



Maungaharuru-Tangitū Trust

Locality Plan

Hawke's Bay Cyclone Gabrielle Recovery April 2023



Version 1.2

Rārangi Upoko

Table of Contents

Table of Contents	1
Mihimihi	3
Important Disclaimer:	4
Tīmatatanga	5
Section 1: Introduction.....	6
Te Takiwā	8
Section 2: Profile of the locality.....	9
Ngā Pāpātanga o te Huripari.....	18
Section 3: Event impacts	19
Kia Tipu te Mauri Ora	28
Section 4: Recovery objectives and priorities.....	28
Section 5: Roles and responsibilities.....	36
Section 6: Recovery initiatives	40
Section 7: Funding.....	54
Section 8: Implementation	58
Section 9: Appendix	59
1. Exploring options for our Marae to mitigate flooding	59
2. Impacts on Health & Wellbeing	62
3. Impacts on Te Taiao	65
4. Impacts on the State Highway	74
Section 10: Bibliography.....	79



Tīmatatanga

Introduction

Photo: Hoani Taurima raises the Tino Rangatiratanga flag at Tangoio Marae, upside down as a signal of distress. Credit: Chris Skelton, Stuff



Mihimihi

Kai te tihi o te whakaaro ko te hunga i
popohe ai i ngā āhuetanga kino o te
huripari. Ki a rātau mā, ki te hunga mate,
haere, tāwhai atu, okioki ki roto i te
waikanaetanga o Hine-te-mate. Hoki mai
ki a tātau me te mihi anō hoki ki ngā
pānga o rātau mā e aroaroā ana i tēnei
wā, ka nui te aroha ki a koutou.

Kua raru tō tātau ao, tō tātau oranga i ngā
āhuetanga o te wā. Kua tīngakungakutia
te whenua, ngā kāinga, ngā marae. I
aukatingia te hono atu ki ō tātau puninga
ā-waea, ā-ipurangi, aha atu aha atu i ngā
āhuetanga o te huripari. Heoi, ka
whaiwhairoroa tātau, ka manawa tītī tonu
tātau kia kumanungia tātau, kia
whakautengia te taiao e tātau anō nā te
mea e kore rawa e mutu te pānga mai o
ngā āhuetanga hurihuri. Ko tā tātau he
āta whakarite i a tātau anō kia iti iho ngā
pānga kino o āpōpō atu, ki te kore ko
tātau me ā tātau mokopuna te papa.

Mā tini mā mano ka rapa te whai.

Ko Maungaharuru te maunga
Ko Tangitū te moana
Ko Tangoio te marae
Ko Punanga Te Wao te whare tīpuna
Ko Tangitū te whare kai
Ko Maungaharuru te whare kōkiri
Ko Punanga Te Wao te kōhanga reo
Ko Marangatūhetaua, Ngāti Whakaari,
Ngāi Tauira, Ngāti Kurumōkihi,
Ngāi Te Ruruku ki Tangoio,
Ngāi Tahu ngā Hapū

Tihei Mauri Ora!

Our primary thoughts are with those who
lost their lives during the events of Cyclone
Gabrielle. We say to those who passed
away, depart to the realm of Hine-te-mate
where you will be cared for. Our heart
goes out to those families who are
mourning loved ones that are no longer by
their side. Ka nui te aroha.

Our world, our lives have faced difficult times
due to recent events. Land, homes, marae
have been destroyed. Our communication
links to our loved ones were cut off. But we
persevere, we continue to care for whānau,
for our environment because the events that
we have recently witnessed and have been
subjected to, will continue to happen due to
climate change. We need to carefully put
plans in place to minimise the effects of
subsequent climatic events to protect our
future and generations that follow us or else
we will suffer greatly in times to come.

Working together, we will find a way.

Maungaharuru is the mountain
Tangitū is the sea
Tangoio is the marae
Punanga Te Wao is the whare tīpuna
Tangitū is the whare kai
Maungaharuru is the house of gathering
Punanga Te Wao is the kōhanga reo
Marangatūhetaua, Ngāti Whakaari,
Ngāi Tauira, Ngāti Kurumōkihi,
Ngāi Te Ruruku ki Tangoio and
Ngāi Tahu are the tribes

Behold the breath of life!

Important Disclaimer:

The information provided by Maungaharuru-Tangitū Trust (MTT) (including, without limitation, all figures, estimates, initiatives and plans) was completed or obtained under constrained circumstances, lacking the resources, engagement and standard of due diligence that would typically be applied. MTT has provided information on an interim basis only, and reserves its ability to update the information at any time.

Various assumptions have been made as part of compiling or obtaining this information, including, without limitation, that initiatives are being made on current state awareness, rather than trying to anticipate future decisions, outcomes or initiatives; that MTT, local authorities and other partners will be able to obtain sufficient resourcing for delivery of any initiatives; and, initiatives will evolve and change as part of further scoping, consultation or similar exercise.

The information provided is based on provisional estimates and historical costs and has not (in the time available) taken into account any necessary or expected Hapū, community consultation, or any increased costs, such as inflation or supply issues, due to the limited time available. The information is subject to change as initiatives become better scoped and defined.

It is crucial to MTT that Hawke's Bay Recovery initiatives including policy and regulatory change, infrastructure cost and design reflect "Building back better, safer and smarter" and give effect to:

Genuine partnership with Māori; Addressing inequities (not inequalities); Stronger productive economy; Fit-for-purpose infrastructure and life-lines; Climate resilience and adaptation; Working with Te Taiao, not against.

Tīmatatanga

Section 1: Introduction

1.1 Purpose

This Locality Plan (**Plan**) outlines how our Hapū and Takiwā will recover from the catastrophic impacts of Cyclone Gabrielle. It presents the immediate priorities and actions required to address the critical needs of Maungaharuru-Tangitū Trust (**MTT**), the collective of hapū it represents (**Hapū**) and their Takiwā (traditional area that this Plan is concerned with) and lays the foundation for building back better, safer and stronger.

Te toto o te tangata he kai, te oranga o te tangata, he whenua, he oneone.

While food provides the blood in our veins, our health is drawn from the land and soils.

This whakataukī is at the heart of this Plan, which aims to engage agencies involved in the recovery effort, including councils, government agencies, and committees with a common goal of serving our Hapū, Tangoio Marae and Takiwā.

This Plan has been developed in haste to ensure that our immediate needs are incorporated into local and central government decision making. MTT's approach to the Plan is iterative, allowing for ongoing improvements and adaptations as they arise. It has been prepared based on the guide provided by Keriana Brooking, Interim Recovery Manager, Hawke's Bay Recovery Agency on 3 April 2023, and expands on the *MTT Locality Plan (Initiatives and Budget Bids Spreadsheet)* that was submitted to Keriana Brooking on 17 April 2023 (**spreadsheet**).

1.2 Scope

This initial Plan, is a rapid assessment of the initiatives and resourcing that is required over the six-month period following Cyclone Gabrielle (mid-February to mid-August 2023 as provided by the guide). We have identified initiatives that need to accelerate over the short term as they are critical to increasing the resilience and reducing vulnerability of our Hapū, Tangoio Marae and Takiwā through to the future.

1.3 Top 5 short-term priorities



1. [Acquire interim accommodation on resilient land within our Takiwā for Tangoio Marae and secure resources critical](#) for the Marae to function.



2. [Warm, dry housing](#) for significantly impacted whānau with limited resources. Provide moveable cabins, or repair houses (if feasible).



3. [Acquire resilient land within our Takiwā for Hapū papakāinga](#) via funding and land-use planning and regulatory support.



4. [Prepare the temporary Hapū Kōhanga Reo site in Clive](#) by providing a safe outdoor play area with relocatable equipment.
** critical before re-opening and not funded by Te Kōhanga Reo National Trust*



5. [Resource MTT to engage and lead initiatives for the recovery](#) of our Hapū, Takiwā and communities.

Our Plan is for 12 months and includes 12 priority initiatives (which consolidates the 35 initiatives identified in the spreadsheet). The total cost of all initiatives is **\$13.273m**. We have aligned our Plan with the Hawke's Bay Regional Recovery Agency (**HBRRA**) six Pou, Community and Whānau Wellbeing, Environmental Resilience, Resilient Infrastructure, Primary Sector, Economic Growth and Recovery Transition.

Medium or long-term initiatives require significant planning, effort and investment and will be included in our next medium to long-term recovery plans.

1.4 How this document has been prepared

This document has been prepared by MTT and is based in part on the following information.

- a. Hui with Hapū members at Tangoio, Arapawanui and Waikōau and visits with several whānau at Tūtira and with whānau at their homes affected by the cyclone.
- b. Survey of affected Hapū members who live within the Takiwā.
- c. Hui with Tangoio Marae Trustees.
- d. Assessments from independent, qualified builders of the costs to rebuild or repair Hapū homes affected by the cyclone.
- e. MTT Pūtea Manaaki Emergency Fund applications information provided by Hapū members.

The tight timeframes and resources, ongoing response work, lack of connectivity and access, has meant engagement has been necessarily limited and far from ideal. There are more whānau we need to reach out to, to understand their needs. In the meantime we have focused on the whānau who responded to our pānui, those we have been able to connect with at their home or by phone, and those that reached out to us.

There has been preliminary hui or contact with some agencies, including Hastings District Council (**HDC**), Napier City Council (**NCC**) and Hawke's Bay Regional Council (**HBRC**). But there have been no substantive discussions about our locality plan or theirs. It is acknowledged all-round that there has just been insufficient time to wānanga, despite the desire to do so.

We also extend our thanks to the Ngāti Pārau Hapū Trust and Ngāti Kere Hapū Authority who generously shared their know-how and information with us. Mei kore ake koutou.

1.5 Video

We have produced a short video (6 minutes) introducing our Takiwā, Hapū, Tangoio Marae and Maungaharuru-Tangitū Trust. It also shows some of the impacts of Cyclone Gabrielle on Tangoio Marae and our whānau doing their best to carry on. Please click on the link to view: <https://www.youtube.com/watch?v=rIIOSOuldMo>

Te Takiwā Traditional Area

Map: Takiwā (traditional area) of the Hapū represented by Maungaharuru-Tangitū Trust



Te Takiwā

Section 2: Profile of the locality

2.1 Maungaharuru-Tangitū Trust, Hapū, Tangoio Marae and Takiwā

MTT represents hapū of the northern Hawke's Bay region including Ngāi Tauira, Ngāi Tahu, Ngāi Te Ruruku ki Tangoio, Ngāti Whakaari, Ngāti Kurumōkihi and Ngāti Marangatūhetaua (Hapū). Their marae is Tangoio, located 20 km north of Napier. MTT is a Treaty of Waitangi Post Settlement Governance Entity. Its objects include being the voice and representative body for the Hapū.

The core purpose of MTT is [Kia Tipu te Mauri Ora](#) (Growing our Inner Strength). We exist to enable the holistic growth of our Hapū - building the capability, capacity and tino rangatiratanga of our people, culture, economy and environment. We will support our Hapū members to grow their inner strength to respond, recover and be resilient to the impacts of events such as Cyclone Gabrielle.

