



Contractor's newsletter Te karere a te kaikirimana

Fulton Hogan/HEB Joint Venture



Weather forecasting in a changing climate

A pilot study on the Takitimu North Link project to achieve more reliable weather forecasting has been underway since mid-2022 and is attracting international attention. This work is ever more important in our changing climate, and is allowing construction teams to make more informed decisions related to weather impacts on the programme.

The project's environmental manager Stephanie Kirk recently spoke at the International Erosion Control Association (IECA) Conference in Kansas City, USA on this topic.

'We all know that understanding what the weather is going to do can be a 'dark art' at the best of times. Here on Takitimu North Link, we were noticing that the publicly available weather forecasts weren't accurate for the project area. This is because we are in between the ocean and the Kaimai Range which can impact on our rainfall experienced on the job in a very localised way, often resulting in differing rainfall than what the public channels tell us. This has meant that programming construction and earthworks activities is difficult, and we could be caught out by unexpected weather.'

NIWA uses ensemble modelling to run through a range of predictions for the weather, known as probabilistic forecasting. This is powerful, as it provides more accurate information to plan earthworks and the construction programme. The study has produced good results so far with more reliable forecasting.

The pilot study is funded by HEB and being delivered in partnership with NIWA.

Te matapae huarere i te hurihanga o te āhuarangi

Kua tīmata tētahi rangahau pairote ki te kaupapa o Te Ara o Takitimu ki te Raki mai i te puku o te 2022, otirā e hau ana te rongō ki te ao. Mātua rā te hira o tēnei mahi nā te huringa o te āhuarangi, ā, nā tēnei, e piki ana te āhei o ā mātou tira hanganga ki te whakatau i ngā take whaimōhio e pā ana ki ngā pānga huarere.

I kōrero te kaiwhakahaere ā-taiao o te kaupapa a Stephanie Kirk mō tēnei take i te International Erosion Control Association (IECA) Conference ki Kansas City i Amerika.

'Kei te mōhio tātou, he 'mahī porehu' i ētahi wā te mārama ki ngā āhuratanga o te huarere. I konei i Te Ara o Takitimu ki te Raki, i kite mātou i te mākūware o ngā matapae huarere tūmatanui i te rohe o te kaupapa nei. I pēnei ai nā te mea kei waenga mātou i te moana me te Pae o Kaimai, otirā he pānga nui i runga i te karawhiu o te ua i tēnei rohe, ko te hua, he rerekē te heke o te ua i tēnei wāhi i tērā e matapaetia ana e ngā pānuitanga tūmatanui. Ko te tikanga o tēnei, ka uaua kē atu te whakamahere mahi hanganga, mahi tūkari, ā, ka raru mātou i te huarere ohore.

Whakamahia ai e NIWA ngā taura takitini ki te tukai te whānuitanga o ngā matapae huarere, arā, ko te matapae tūponotanga tēnei. He mea rirā tēnei, otirā he tika ake ngā mōhiohio ki te whakarite i te hōtaka tūkarikari me te hanganga. He pai ngā hua o te rangahau i tēnei wā, otirā he pono ake ngā matapae.

He mea utu te rangahau pairote nei e HEB, ā, ka whakahaeretia ngātahitia kia NIWA.



On 29 January 2023, the Wairoa River breached its banks. Imelapse photos show the flooding at its peak and 10 hours later when most of the water had receded.

I te 29 o Hānuere 2023, i waipuketia te awa o Wairoa. E whakaatu ana ngā whakaahua tārewa i te teiteitanga o te waipuke, me te āhua o te wai 10 haora i muri ake.



Water, water everywhere

The start of 2023 saw the upper North Island experience two cyclones within five weeks, and frequent and heavy rainfall throughout summer. These weather events took a huge toll, not only on those directly affected, but on the wellbeing of all New Zealanders. As well as affecting people's homes, livelihoods and access to their communities, the wet weather affected our work programme on Takitimu North Link.

For the most part our sites have held up well, despite the Wairoa Valley site being flooded in January. However, our earthworks programme has been affected by the wet weather.

Each year we have about 100 earthworks days within the drier months between October and April, factoring in estimated normal rain days for the season. This season we've had only 65 production days (1 October 2022 to 30 April 2023). We are currently hopeful that we will find some drier days over the winter shoulder months, spanning from May to the end of June.

This season we were planning on moving roughly 350,000m³ to 400,000m³ of material. On a good weather week, we can move over 20,000m³, we had many weeks where we were only able to move 2,000m³ in the entire week, well below our target.

The team are now looking at how we can maximise the rest of the earthworks season.

