuator keeps the traffic at a safe distance and keeps the road clear while we complete the blast. This is to ensure that if any rocks or debris reach the road then we have the opportunity to clear these before road users and vehicles continue on their journey.

If you find yourself in one of these rolling blocks we thank you for your patience!



Traffic management attenuator

The project has specific consent conditions (or limits) relating to construction noise and vibration. While people nearby may hear a brief noise and feel a short vibration, our blasts are designed to minimise disruption and operate within our permitted limits. Monitoring for both noise and vibration is completed at several locations near the blast.

## New bulldozer

We've recently welcomed another new bit of 'kit' to site! Here's a sneak peak of our new Komatsu Bulldozer. It's the first of its kind in New Zealand. It has a 750-horse power engine, weighs 72 tonne and has a blade capacity of 18.5 cubic metres. It'll join some of the other 'big kit' in the central zone.



## What's coming up?

### North

- Ground improvement works near SH1 / Kaipara Flats Rd intersection and Woodcocks /Carran Rd
- Top soil stripping and earthworks commence at the northern roundabout
- Structures work commence

### Central North

- Structures recommence work at Te Arawhiti Pua Ngahere (Kauri Eco Viaduct)
- Rock blasting continues along CN1 cut, west of Perry Road
- Earthworks continue throughout area
- Culvert installation, various locations across Central North Zone

### Central South

- Rock blasting in the Hungry Creek area to continue
- Pier construction continues with concrete pours at Arawhiti ki Pūhoi
- Continuation of earthworks operations

### South

- Continue fill operations south of Pūhoi Road
- Rock blasting to open up the S4 cut
- Concrete pours at Arawhiti ki Ōkahu to begin headstock construction

## Project Timeline

✓ **JANUARY 2017**  
Start of enabling works

✓ **OCTOBER 2017**  
Start of bulk earthworks

✓ **JANUARY 2018**  
Start of structures

**NOVEMBER 2019**  
Start of pavement works

**NOVEMBER 2020**  
Earthworks completed

**OCTOBER 2020**  
Structures completed

**SEPTEMBER 2021**  
Pavements completed

**OCTOBER 2021**  
Works completed

**LATE 2021**  
Motorway open to traffic

If you do not wish to receive any further newsletters, please [unsubscribe here](#)

A copy of our privacy policy and how we look after the information you provide us is available on our website: [www.nx2group.com](http://www.nx2group.com)

E. [info@nx2group.com](mailto:info@nx2group.com) P. 0508 P2WK INFO f Ara-Tūhono-Pūhoi-to-Warkworth