Our vision [Puāwaitanga o te Puawānanga](#) (Living Our Dreams) represents a future where our whānau are prospering culturally, socially, spiritually and economically. Our aronga nui (focus areas) are:

- He Kāinga Taurikura - A Treasured Environment
- Kia Niwha - Strong People
- Kia rīrā te Pā kai ngā Rekereke - Strong Culture, Reo & Marae
- Kia Rawaka - Strong Hapū Economy
- He Waka Kairangatira - MTT Group, A Great Organisation

These aronga nui relate to the Hawke's Bay Recovery Framework (**HBRF**), which will underpin the Regional Recovery Plan for Te Matau-a-Māui Hawkes Bay. We note that the HBRF refers to "addressing inequalities", in our view this should be changed to "addressing inequities" to better reflect the need to tailor recovery efforts to the recipients.

MTT's guiding principles underpin our recovery by applying three disciplines:

- Kia Rangatira te Tū - Disciplined People
- Kia Rangatira te Whakaaro - Disciplined Thought
- Kia Rangatira te Mahi - Disciplined Action

The purpose of these principles is to undertake recovery initiatives in an efficient and effective manner.

Our registered members number 6,373. Of the members we have addresses for, 44% live in Hawke’s Bay. And 55% of them live in Napier. We also have a youthful population, with 56% of our members under the age of 30 years in Hawke’s Bay. These statistics come from the MTT registration database.

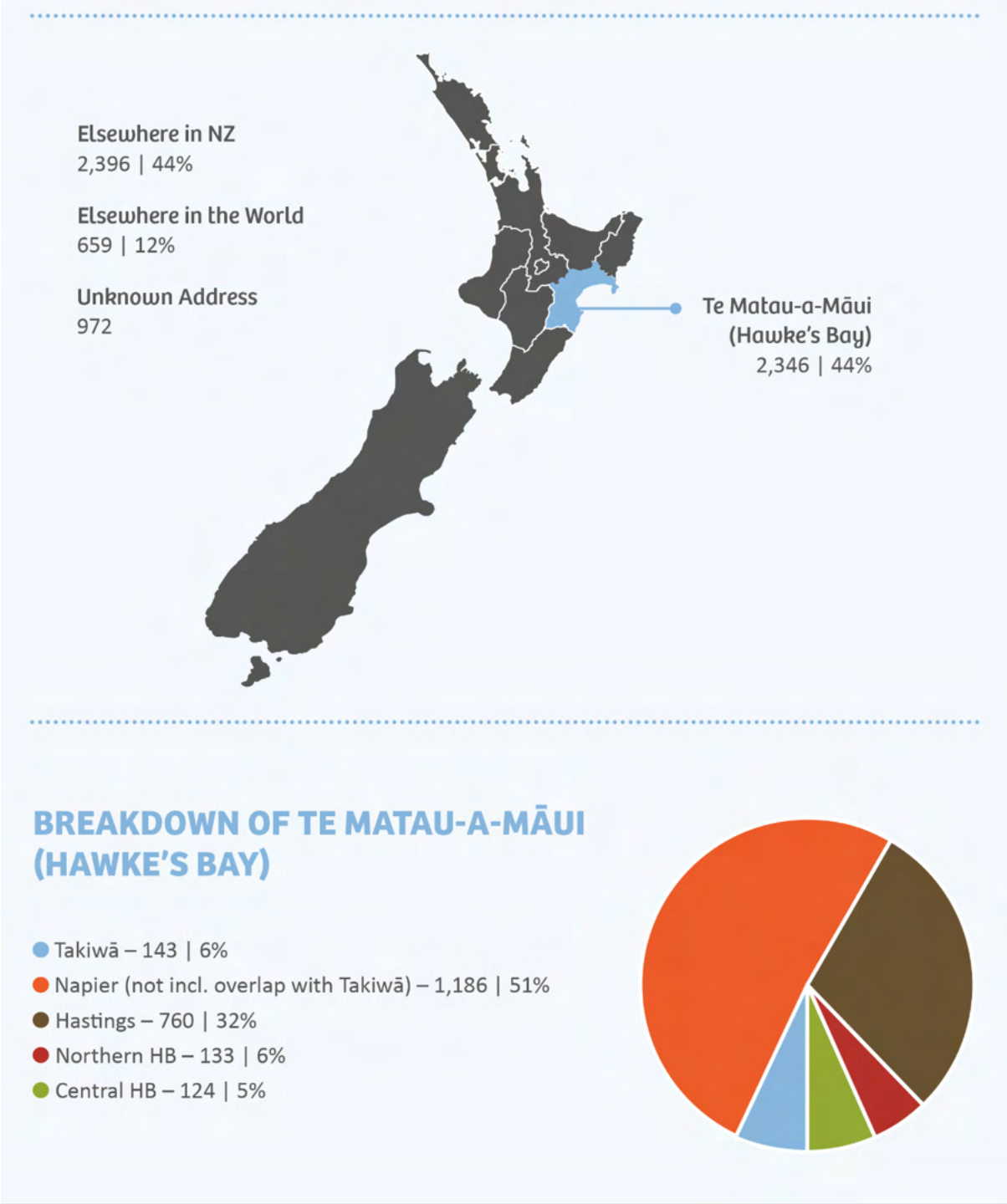


Figure 1. Registered members of Maungaharuru-Tangitū Trust live throughout Aotearoa and the world, but the largest concentration by far is in Hawke’s Bay. Within Hawke’s Bay, most of our whānau live in Napier, but many desire to return to live in our Takiwā. These statistics come from the MTT registration database.

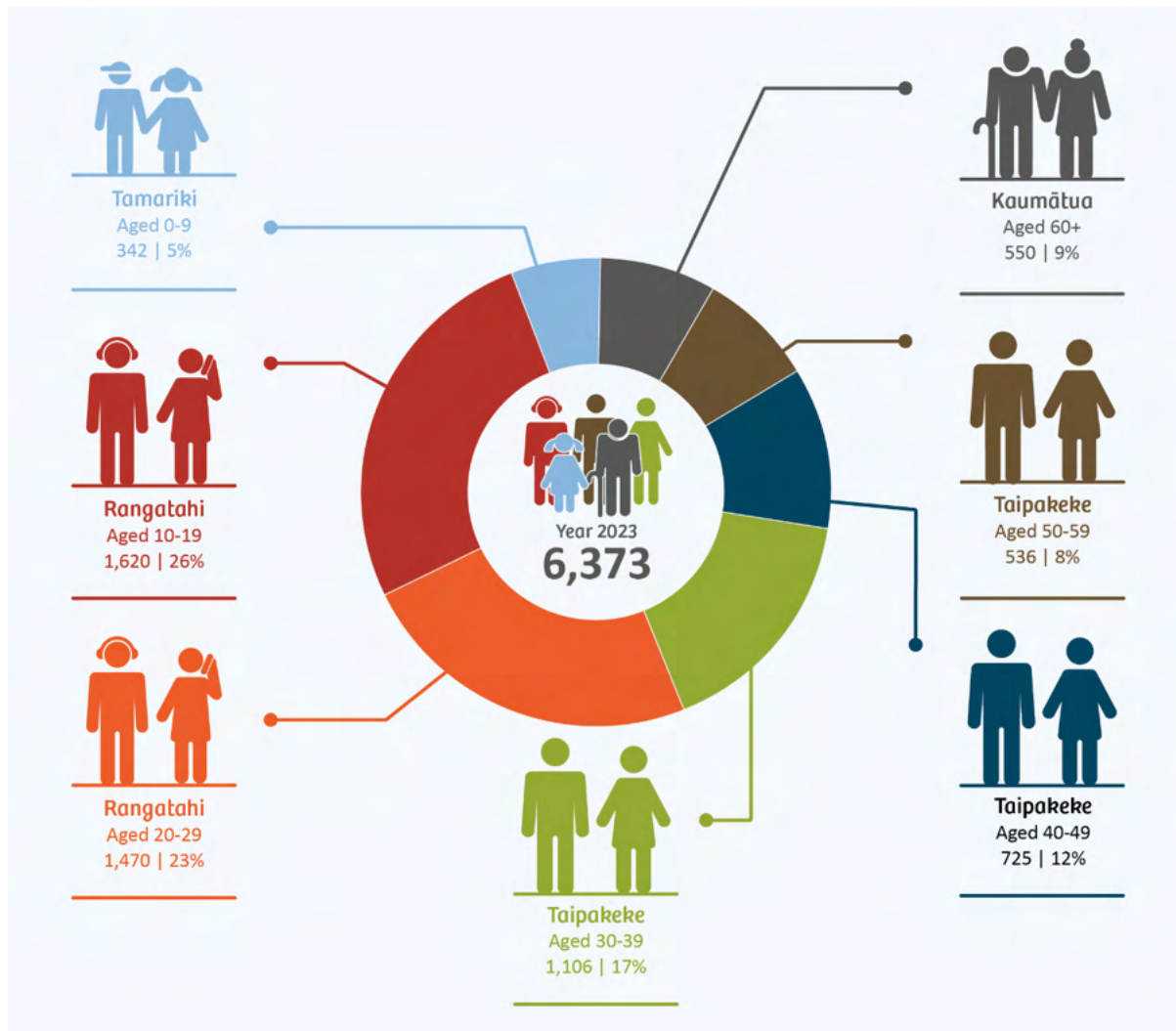


Figure 2. Maungaharuru-Tangitū Trust has a youthful population, with 56% of our members under the age of 30 years in Hawke’s Bay, and 54% overall. These statistics come from the MTT registration database. (24 members are of unknown age).

2.2 Te Takiwā

Ka tuwhera a Maungaharuru, ka kati a Tangitū
Ka tuwhera a Tangitū, ka kati a Maungaharuru

This whakataukāki (tribal saying) was inscribed on the waharoa to the Marae. It describes the Takiwā of our Hapū – from Maungaharuru (the mountain range) in the west, to Tangitū (the coast and sea) in the east. It also provides that when Maungaharuru is open, Tangitū is closed; when Tangitū is open, Maungaharuru is closed. It describes the mahinga kai of our Hapū; where the ngahere on Maungaharuru was, and is, the source of food for our Hapū in the winter and Tangitū was, and remains, the source of food in the summer. The southern extent of our Takiwā is Keteketerau (the former outlet of Te Whanganui-ā-Orotu / the Napier Inner Harbour near Napier Airport). The northern extent of our Takiwā is the Waitaha Stream north of the Waikari River.

Our waharoa also helps guide our assessment of environmental taonga within our Takiwā and represents the interconnections our Hapū has with Te Taiao.