Kua moanatia e te wai

Nō te tīmatanga o te 2023 i pākia a tai whakarao o Te Ika-a-Māui e ngā huripari e rua i roto i te rima wiki, otirā i karawhiua hoki e te marangai puta noa i te raumati. He pānga nui tō aua huarere, otirā kua noa ki te hunga i pā kinotia ake, engari ki te oranga o te motu whānui. Tae atu ki te pānga ki ngā kāinga o te tangata, te oranga mahi, me te tomopai ki ngā hapori, i pā kinotia hoki ā mātou mahi i runga i Te Ara o Takitimu ki te Raki e te huarere.

I tū pakari te nuinga o ā mātou wāhi mahi, ahakoa te waipuketanga o te wāhi mahi i te Riu o Wairoa i te Hānuere. Engari i pā kinotia tā mātou hōtaka tūkarikari e te ua.

I ia tau, āhua 100 ngā rā tūkari whenua hei ngā marama maroke, i waenga i te Ōketopa me te Āperira, otirā ka whakatau tatahia te rahi o ngā rā ua i te kaupeka. I tēnei kaupeka, he 65 anake ngā rā mahi (1 o Ōketopa 2022 ki te 30 o Āperira 2023). E tūmanako ana mātou ka kitea ētahi atu rā maroke hei ngā marama tata ki te takurua, atu i te Mei ki te mutunga o Hune.

I tēnei kaupeka e whakarite ana mātou ki te nuku i te 350,000m³ ki te 400,000m³ o te oneone. I ngā wiki pai, ka taea e mātou te nuku i te 20,000m³, otirā he nui ngā wiki i nukuhia te 2,000m³ anake hei te roanga o te wiki, ā, kei raro rā anō i tērā i matapaetia.

Ināianei e titiro ana te rōpū mahi me pēhea te whakamōrahi i te toenga o te kaupeka tūkari whenua.



Meet Morgan Raby, Project Engineer

Morgan is in charge of building the Wairoa River Bridge and believes that the many career opportunities presented to her thus far have contributed to her highly valued expertise on this project.

As an engineer within the construction industry, Morgan views the profession as ideal for her as she gets to make a positive difference within communities.

Morgan has a conjoint Bachelor of Engineering (Hons) and Bachelor of Arts from the University of Auckland and became a Chartered Professional Engineer in the practice area of Construction Management of Major Infrastructure Projects in 2021.

She started her career by securing a summer internship with Fletcher Construction and was then offered a permanent graduate role exposing her to different disciplines.

An internal transfer to Brian Perry Civil as a Site Engineer brought a focus on piling operations and different types of ground improvement techniques. Morgan then joined the bridges team at HEB Structures working on the Northern Corridor Improvements (NCI) project in Albany where responsibilities included bridge widening, a shared user path underpass and she was also Project Engineer for two Super T viaduct bridges. Most recently, Morgan has worked on a sewer upgrade in American Samoa with Fletcher South Pacific before heading back to NZ to join HEB on the Takitimu North Link Project.

Morgan is really enjoying applying her experience and working with the team to deliver the Wairoa Awa (River) bridge, where she and the team have learnt a fair bit about challenging ground conditions!

Tūtaki mai ki a Morgan Raby, Kaipūhanga o te Kaupapa

Ko Morgan te rangatira o te hanga i te Arawhiti o te awa o Te Wairoa, ā, e whakapono ana ia, nā te nui o ngā arawātea mahi i wātea ki a ia i whai wāhi ai ki ōna mōhiotanga hōhonu ki tēnei kaupapa.

Hei kaipūhanga i roto i te rāngai mahi hanganga, e whakaaro ana a Morgan he mahi hāngai tēnei ki a ia, i te mea ka whai hua āna mahi i roto i ngā hapori.

He tohu tūhono tā Morgan i te Tohu Pūhanga (Hōnore) me te Tohu Paetahi nō Waipapa taumata Rau, ā, ka tū hei Kaipūhanga Ngaio i roto i ngā mahi Whakahaere Hanganga o ngā Kaupapa Tūāhanga Matua i te 2021.

I tīmata āna mahi hei ika tauhou raumati i te taha o Fletcher Construction, ā, ka whiwhi ia i tētahi tūranga ihuputa tūturu, otirā i kite ia i ngā momo mahi rerekē.

Nā te whakawhitinga rāroto ki a Brian Perry Civil hei Kaipūhanga Wāhi Mahi, i aro ia ki ngā mahi pou tūāpapa, me ngā tikanga rerekē o te whakapai i te whenua. Kātahi ka tūhono atu a Morgan ki te rōpū arawhiti i roto i a HEB Structures, e mahi ana i runga i te kaupapa Whakapai Kauhanga o te Raki (NCI) i Albany, ko āna haepapa ko te whakawhānui arawhiti, he ara hīkoi tiri, ā, ko ia hoki te Kaipūhanga Kaupapa mō ngā arawhiti Super T e rua. Inā tata nei, i mahi a Morgan i runga i tētahi kaupapa parakaingaki i American Samoa i te taha o Fletcher South Pacific, i mua o te hoki ki Aotearoa ki te mahi i runga i te Kaupapa o Te Ara o Takitimu ki te Raki me HEB.