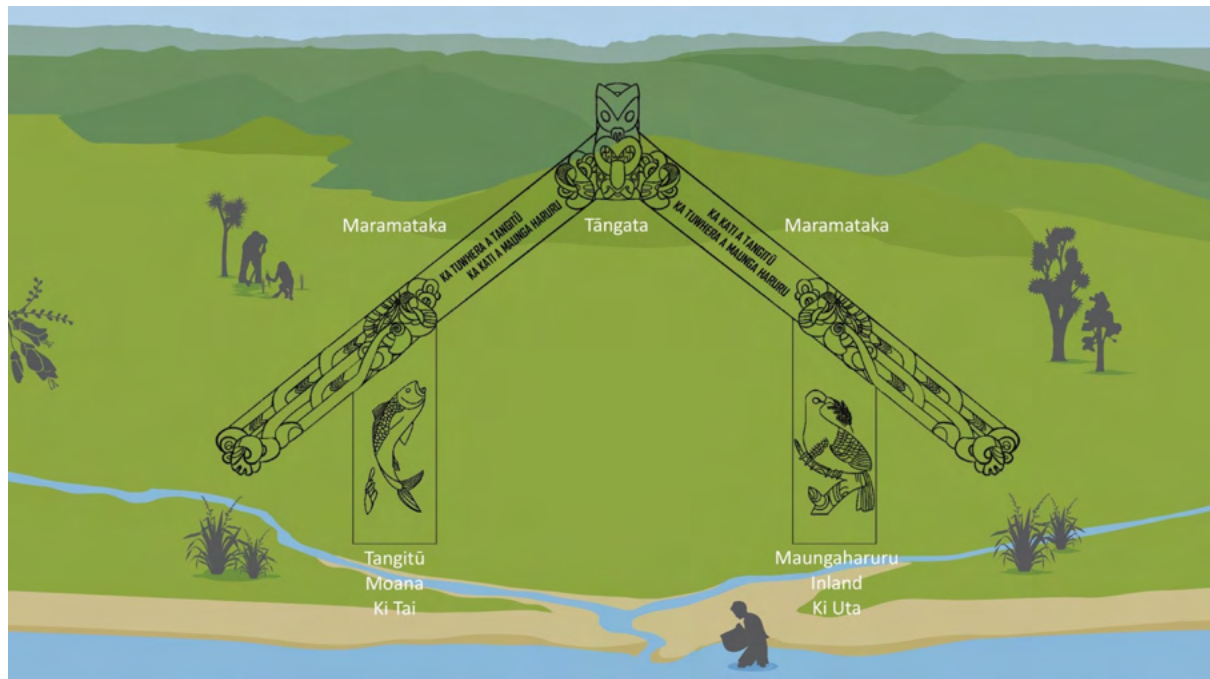


Figure 3. He Kāinga Taurikura (A Treasured Environment) is our Cultural Ecological Environmental Assessment Framework based on our whakatuākī, that was carved on the waharoa of Tangoio Marae. It is a kaupapa Māori framework that we are developing to guide assessment of environmental taonga. Tohu (from mātauranga ā-Hapū) and scientific indicators help us select from three aronga to describe hauora: Tangitū (moana - left amo), Maungaharuru (maunga inland - right amo), Ki Uta ki Tai, Ki Tai ki Uta (acknowledging the water cycle), Tāngata (our interactions with te Taiao - the kōruru), and Maramataka (represented on the maihi) embraces all and guides us. For further information refer to: He Kāinga Taurikura o Tangitū - Kia Tipu te Mauri Ora: Treasured Coastal Environmental - Growing our inner strength video submitted to the [Te Au o Te Moana | Conference 2023 - Sustainable Seas National Science Challenge \(sustainableseaschallenge.co.nz\)](https://www.youtube.com/watch?v=8Hzr5FI-g8U&feature=youtu.be) Session 6 - Mauri Manaaki: <https://www.youtube.com/watch?v=8Hzr5FI-g8U&feature=youtu.be>

2.3 Tangata Whenua with no whenua

Our Hapū have suffered immensely through the loss of almost all of their lands through disputed purchases and the only raupatu within the Hawke's Bay region, often referred to by historians as 'the Forgotten Land Confiscation'. (Our short video includes some further information on this. Please click on the link below to view:

<https://www.youtube.com/watch?v=rIIOSOuldMo>)

Around the 1840s and the arrival of Pākehā in our region, the principal settlements of the Hapū were at Waikare, Moeangiāngi, Arapawanui, Waipātiki, Tangoio, Whakaari, Ngāmoerangi, Kapemaihi, Tūtira and Te Pōhue. From 1851 to the 1930s the landholdings of

the Hapū in their Takiwā were dramatically reduced from approximately 110,700 hectares to just small holdings by individual whānau at Tangoio, Arapawanui and Tūtira totalling 1,820 hectares.

The Crown was the main cause of land loss. Between 1851-1865 the Crown purchased several large blocks which were disputed by the Hapū (including parts of the Mōhaka and Ahuriri blocks). In 1866, Crown military forces and others attacked and imprisoned Hapū members without trial in Wharekauri (Chatham Islands). The Crown proclaimed a large raupatu (confiscation area) in 1867 and agreed to return much of it in 1870 but did not investigate customary ownership and did not issue Crown grants for over 40 years. Between 1911-1931 the Crown had purchased nearly all the valuable returned land using tactics that were described by the Waitangi Tribunal as unfair and oppressive. These tactics resulted in individual whānau being left with small blocks of land at Tangoio, Arapawanui and Tūtira which in the case of the first two valleys were also flood-prone. Overall, the Crown acquired so much land that those who did not wish to sell were left with too little land to maintain a viable presence in the region. Prior to our Treaty of Waitangi Settlement, the only land that remained for the benefit of the Hapū was the area gifted by whānau for the present-day Marae at Tangoio, a scant total of 1.6 hectares.

As part of our Treaty Settlement in 2013 the Hapū now own 5,850 hectares of land in our Takiwā (not including lake beds and reserves). The settlement included Opouahi Station (currently leased by Pāmu) high up on Maungaharuru (40 mins drive from Napier), and part of the Esk Forest (75% leased to Pan Pac Forestry Limited and the remainder subject to a joint venture with Rayonier Matariki).

2.4 Connection with wāhi taonga

In spite of the loss of land, our Hapū have maintained a close association with our lands through whakapapa and kōrero tuku iho. The landscape is our history book, and every feature tells a story. Evidence of the areas that our tīpuna occupied include wāhi taonga that are still visible or acknowledged today. Wāhi taonga include: kāinga, mahinga kai, marae, pā, tauranga waka, urupā and wāhi tapu. The connection to these wāhi taonga and others such as our awa, roto, ngahere, maunga and moana is still highly valued by our Hapū today.

2.5 Tangoio Marae

In the past, Tangoio Marae was the centre of Hapū life. The Hapū lived around the Marae and observed the tikanga of the Hapū. The Marae provided a place of gathering and identity. The Marae was at the heart of the community, whānau looked after whānau there. It was once a place that was used for everyday activities; from birth through to death. It was the base of our people.

There has been a succession of wharenui in Tangoio since at least 1916. Around 1942 the Hapū decided to fundraise to build a wharekai. The struggle to raise funds was a long and hard one. However, their efforts were rewarded some 12 years later when on 9 April 1955, the wharekai named Tangitū was opened. Unfortunately, by the 1950s the wharenui was beginning to fall into disrepair. In the 1970s the Hapū once again took on fundraising, this time to build a new wharenui. In 1981 the building began and was finally completed on 16 March 1991 with the opening of the current day wharenui. The wharenui (and the one before it) is named Punanga Te Wao.

The Kōhanga Reo building located on Tangoio Marae was opened on 3 April 1993. The Kōhanga Reo is also called Punanga Te Wao.

2.6 Papakāinga at Tangoio

Prior to the 1960s Tangoio was a bustling community with over 20 homes, a Marae, school and post office. The Marae had life all around it because the children, parents and grandparents lived there.

By the 1960s many whānau were forced to move away from their lands due to a series of devastating floods in Tangoio. As a result, many of our people became disconnected from their Marae, wider whānau, culture, Te Reo, mahinga kai and tribal history; their home. The Tangoio community and its many advantages were lost. Today, there are only a handful of whānau who live in Tangoio, near the Marae.

Prior to the cyclone, the Kōhanga Reo was on the Marae, and all of the children were collected and bused over 20 kms from Napier to attend each day.

2.7 History of flooding at Tangoio

This timeline gives some insight into what our whānau experienced during the floods at Tangoio. There have been six major floods in the last 100 years, and numerous other floods. These events are represented on the timeline by the black dots for major floods and small blue dots for other floods.

Our website has videos, photos, news articles and quotes from our whānau about flooding in Tangoio, for more information please see www.tangoio.maori.nz/maraeoptions.

History of Flooding at Tangoio

Figure 4. This timeline gives some insight into what our whānau experienced during the floods at Tangoio. There have been six major floods in the last 100 years, and numerous other floods. These events are represented on the timeline by the black dots for major floods and small blue dots for other floods.

Our website has videos, photos, news articles and quotes from our whānau about flooding in Tangoio, for more information please see www.tangoio.maori.nz/maraeoptions.



1938 ANZAC Day Flood

Violet Koko of Petane commented, “returning after the 1938 flood, the recent earthquake and depression set us back for a long time making no head way. There was about nine feet of silt covering our land”.

Photo: 1938 flood, looking north towards our Marae with the wharenui highlighted.



1956 Flood

Residents forced onto their roof commented that “The whole house shook with the force of the water, and we were afraid we were going to be swept out to sea. Great trunks of trees swept past the house and fortunately none of them made contact.”

Photo: Desolate surroundings of the home of Mr and Mrs Sullivan, which lay in the path of the flood in 1956.

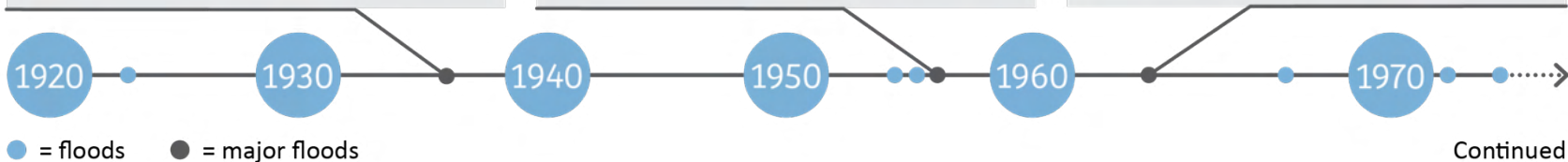


1963 Queen’s Birthday Flood

“...63 it was just amazing, the flood just covered the whole valley...(George Tawhai)” “they would have had to carry us out we were lucky to stand up cause the water was coming down there that fast...”

(Jonny Taunoa)”

Photo: Tangoio School yard clean-up in 1963, left to right: Hana Tawhai, Lala Puna, Graham Johnson, Cathy Taylor.





1988 Cyclone Bola

One of our Kaumātua remembers “...when the whānau saw the damage their hearts just bled because I was building what they dreamt of, their dreams”. “Oh yes they came [to help clean up]. Old people, young people, the lot. My family, my whānau just came down, went there to help whatever they could do...”

Photo: Silt deposits remaining across the valley floor following Cyclone Bola in 1988, with our Marae highlighted.



2018 Hawke’s Bay Flood

“Never seen it like this before”

In March 2018, on the 30th anniversary of Cyclone Bola, Tangoio caught the tail of intense rainfall which centered over the Esk Valley. Water ran like a river down the hills flooding our urupā, Marae grounds (not the buildings), Tangoio properties and the State Highway.

Photo: Floodwaters pouring onto a flooded SH2 across from the Marae.

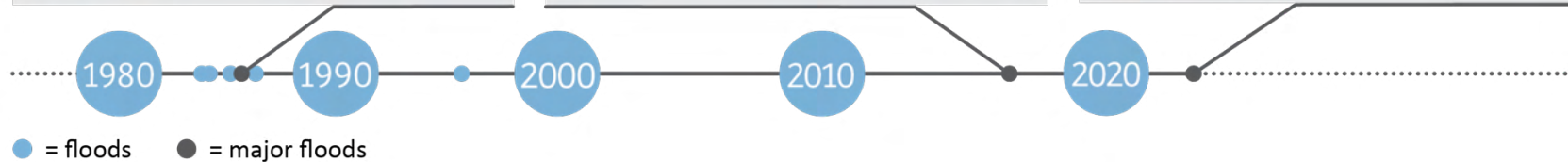


2023 Cyclone Gabrielle

“When I saw the images of what happened to the Marae – it’s the most crying I’ve done in ages (Perēri King)”

“It just broke our hearts, it was so emotional. I was crying inside [the wharenui], people had to awhi me (Kaumātua Bevan Taylor)”

Photo: one of the first photos whānau saw of the devastation - showing silt approx. 0.5m high in the whare tipuna and water marks over 1m high, 14 February 2023.



2.8 Exploring options for our Marae to mitigate flooding

Over the last 13 years, our Hapū together with our Marae Trustees and MTT, have been on a long journey, exploring options to relocate Tangoio Marae or protect and develop the Marae at the current location. For more information please see **Appendix 1**.



Ngā Pāpātanga o te Huripari

Impacts of the Cyclone

Photo: Extremely large quantities of soil, silt and woody debris were deposited in the river valleys, including at Tangoio as shown in this photo of the back of Tangoio Marae.

Credit: Paul Taylor, Hawke's Bay Today



Ngā Pāpātanga o te Huripari

Section 3: Event impacts

3.1 Impacts on whānau and responses

“When seeing the damage done to our whenua it is emotional.”

On 13 and 14 February 2023 Cyclone Gabrielle caused catastrophic damage and flooding across Hawke’s Bay, leaving our Takiwā isolated and vulnerable. 2,346 Hapū members were impacted, losing power for days to months. As an example, power to Arapawanui was only restored by Unison on 19 April 2023 (and some Hapū homes still do not have power as their private connection has not been repaired). Thousands of our Hapū were isolated due to road damage and many displaced from their homes throughout Hawke’s Bay.

Hapū homes impacted within the Takiwā

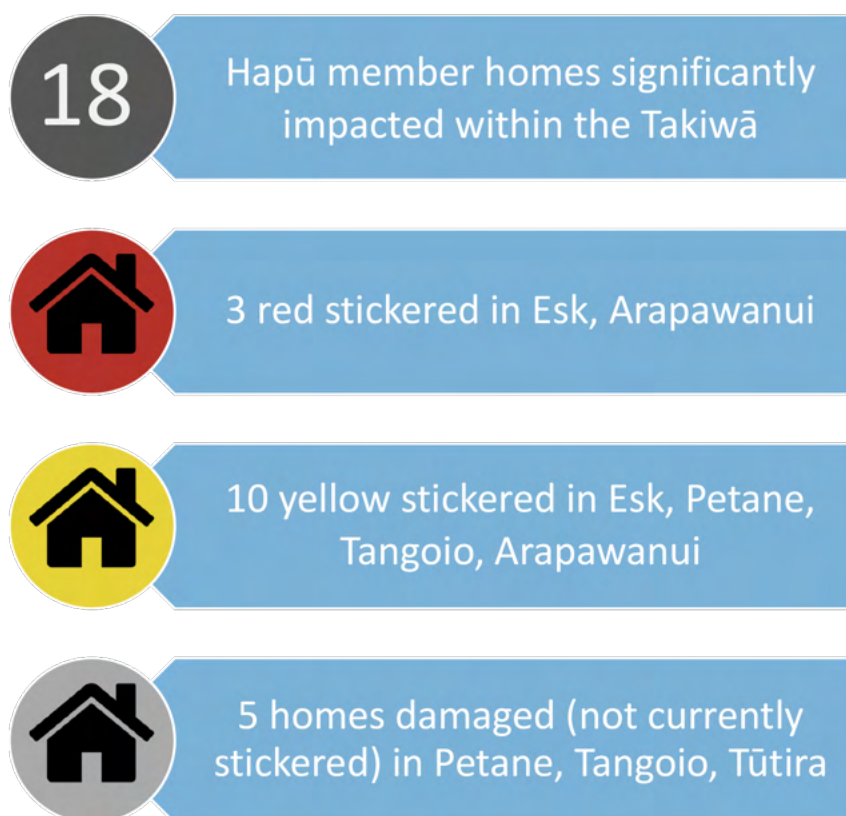


Figure 5. Some of the Hapū homes impacted within the Takiwā were subject to rapid building assessments. MTT later engaged independent builders to visit, assess and provide costs to repair or rebuild 14 of the highest priority homes.

Hapū whānau living within the Takiwā swiftly mobilised to rescue vulnerable people and bring them to safety in the midst of flood-waters laden with debris. Rescues were led by whānau at Tangoio and in the Esk Valley as Civil Defence authorities were either completely cut off or overwhelmed with demand. In Tangoio, the Marae community promptly set up a community hub across the road from the Marae, which not only provided immediate emergency support and relief for displaced whānau, but also served as a crucial and ongoing centre for support. The Tangoio Marae Trustees, whānau and wider community, activated their networks to help each other and collectively respond to the catastrophe.

MTT responded by providing information to connect Hapū members with available services and funding, donating koha to marae, and establishing the [Pūtea Manaaki Emergency Relief Fund](#), which has disbursed \$61,500 (as at 28 April 2023) to Hapū members suffering significant hardship. MTT also took the actions outlined below.

MTT Response for their Hapū whānau

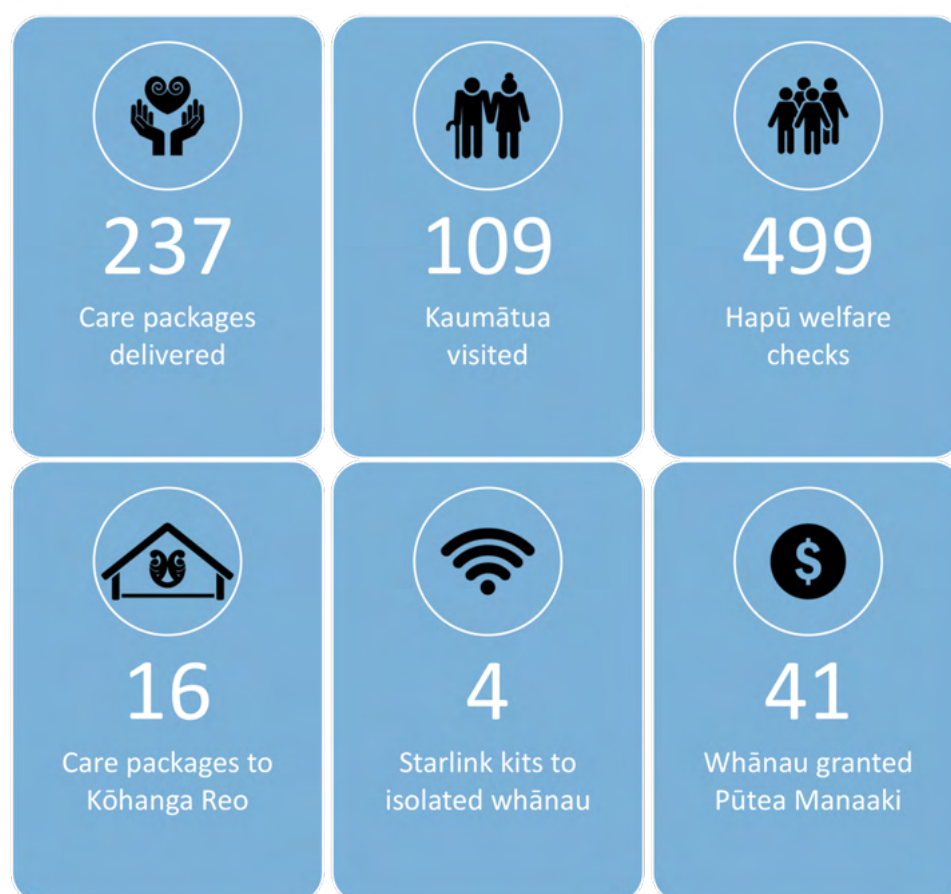


Figure 6. The MTT response outlined above was mostly completed within the first week post-cyclone. The Pūtea Manaaki Emergency Relief Fund is still receiving applications. (For more information on MTT’s response, see **Appendix 2**).

3.2 Impacts on Health & Wellbeing

Cyclone Gabrielle has had a significant impact on the health and wellbeing of whānau within our Takiwā. To better understand the extent of these impacts and identify ways to provide assistance, we developed and conducted a household survey of whānau whose homes are in the Takiwā. These surveys include the Te Whare Tapa Whā model as a comprehensive framework to help understand Māori health and wellbeing, address each dimension and assess the impacts and prioritise the needs of our whānau. To date, 15 surveys have been completed (see **Appendix 2**, Figures 2-3).