He rawe ki a Morgan te whakamahi i āna wheako me te rōpū hoki ki te hanga i te arawhiti o te awa o Wairoa, otirā he nui ngā akoako e pā ana ki ngā āhuatanga whenua uaua!



Watch the video of the Wairoa Awa (River) bridge at nzta.govt.nz/takitimunorth

Mātaki i te ataata o te arawhiti o te awa o Wairoa ki nzta.govt.nz/takitimunorth

Progress to date



Te Rangi Tuanehe (Minden Gully): Temporary bridges have been created over the Hakao Stream allowing a one-way system across the stream for construction vehicles only. The construction vehicles go in via the left-hand bridge and out via the right-hand bridge.

Te Rangi Tuanehe (Minden Gully): Kua hangaia ētahi arawhiti taupua e whakawhiti ana i te Kōawa o Hakao, otirā kotahi te ara e whiti ana i te kōawa, mō ngā waka hanganga anake. Ka kuhu ngā waka hanganga mā te arawhiti taha mauī, ā, ka puta mā te arawhiti katau.

SH29: Sand blankets are being installed along Takitimu Drive Toll Road to allow wick drains to be installed. Wick drains speed up the rate at which the water can escape from the underlying water-logged soils, reducing the settlement time.

SH29: E tāuta ana mātou i ētahi papanga kirikiri i te taha o te Huarahi Utu o Takitimu Drive, kia pai ai te tāuta i ētahi wāra wiki. Mā te wāra wiki e whakatere ake i te putanga o te wai i te hōpua kei raro - arā ngā pukewai, e whakaiti ana i te wā whakaea.





Smiths Farm: This is the area below Cambridge Road East and on the northern side of Smiths Farm. To date we have shifted approximately 30,000m³ of material into this area. We need a total 400,000m³.

Te Pāmu o Smiths: Ko te wāhi tēnei kei raro i a Cambridge Road East, ā, kei te taha tuaraki o Te Pāmu o Smiths. I tēnei wā, ka nukuhia e mātou āhua 30,000m³ oneone ki tēnei wāhi. Me eke rawa ki te 400,000m³.



Cambridge Road: Over four days 21 beams were placed for the Cambridge Road Overbridge, this involved some very impressive reversing by members of our crew! This shows the level of the new Cambridge Road alignment (approximately 5 metres lower than existing road), and the new expressway will then run approximately a further 18 metres underneath, showing the significant earthworks required at this section of the project.

Te Ara o Cambridge: I roto i te whā rā, 21 ngā kurupae i whakatakotoria mō te Arawhiti o te Ara o Cambridge, otirā he mīharo ngā mahi taraiwa whakamuri ā ngā kaimahi o te rōpū! E whakaatu ana tēnei i te teitei o te whakahāngaitanga o te Ara hou o Cambridge (otirā he 5 mita iti iho i te ara o nāianei), ā, kātahi ka ahu te ara matua hou mā te 18 mita i raro i tēnei arawhiti, hei whakaatu i te nui o ngā tūkari whenua i hiahiatia mō tēnei wāhanga o te kaupapa.

Wairoa Awa (river): The temporary bridge is the main access route for hauling material across the river. The Wairoa Valley will have 350,000m³ material fill through earthworks. The bridge deck will be about 8m above ground level at the highest point. The underside of the bridge will be about 4.5m above ground level (at the abutments).

Te awa o Wairoa: Ko te arawhiti taupua te kuhunga matua hei kawē i ngā oneone ki tua o te awa. Ka āhua 350,000m³ ngā matū oneone ka haere ki te whakakā i te Riu o Wairoa. Ka āhua 8m te teitei o te papa o te arawhiti i tōna wāhi teitei rawa. Ka āhua 4.5m te teitei atu i te whenua o te wāhanga o raro o te arawhiti (i ngā tauhōkai).



Wairoa Road Overbridge: Construction continues with utilities being realigned within the bridge structure, which is now due to complete early 2024. In the background we are removing approximately 660,000m³ of material to get down to the finished road level.

Te Arawhiti o Te Ara o Wairoa: E haere tonu ana ngā mahi hanganga otirā e tīaroarotia ana ngā ratonga tūmatanui i roto i te hanganga tonu o te arawhiti, ā, ka oti ā te pane o te 2024. I muri, e tango ana mātou i te āhua 660,000m³ o te matū, e tae atu ai ki te papanga tika o te ara.



For more information

Read more and sign up for updates about the project at:

nzta.govt.nz/takitimunorth

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