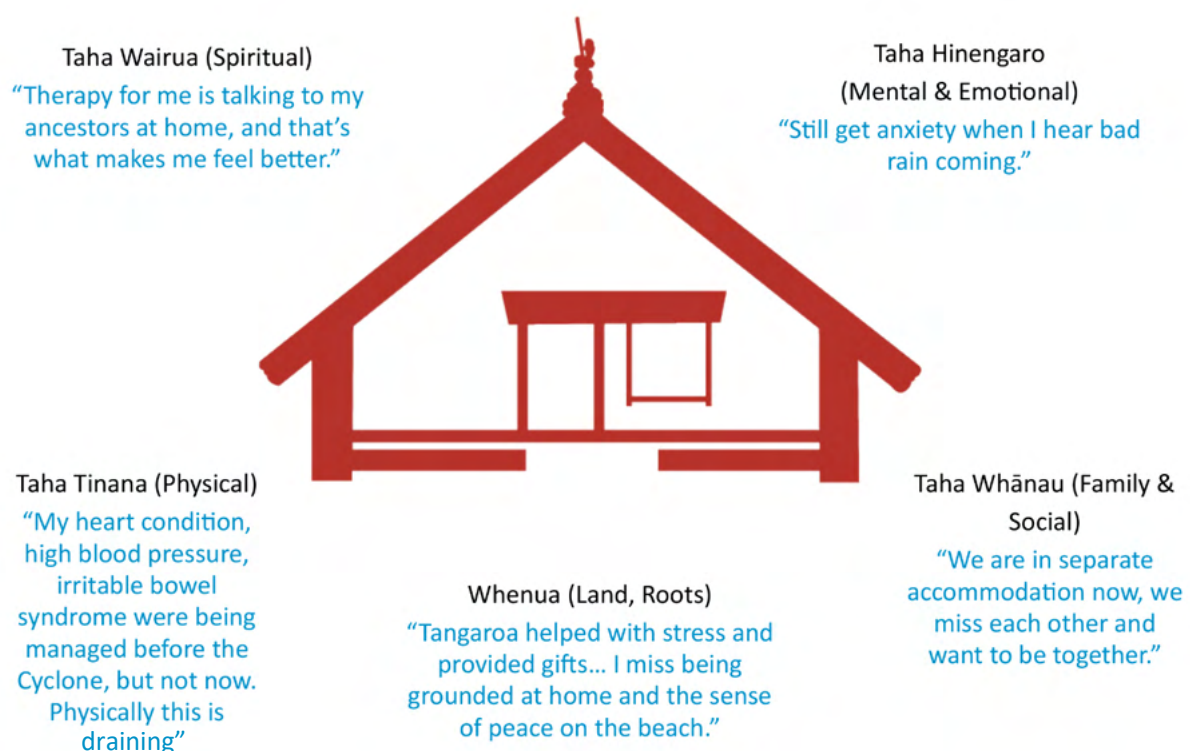


Figure 7. Te Whare Tapa Whā model dimensions of Māori health and wellbeing (Durie 1998) with some direct Hapū member quotes from survey findings.



Figure 8a. Punanga Te Wao, Te Kōhanga Reo was severely damaged and has had to relocate to a temporary site in Clive. They are eager to return to our Takiwā but need to be somewhere safe. While preparing the temporary site, mokopuna have been unable to attend Kōhanga. Kaimahi have been providing resources weekly / fortnightly for tamariki to learn at home. Unfortunately, parents are considering starting their tamariki at other Kōhanga due to the relocation and time taking to make the site suitable. It is important for the survival of our Kōhanga Reo that we can return to low risk areas in our Takiwā.



Figure 8b. Photos of the outside area at the temporary Kōhanga Reo site in Clive. This area needs to be made safe and suitable for tamariki mokopuna to exercise and play, before the Kōhanga Reo can reopen.

Cultural Impacts

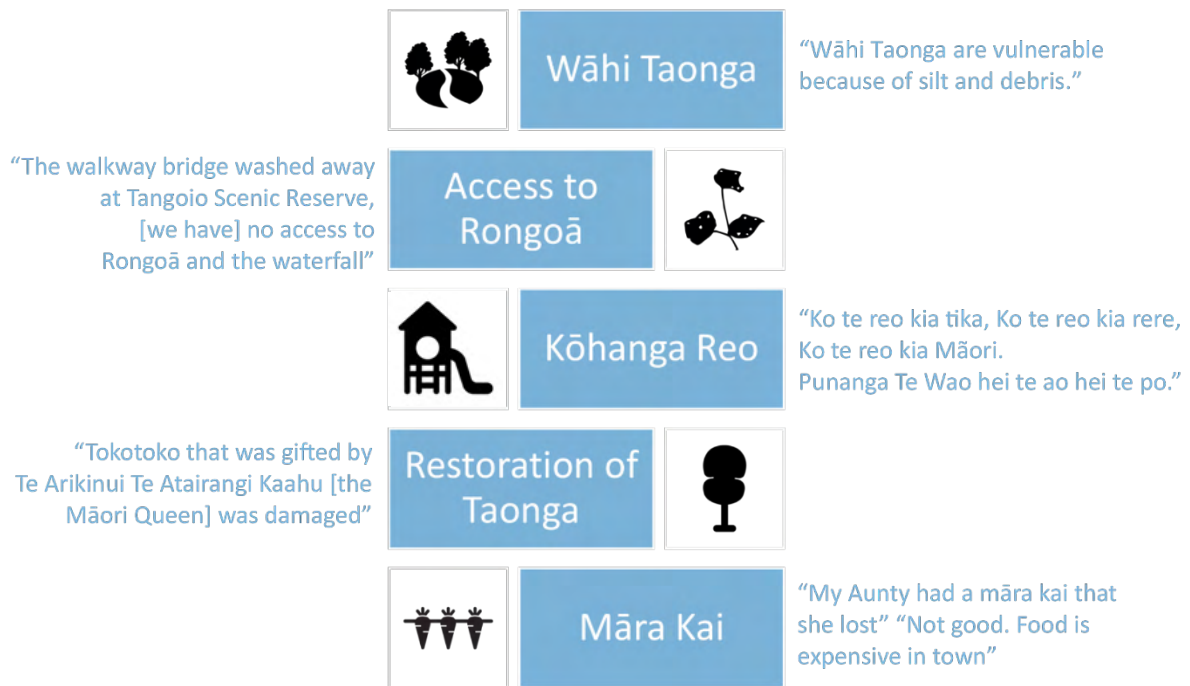


Figure 9. Direct cultural impact - quotes of Hapū members from survey.

3.3 Impacts on Tangoio Marae



Figure 10.

Above: A re-creation of the peak flood water level at the Marae during Cyclone Bola. Image modelled by NIWA (source Joe Taylor).

Top Right: The peak flood water level during Cyclone Gabrielle is shown by the marks on the wall and emphasised in orange.

Right: The peak flood water level shown by the marks on the walls inside our whare tīpuna, Punanga Te Wao, during Cyclone Gabrielle.



“Everyone is heartbroken and wants to see the symbol of their identity,
but it’s going to be broken, it’s hard to go in there cos that’s my life,
that’s who I am, that’s my symbol of strength and it’s smashed.” Perēri King.

As noted in the ‘*Exploring options for our Marae to mitigate flooding*’ in **Appendix 1**, prior to the cyclone MTT had applied for resource consents to redevelop the Marae on a raised platform at Block 32 (300m from the current Marae). Since the cyclone, some Hapū members have questioned the appropriateness of redeveloping the Marae in a flood zone, albeit with increased defences. MTT has sought advice about the impacts of the cyclone on the valley floor (given the large deposits of silt across the valley) and the implications for the proposed development on Block 32. Our engineers are awaiting new LiDAR data from Hawke’s Bay Regional Council to help them to redo the flood modelling. As is usually the case, all modelling to date has been for water flow and did not include silt and debris transport and deposition. We understand that silt is not included in flood modelling as it is difficult to predict how much and where debris and silt will accumulate. Regardless, accumulation of silt is a concern as it could change the flood levels and reduce the effectiveness of the platform.



Figure 11. Left Prior to the cyclone MTT had applied for resource consents to redevelop the Marae on a raised platform at Block 32 (outlined in red). **Right** Satellite imagery shows the silt deposits on and around Block 32. The Marae is visible to the right of the image.

3.4 Impacts on Te Taiao

During Cyclone Gabrielle, rainfall exceeded 20 mm/hour for more than six hours across multiple recording sites in the Takiwā, with the headwaters of the Esk Valley experiencing particularly severe rainfall intensities, peaking at over 30 mm /hour (Harrington et al. 2023; see also **Appendix 3**, Figure 4). The most intense rainfall in the Takiwā arrived in the middle of the night, complicating the delivery of emergency messaging and up-to-date information about weather warnings. Seven of ten sites monitoring rainfall and river flows in the Esk Valley region went offline at 1am on Tuesday February 14 after a repeater station relaying the data failed. This severely impacted the ability of Civil Defence authorities to monitor fast-changing conditions just as rainfall rates proceeded to nearly double over the following hours.

Historical changes in land-use within the Takiwā catchments, including the removal of stabilising vegetation on steep terrain and along riverbanks and plantation forest clearance and management has reduced the strength and stability of soils, making the surrounding catchments susceptible to landslides and increasing debris flows and landslide materials into river systems during heavy rains.

Cyclone Gabrielle's arrival followed an extremely wet January 2023. Total rainfall in January within the Takiwā exceeded 400% of normal January rates (NIWA monthly rainfall anomalies for January 2023). The already saturated soils combined with the sustained, heavy rainfall that occurred during Cyclone Gabrielle resulted in significant land-slippage and erosion in the upper catchments and extensive flooding. Areas in the Esk Catchment had over 500 mm of rainfall in the 24 hours 9am 13 Feb to 9am 14 Feb 2023.

Satellite imagery taken before (22 October 2022) and shortly after Cyclone Gabrielle (19 February 2023) captures the extent of land damage in the upper catchments (see **Appendix 3**, Figures 5-8) and the extremely large quantities of sediment that were mobilised and deposited in the river valleys during the flooding.

The Takiwā has no flood protection stop-banks and silt-laden floodwaters caused significant impacts to housing, Tangoio Marae, productive land and surrounding environments. Silt deposits of up to 3m depth were recorded in several areas, while severe scouring was also recorded in areas of high-water flow (**Appendix 3**, Figures 9-10).



Figure 12. A whānau home in Tangoio had over 1.5m of floodwaters pass through it (Ariana Walker, pictured, is 1.66m tall).

In addition to silt, flood waters swept up forestry slash, trees and other debris which accumulated in sections of the rivers, occasionally creating dams that restricted or redirected water flow and silt. (**Appendix 3**, Figure 11).

“Marae, awa, moana, whenua are all devastated.

This means I can’t enjoy my Marae, fish / swim / wash /
collect kai or care for tuna in the awa.”



Figure 13. Lake Tūtira and State Highway 2

3.5 Impacts on Roothing

Cyclone Gabrielle also had a massive toll on roading in Hawke’s Bay, separating whānau from each other. On State Highway 2 between Tangoio and Wairoa, there were 92 damaged sites, ranging from smaller dropouts to large underslips where the road had been severely undermined. The bridge across the Waikari River was completely washed out, cutting off access to northern Hawke’s Bay. State Highway 5 also suffered major damage with 32 damaged sites along the route ranging from minor dropouts to significant underslips and washouts. There were also many slips along other roads, such as between Whirinaki and Tangoio, Tangoio and Arapawanui, and around Tūtira, which in the early days post-cyclone prevented whānau from leaving those areas to obtain help and supplies, and stymied efforts of responders to reach them by road. Attached as **Appendix 4** is a summary of impacts on roading the the Takiwā from Waka Kotahi.

Kia Tipu te Mauri Ora

Recovery

Photo: Hapū working bees were held at Arapawanui (pictured) and Tangoio, to help clear silt from homes. Credit: Huia Whyte-Puna.



Kia Tipu te Mauri Ora

Section 4: Recovery objectives and priorities

Our Hapū objectives and priorities for short-term recovery in our Takiwā are outlined in the table below. The top five are indicated with numbers. The following table also sets out how our Hapū objectives relate to the HBRF objectives and Pou.



Figure 14. The whānau hub at Tangoio has been a life-saver for many.

Takiwā o Maungaharuru-Tangitū Trust Locality Plan

HBRA

Objectives

Priorities (Short-term)

Objectives

WHĀNAU / COMMUNITY WELLBEING



Priority 1

Tangoio Marae is functioning on resilient land within our Takiwā

Acquire accommodation on resilient land within our Takiwā for Tangoio Marae, via:

- Funding
- Land-use planning and regulatory support

Secure resources critical for the Marae to function.

Acquiring accommodation priority also correlates with 'Environmental Resilience'

Genuine partnership with Māori

Addressing inequities

Working with Te Taiao not against

Climate resilience and adaptation

Fit-for-purpose infrastructure and life-lines



Priority 2

Whānau recover and regain quality of life in our Takiwā

Warm, dry housing for significantly impacted whānau with limited resources. Provide moveable cabins, or repair houses (if feasible).

Genuine partnership with Māori

Addressing inequities

Working with Te Taiao not against

Climate resilience and adaptation

Fit-for-purpose infrastructure and life-lines



*Whānau/Community Wellbeing and 'Environmental Resilience' –
Please see below under 'Environmental Resilience'*

Priority
3



Priority
4

Our Hapū Kōhanga Reo can reopen with a safe outdoor area at the temporary site.

Prepare the temporary Punanga Te Wao Te Kōhanga Reo site in Clive by providing a safe outdoor play area with relocatable equipment. (The Kōhanga Reo was severely damaged in the cyclone, at Tangoio).

** critical before reopening and not funded by Te Kōhanga Reo National Trust.*

Genuine partnership with Māori
Addressing inequities



Priority
5

We recover and build a future where our whānau are prospering culturally, socially, spiritually, and economically.

Resource MTT to engage and lead initiatives for the recovery of our Hapū, Takiwā and communities.

Genuine partnership with Māori
Addressing inequities
Working with Te Taiao not against
Climate resilience and adaptation
Fit-for-purpose infrastructure and life-lines
Stronger productive economy



Health and wellbeing is strengthened in Hapū communities by remedying the impact of post-cyclone trauma

Provide access to rongoā practices and applications for Hapū communities.

Engage with providers to deliver accessible psycho-social, mental and physical health support, especially for those with complex needs.

Genuine partnership with Māori
Addressing inequities



Hapū culture and identity is safeguarded.

Protect wāhi taonga and restore:

- access to rongoā for harvesting
- māra kai (food gardens) & rongoā plants
- damaged whānau taonga

Genuine partnership with Māori
Addressing inequities
Working with Te Taiao not against

ENVIRONMENTAL RESILIENCE



Priority 3

Land is secured for resilient papakāinga in our Takiwā.

Acquire resilient land within our Takiwā for Hapū papakāinga, via:

- funding
- land-use planning and regulatory support

Acquiring resilient land for papakāinga correlates with 'Whānau/Community Wellbeing'

Genuine partnership with Māori

Addressing inequities

Working with Te Taiao not against

Climate resilience and adaptation

Fit-for-purpose infrastructure and life-lines



Our Takiwā becomes healthy and resilient through collective efforts towards recovery

Collaborate with partners to develop:

- environmental restoration programmes
- strategies to mitigate and adapt to climate change

informed by mātauranga ā-Hapū, science and planning.

Genuine partnership with Māori

Addressing inequities

Working with Te Taiao not against

Climate resilience and adaptation

Fit-for-purpose infrastructure and life-lines

Stronger productive economy



Immediate environmental concerns in our Takiwā are urgently addressed.

Act immediately to:

- repair predator-suppression areas
- repair Hinekatorangi wetland outlet to remove floodwaters for the restoration of the wetland
- stabilise bank erosion and remove environmental waste in priority areas

Genuine partnership with Māori

Addressing inequities

Working with Te Taiao not against

RESILIENT INFRASTRUCTURE



Flooding from smaller rainfall events is avoided in vulnerable Hapū communities and assets

Assess flow, repair and upgrade drains/culverts on Māori land in Tangoio, Arapawanui and Hapū assets to increase drainage capacity.

Genuine partnership with Māori
Addressing inequities
Working with Te Taiao not against
Climate resilience and adaptation
Fit-for-purpose infrastructure and life-lines
Stronger productive economy

PRIMARY SECTOR



Productive and smart land use options are accessible for Māori multiply-owned blocks and Hapū assets.

Assess cyclone impacts and smart land use options for Hapū assets and Māori multiply-owned blocks in Tangoio and Arapawanui (in partnership with land owners).

Receive advice and implement actions for forestry and farming (to arrest erosion and increase soil fertility).

Genuine partnership with Māori
Addressing inequities
Working with Te Taiao not against
Climate resilience and adaptation
Fit-for-purpose infrastructure and life-lines
Stronger productive economy



RECOVERY TRANSITION



Isolated Hapū communities are prepared for emergencies.

Strengthen our Hapū and isolated communities Civil Defence Planning with:

- emergency training
- emergency services
- resourced Hapū and community hubs
- agency engagement

Genuine partnership with Māori
Addressing inequities
Working with Te Taiao not against
Climate resilience and adaptation
Fit-for-purpose infrastructure and life-lines
Stronger productive economy

Kia Tipu te Mauri Ora, Me Hoki Whenua Mai

Return land so that we thrive

Now is the opportune time to honour Te Tiriti, the apology from the Crown, and address compounding injustices and inequities.

For our Hapū to thrive, we need land returned to us for:

- our Marae, the heart of our Hapū community
- our Kōhanga Reo, to nurture our mokopuna
- papakāinga, a safe warm dry place to live in our ancestral home

The land needs to:

- minimise hazards: not be exposed to risks of flooding, tsunamis, liquefaction, coastal inundation
- have sufficient space to be built upon
- be within 40 minutes drive from Napier (ideally)
- be within our takiwā, ideally in Tangoio



Takohanga

Section 5: Roles and responsibilities

5.1 Roles and responsibilities of agencies involved in recovery

In recovery, collaborative planning and coordinated implementation of work programmes is essential. Our Takiwā overlaps with:

- the Napier City Council's (**NCC**) Ahuriri Ward (in particular, Westshore, Bay View and Esk Valley),
- the Hastings District Council's (**HDC**) Mōhaka Ward,
- the Hawke's Bay Regional Council's (**HBRC**) Māui ki te Raki and Ngaruroro wards, and
- with the Wairoa District Council's (**WDC**) Māori and General Wards.

The short timeframes to draft this Plan did not allow MTT to co-design locality plans with its partner councils. In addition, there was no time to engage with our neighbouring PSGEs and taiwhenua. We expect to be able to engage effectively with our partner councils and neighbouring PSGEs and taiwhenua in the next iteration of our locality planning, as well as other partner or lead agencies involved in the recovery effort.

Maungaharuru-Tangitū Trust will:

- work closely with partner councils to ensure that our shared priorities are effectively communicated and addressed at both the regional and national levels.
- work together with Te Kāhui Ohanga, the Matariki Governance Group and the Regional Recovery Agency to further the objectives of the Hawke's Bay Recovery Framework;
- establish a system for monitoring and communicating recovery actions to our Hapū and others on progress

Central government departments participate in recovery through the six Pou and the delivery of recovery services. Planning for recovery activities must include MTT priorities and be undertaken by participating agencies including (but not limited to):

Pou	Agencies
Community & Whānau Wellbeing	Te Puni Kōkiri (TPK), HDC, Ministry for Social Development (MSD), NCC, Red Cross, Salvation Army and other funders, MTG Museum, Te Papa, Pouhere Taonga Heritage NZ, Ministry for Housing & Urban Development (MHUD), Kāinga Ora (KO), Temporary Accommodation Service (TAS), Te Taiwhenua o Te Whanganui-ā-Orotu, DIA, MSD, MPI, Te Whatu Ora, Choices Kahungunu, ECCT, EECA – Insulation and Heat Pump assessments, Te Kupenga Hauora Ahuriri
Environmental Resilience	HBRC, HDC, NCC, DOC, Rayonier Matariki, ECOED, Science NZ (CRIS), independent science / planning institutes & universities
Resilient Infrastructure	HDC, Waka Kotahi NZ Transport Agency, HBRC, NCC, Unison
Primary Sector	Hastings District Council, Rural Advisory Group (RAG), Hastings District Rural Community Board, Ministry for Primary Industries (MPI)
Economic Growth	HDC, NCC, Hawke's Bay Chamber of Commerce, Hawke's Bay Regional Economic Development Agency (REDA), Ministry of Business Innovation & Employment (MBIE), NZ Science
Recovery Transition	Hastings District Council, Hawkes Bay CDEM Group

5.2 Leadership of this Locality Plan

Our Plan and long term recovery requires an intimate knowledge of our Hapū, whānau, Tangoio Marae and our Takiwā. It has been completed under constrained circumstances, lacking the resources, engagement and standard of due diligence that would typically be applied. It took leadership by a small recovery team and significant voluntary efforts by Trustees of MTT, Tangoio Marae and the wider whānau, as well as initial resourcing from MTT to make it happen.

The health and well-being of whānau in our Takiwā, especially in Tangoio, Arapawanui, Tūtira and Esk remains fragile. Notwithstanding the cyclone aftermath, the whenua where the few remaining whānau live is flood-prone (refer Section 2.2 'Tangata whenua with no whenua'). The whānau that physically remain have a deep connection to their land, which serves as a bastion of cultural identity. Many whānau have been significantly impacted, and those with limited resources urgently need moveable cabins, or housing repairs (if feasible). Tangoio Marae, Hapū and Te Punanga Te Wao Kōhanga Reo need resilient land within our Takiwā to thrive.

Recovery must be MTT-led and Crown and council enabled and resourced. Initiatives within Tangoio Marae are led by the Tangoio Marae Trustees, and also need to be Crown and council enabled and resourced.

This means:

- the relationship of the Crown and council with MTT is guided by Te Tiriti principles, and apply to our Plan as follows:
 - *Partnership*: to work with MTT in partnership in the governance, design, delivery, and monitoring of recovery initiatives.
 - *Tino rangatiratanga*: to guarantee MTT self-determination and mana motuhake (autonomy) in the design, delivery, and monitoring of recovery;
 - *Active Protection/Equity*: requires the Crown and its agents, to commit to achieving equitable recovery outcomes for the Hapū;
 - *Participation*: requires the Crown and its agents to enable the active involvement of MTT in decision-making processes that affect our Hapū.
- The resourcing of the Crown and councils must be flexible and deployed efficiently to meet the needs and risks that are agreed by MTT (and Tangoio Marae Trustees where applicable).

It does not mean:

- MTT (and the Tangoio Marae Trustees) are expected to achieve recovery without sufficient partnership, resources, and support from the Crown and councils.

- that recovery is exclusive to MTT (and Tangoio Marae), it is for all communities within our Takiwā.
- unlimited Crown resources, complex contracting and reporting.

Once resourcing is secured, MTT will establish a new Recovery Team structure that will be organised into key work streams. The team will be responsible for developing project plans that involve personnel such as project manager, kaiawhina (whānau manaaki, Taiao, and administrative support), advisors, and specialists. This team will develop a monitoring and evaluation framework and also inform and engage with Pou leaders within councils and government agencies. External funding is expected to resource these roles and delivery.

As we move forward in partnership, it is critical that tikanga, mātauranga ā-Hapū and the principles of Te Tiriti o Waitangi are respected and embedded across all recovery practices. This is not only important for the wellbeing and prosperity of our Hapū and Takiwā but also necessary for the broader wellbeing of our communities and society.

Section 6: Recovery initiatives

Initiative Name	Cost (\$m) excl GST	Lead Agency	Timeframe for implementation	How this initiative will help achieve the objective(s) and priorities
WHĀNAU / COMMUNITY WELLBEING				
Tangoio Marae & Resilient Land <u>Priority 1</u>	2.780	Tangoio Marae Trustees (TMT)	Immediate - 12 months	<p>Supports: the provision of resources critical for Tangoio Marae to function, albeit limited, at the current site (and potential temporary site this year) while other options for accommodating the Marae are sought. These include (but not limited to) emergency shelter canopy tents, mobile kitchen and ablution units and management costs (please refer to Tangoio Marae Chair, Hōri Reti for further detail).</p> <p>Supports: acquiring interim accommodation for Tangoio Marae on resilient land within our Takiwā that is not exposed to high risk of flooding and other natural hazards.</p> <ul style="list-style-type: none"> • Land will ideally have some form of accommodation that could temporarily enable the functioning of the Marae and allow for the further full redevelopment of the Marae in future years (whare tīpuna, whare kai, ablutions, kōhanga reo etc). • <i>This Initiative also aligned with Environmental Resilience Pou.</i>

Housing <u>Priority 2</u>	1.485 + tbc	MTT in partnership with agencies	Immediate	<p>Supports: warm, dry housing for significantly impacted whānau with limited resources by providing moveable cabins, or repair houses (if feasible) asap. (Includes necessary private infrastructure and waste removal). 11 Hapū whānau are supported to recover and regain quality of life within their Takiwā. Ahi-kā-roa whānau are appropriately respected, they can make their own decisions, care for themselves, their whānau and are now better equipped to supply their own needs. Quotes and costings are available.</p> <p>Includes:</p> <ul style="list-style-type: none"> • Moveable cabins / house repair including water tanks and wastewater systems 0.955m (replaces initiatives 29, 30, 33 on spreadsheet submitted 17.04.23). • Repair power connections in Tangoio and Arapawanui and provide backup generators (given that connections to isolated areas are still vulnerable): repair connections to 5 homes \$100k; mitigation measures for trees and subsidence threatening power lines in Tangoio and Arapawanui \$150k; generators & fuel at communities where population is larger or more widespread \$80k = 0.330m total cost. (Correlates to item 27 on spreadsheet submitted 17.04.23). • Roding access to homes and urupā at Tangoio & Arapawanui is via long accessways which have been badly damaged and need remedial earthworks and metal laid 4km @\$200k (Correlates to item 32 on spreadsheet submitted 17.04.23). • Waste removal from houses sites in Tangoio, Arapawanui, Esk \$ tbc. (Correlates to item 31 on spreadsheet submitted 17.04.23).
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Resilient land for Hapū papakāinga <u>Priority 3</u>	See below under 'Environmental Resilience'			
Hapū Kōhanga Reo playground <u>Priority 4</u>	0.044	MTT	Immediate - 1 month	<p>Supports: reopening our temporary Punanga Te Wao Te Kōhanga Reo site in Clive by providing a safe outdoor play area with relocatable equipment (not funded by Te Kōhanga Reo National Trust).</p> <p>Strengthens: Tamariki mokopuna Māori health and wellbeing - taha tinana, taha wairua, taha hinengaro and taha whānau. * It is not known how long the kōhanga reo will remain at the Clive site, the intent is for outdoor equipment to be all relocatable to be used in future for when Punanga Te Wao returns to the Takiwā. Quotes and costings are available.</p> <ul style="list-style-type: none"> • Concreting for bike riding area \$12,865; landscaping (removal of shingle, replacing with topsoil, grassing) \$9,295; relocatable outdoor play equipment \$21,593.85; Total = \$43,753.85 (Quotes available)

MTT Recovery Team <u>Priority 5</u>	0.630	MTT	Immediate - 12 months	<p>Increase: capability & capacity (beyond existing operations) to enable MTT to engage and lead initiatives for recovery, i.e., financial management, legal compliance, project management, contractors, communications, governance fees.</p> <p>Supports: engagement, collaboration, planning and coordination with: affected whānau, and communities majority of which live in isolated communities including Tangoio, Arapawanui, Tūtira; whānau, kāhui kaumātua, Tangoio Marae Trustees, Maori Land Block Trustees, isolated community hub leaders; the Matariki Governance Group, Regional Recovery Agency, HBRC, HDC, NCC, WDC, Hīkina Whakatutuki (MBIE), Te Manatū Whakahiato Ora (MSD), Te Whatu Ora / Te Aka Whai Ora, Te Puni Kōkiri, Te Tari Taiwhenua (DIA), Te Waka Kotahi, Te Papa Atawhai (DOC), funders, NZ Science (CRIs), independent science institutes, and regional industry sector groups.</p> <p>Supports: MTT to lead or partner with lead and other agencies to enable:</p> <ul style="list-style-type: none"> • Resilient infrastructure: assess, repair and upgrade drains/culverts on Māori land in Tangoio and Arapawanui, MTT assets and management of flows of Te Ngarue and Pākuratahi Streams and Arapawanui River; waste removal from Hapū homes; repairing roading access to homes and urupā at Tangoio and Arapawanui; provision of emergency supplies, training and services to be prepared for emergencies. • Whānau wellbeing: (1) emergency replace / repair housing, psycho-social, counselling and traditional Māori healing support, restoring access to rongoā, (2) assisting the Hapū Kōhanga Reo to prepare the temporary site in Clive by providing a safe outdoor
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				<p>play area (3) reinstating edible gardens, restoration of damaged taonga held by whānau and, (4) protection of wāhi taonga.</p> <ul style="list-style-type: none">• Land use recovery: assess impacts of the cyclone on Hapū multiply owned land and exploration of opportunities for horticulture and forestry.• Environmental resilience: assess impacts of the cyclone on the Takiwā and mitigation and restoration strategies; establish data hubs for catchment-based land use information and advice; reinstatement of predator-exclusion and predator suppression areas at Opouahi and Maungaharuru; earthworks and planting programmes for Te Ngarue and Rangiātaahua streams at Tangoio and Arapawanui River to stabilise river bank erosion; repair Hinekatorangi wetland outlet (Whirinaki); removal of silt, wood debris and waste in particular at Tangoio, Arapawanui; ensuring mātauranga ā-Hapū is incorporated in all environmental resilience initiatives in the Takiwā.• Recovery transition: enable isolated communities to maintain or establish their hubs.• All Pou shares in the recovery to build a future where our whānau are prospering culturally, socially, spiritually, and economically.• 1 FTE Recovery Manager (project management, strategy & relationships), 0.5 FTE Recovery Analyst, 0.5 FTE Kaiawhina (whānau manaaki coordinator), 0.25 FTE Kaiawhina (administrative support), Kaiawhina (Taiao coordinator) Overheads transport (noting the distribution of isolated communities), accommodation, communications, costs of hosting or attending hui including food and koha, printing and other administration costs.
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Strengthen health & wellbeing in Hapū communities	0.170 <i>NOTE: 1.645 estimated Northern Locality needs tbc by agencies</i>	MTT (support <i>THAHT</i>) MTT in partnership with agencies i.e., Te Whatu Ora, Te Kupenga Hauora Ahuriri	Immediate – 12 months	<p>Supports: Traditional Māori healing, rongoā practices and application (0.170m), Hapū communities have access to rongoā - encompasses herbal remedies, physical therapies and spiritual healing, collecting, preparation, application, distribution and monitoring needs (<i>this is a priority, initiative also informed by Te Huarahi o te ora ki Ahuriri Hapū Tohunga (THAHT) (wāhine) e tungia te ururua kia tipu whakaritorito o ngā taonga tuku iho</i>).</p> <p>Supports: Hapū communities psycho-social, mental and physical health and receive targeted, co-ordinated support and needs are monitored. By providing co-ordinated physical health, chronic and complex condition support and monitoring of needs by:</p> <ul style="list-style-type: none"> • Counsellor(s) (at least two positions for <u>northern locality area</u> @ \$125k FTE (incl overhead) 2 x \$125,000 = 0.250m; • <u>GP / Nurse Practitioner</u> (Doctor fees / medications covered by Te Whatu Ora separately) at least one dedicated position for <u>northern locality area</u> @ \$250k FTE; • <u>Physio/Podiatrist</u> \$150k part time FTE (incl overhead) = \$0.400 total cost tbc;
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				<ul style="list-style-type: none">• Provide <u>specialist treatment</u> - contracted Psychiatrist to assess, diagnose and treat/prescribe support (at least 1 @ 350,000 FTE (plus 70k overhead) to service <u>northern locality area</u>) = 0.420m;• Provide <u>mobile clinic/equipped 4WD van</u> of medical professionals that travel to Hapū communities (rural/isolated), complex needs are supported by receiving necessary care at place (homes/community hubs) and or <u>transport</u> is available when required to connect with urban support services = \$0.450 total cost tbc;• Provide for <u>Emergency small, access / service building repairs</u> (handles, grab bars, ramps), budget is available to address any emergency access / safety issues within houses of kaumātua and whānau with complex needs = \$0.100;• Provide for Complex needs Hapū community members to <u>receive food, fuel and medical supplies</u> when identified via mobile clinic/at community hub visits = \$0.025• <i>Initiatives also informed by the ex-Deputy CE of Te Aka Whai Ora.</i>
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Safeguard Hapū culture & identity	0.063m + wāhi taonga and cultural monitors tbc	MTT HDC, DOC, MTG Museum, Te Papa, Pouhere Taonga Heritage NZ	Next 5 months (before October)	<p>Protect: wāhi taonga, desktop assessment by HDC of impact on MTT wāhi taonga, plan remedial work that can be funded ASAP and agreed with landowners; protection of registered and soon to be registered wāhi taonga from earthworks and other recovery activities; engagement of MTT Hapū Cultural Monitors for observation of works on or near wāhi taonga and archaeological sites (Cost tbc).</p> <p>Safe access: to rongoā in the following Reserves is restored and maintenance work undertaken to ensure care and supply of rongoā in Scenic Reserves: Tangoio, White Pine Bush, Waipātiki, Opouahi, Boundary Stream Reserve (Cost tbc by DOC).</p> <p>Support: whānau living in our Takiwā have the necessary tools, materials, soil and seeds/seedlings to: restore māra kai and rongoā plants; the cultural practice of growing and providing home-grown kai, food security and rongoā (medicinal plants) is enabled = \$0.023 (estimates available).</p> <p>Support: whānau with damaged taonga in their homes that were damaged in the cyclone are repaired / restored / replaced. Including, Tīpuna portraits, Whakairo (carvings), Woven taonga, Heirlooms so that they remain with whānau for cultural use and to be passed down through generations = \$0.040 (estimates available).</p>
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ENVIRONMENTAL RESILIENCE

<p>Resilient land for Hapū papakāinga</p> <p><u>Priority 3</u></p>	5.0m	MTT	Immediate - 12 months	<p>Supports: the acquisition of resilient land within our Takiwā for safe Hapū papakāinga, via funding and land-use planning and regulations.</p> <ul style="list-style-type: none"> • We have estimated \$5.0m for papakāinga land (MTT's last survey of appropriate lands was completed in 2018 see Appendix 1. Based on shortlisted blocks identified in 2018 and current RVs the cost of purchasing one of those properties could be up to \$5.0m plus other expenses). <p>Supports: Priority 2, by providing an option for affected whānau to relocate their moveable cabins.</p> <p><i>This Initiative also aligned with Whānau/Community Wellbeing Pou.</i></p>
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Natural Environment – Informed strategies	0.30 + data hub tbc	HBRC, HDC, NCC & supporting agencies (Science NZ, Independent Science & Planning Institutes, Universities) in partnership with MTT	Immediate and ongoing	<p>Supports: collaboration with partners to develop environmental restoration programmes; strategies to mitigate and adapt to climate change informed by mātauranga ā-Hapū, science and planning.</p> <p>Push ‘pause’ on at risk new developments: Consents for new developments in areas that are flood prone and/or at risk from coastal hazards to be put on hold. (Note this does not include rebuilds for current use in those areas but targeted to new development proposals).</p> <p>Supports: Establishment of <u>data and interpretation hubs</u> to collate catchment-based land use information and advice. MTT priorities are Tangoio, Arapawanui, Tūtira, but all catchments in the MTT Takiwā need to be included. Data hubs to allow planning that uses the best, most up-to-date information, in the context of climate change, so we can all “build back better and smarter”.</p> <p>Supports: strategies, programmes, policy and planning to be informed by mātauranga ā-Hapū [and science] by partnering to develop, prioritise and source funding. This requires specialised MTT capability including engagement with kaumātua and whānau. This leads to a deeper understanding of Te Taiao and improved environmental outcomes = \$0.30.</p>
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Natural Environment – Immediate actions	0.790 Wetland outlet repair & waste removal costs, earthworks tbc	HBRC, HDC, DOC & supporting agencies in partnership with MTT	Immediate	<p>Act now to: <u>repair</u> predator-suppression areas, <u>Hinekatorangi wetland outlet</u> to remove floodwaters for restoration of the wetland, <u>stabilise</u> bank erosion and remove environmental waste in priority areas.</p> <ul style="list-style-type: none"> • Removal of <u>predator incursions</u> into Opouahi Scenic Reserve (while the predator-exclusion fence was damaged due to the cyclone) = \$0.02m. • Repair of <u>3km damaged road</u> to seabird site (predator-exclusion fenced area) = \$0.150m. • <u>Predator control</u> for Boundary Stream Mainland Island to 'catch up' from the suspension caused by access difficulties and replacement of damaged traps = \$0.040m (Costs estimated April 2023 in consultation with DOC). • <u>Stabilise</u> bank erosion and <u>remove</u> environmental waste. <p>Supports: indigenous ecosystem, biodiversity & conservation and helps to protect native species (<u>and must be completed before seabirds return in November</u>). The native species within the fenced areas can once again be protected from the risk of predation from (i.e. rats, mustelids, possums); at Opouahi, kiwi chicks can be protected and the Kiwi Recovery program can continue to raise chicks in the sanctuary for safe return to Kaweka once they are large enough to defend themselves; at Boundary Stream, the endangered tītī (Cook's Petrel) & kōrure (Mottled Petrel) can be protected and the reintroduction programme can continue.</p> <p>A <u>large investment has already been made</u> into re-establishing a seabird colony on Maungaharuru. The adults will return later in</p>
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				<p>the year to breed and must be safe from mammalian predators to do so.</p> <p>Supports: the <u>repair</u> of Hinekatorangi wetland outlet to remove floodwaters for the restoration of the wetland in a way that is safe for the ecosystem and the nearby community. Blocking of the outlet pipe prevents floodwaters from draining efficiently in extreme rainfall events and stops restoration of good habitat for the critically endangered matuku (bittern) (cost tbc).</p> <p>Supports: the removal of cyclone created environmental waste in the Takiwā to enable recovery, restoration and allow communities to use the land in: Tangoio Valley, especially around the settlement and Tangoio Marae; Arapawanui Valley, especially on Māori-owned land at the rivermouth (cost tbc).</p> <p>Supports: Some erodible areas are planted to reduce erosion and sedimentation of rivers by planting ~100,000 plants this season by MTT's Manu Tāiko rangers at Tangoio (Te Ngarue & Rangiātaahua Streams) and Arapawanui and some priority riparian margins are planted to assist with bank stabilisation. Cost is estimated using information previously provided by HBRC, i.e. that a team of 7 can plant approx. 100,000 plants in a season, ~\$0.40m and coconut matting used on Kahikanui Stream was \$0.03, estimated needing twice as much this season, for three awa (i.e. \$0.03 x2 x 3 awa = \$0.180. Total = \$0.580m).</p> <p>Supports: Tangoio (Te Ngarue & Rangiātaahua Streams) and Arapawanui with required earthworks completed to bench stream banks where required, to allow for planting for stabilisation.</p>
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RESILIENT INFRASTRUCTURE

Increase drainage capacity of Māori land	0.180m	HDC & MTT in partnership	Immediate – 3-6 months	Supports: the immediate repair and upgrade drains/culverts on MTT assets and Māori land in Tangoio and Arapawanui to avoid flooding from nuisance and smaller rainfall events in an isolated and already vulnerable Māori community. Identify options to enable flow and determine when to open rivermouths prior to or during a flood event with particular focus on the Te Ngarue / Pākuratahi Streams (Tangoio) and Te Waiohingānga River (Esk). (Correlates to item 26 on spreadsheet submitted 17.04.23).
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PRIMARY SECTOR

Productive and smart land use	tbc	HBRC, HDC, NCC & supporting agencies (Science NZ, Independent Science & Planning Institutes, Universities) in partnership with MTT	Immediate - 12 months	Supports: the assessment of cyclone impacts and identifying smart land use options for Hapū assets and Māori multiply-owned blocks in Tangoio and Arapawanui (in partnership with land owners). The blocks are predominantly pastoral or forested.
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RECOVERY TRANSITION

Emergency Preparedness	0.186m	HBRC, HDC, NCC, Civil Defense & supporting agencies in partnership with MTT	Immediate – 6-12 months	<p>Strengthen: our Hapū and isolated communities Civil Defence Planning with emergency training, services and resources including centralised sites with alternative water, power and communications supply and provision for immediate health needs (estimated costs are available).</p> <ul style="list-style-type: none"> Emergency Training: First Aid and Mental First Aid training \$30k; CIMS training \$20k; Evacuation Plans \$10k Resourced Hapū and community hubs: \$10-15k each to host their hub, hui and communications over 12 months \$100k; Starlink 0.026m (Correlates to item 28 on spreadsheet submitted 17.04.23)
TOTAL	\$13.273m (other costs tbc with agencies)			

Section 7: Funding

Recovery initiative name	Description	Total cost (\$m) per annum excl. GST (short-term)	Existing funding amounts tagged to this recovery initiative (\$m) per annum	Any additional funding required and source (\$m) per annum (short-term)
WHĀNAU / COMMUNITY WELLBEING				
Tangoio Marae & Resilient Land <u>Priority 1</u>	Acquire interim accommodation on resilient land within our Takiwā for Tangoio Marae and secure resources critical for the Marae to function: <ul style="list-style-type: none"> ○ Funding ○ Land-use planning and regulatory support 	2.780	(0.780 <i>Tangoio Marae Trustees submitted their TPK funding application for critical resources tbc</i>)	2.780 (0.780 tbc via TPK)
Housing <u>Priority 2</u>	Warm, dry housing for significantly impacted whānau with limited resources. Provide moveable cabins, or repair houses (if feasible). (Includes water tanks, wastewater systems.) (0.955) Private infrastructure necessary to connect houses to power (0.330), and roading via driveways (0.200). Waste removal tbc.	1.485 + tbc	(0.955 <i>submitted TPK funding application tbc</i>)	1.485 (0.955 tbc via TPK)

<u>Priority 3</u>	See below under 'Environmental Resilience'			
Hapū Kōhanga Reo playground <u>Priority 4</u>	<p>Prepare the temporary Punanga Te Wao Te Kōhanga Reo site in Clive by providing a safe outdoor play area with relocatable equipment. (The Kōhanga Reo was severely damaged in the cyclone, at Tangoio).</p> <p><i>* critical before reopening and not funded by Te Kōhanga Reo National Trust.</i></p>	0.044	(0.044 submitted TPK funding application tbc)	0.044
MTT Recovery Team <u>Priority 5</u>	Resource MTT to engage and lead initiatives for the recovery of our Hapū, Takiwā and communities.	0.630	(0.410 submitted TPK funding application tbc)	0.630 (0.410 tbc via TPK)
Strengthen health & wellbeing in Hapū communities	<p>Provide access to rongoā practices and applications for Hapū communities (0.170).</p> <p>Engage with providers to deliver (0.450) accessible psycho-social & mental (0.670) and physical health support (0.525), especially for those with complex needs.</p>	0.170 (1.645 estimated for Northern Locality needs tbc by agencies)	0	0.170
Safeguard Hapū culture & identity	<p>Protect wāhi taonga (\$ tbc) and restore:</p> <ul style="list-style-type: none"> ○ access to rongoā for harvesting (\$ tbc) ○ māra kai (food gardens) & rongoā plants (0.023) ○ damaged whānau taonga (0.040) 	0.063 + wāhi taonga and cultural monitors tbc	0	0.063

ENVIRONMENTAL RESILIENCE

Resilient land for papakāinga <i>Priority 3</i>	Acquire resilient land within our Takiwā for safe Hapū papakāinga, via: <ul style="list-style-type: none"> o funding o land-use planning and regulatory support 	5.0	0	5.0
Natural Environment – informed strategies	Collaborate with partners to develop: <ul style="list-style-type: none"> o environmental restoration programmes o strategies to mitigate and adapt to climate change informed by mātauranga ā-Hapū (0.3m), science and planning (\$ tbc).	0.300 + data hub tbc	0	0.300
Natural Environment – immediate actions	Act immediately to: <ul style="list-style-type: none"> o repair predator-suppression areas (0.210) o repair Hinekatorangi wetland outlet to remove floodwaters for the restoration of the wetland (\$ tbc) o stabilise bank erosion (planting 0.580, earthworks \$ tbc) and remove environmental waste in priority areas (\$ tbc) 	0.790 + Wetland outlet repair & waste removal costs, earthworks tbc	0	0.790

RESILIENT INFRASTRUCTURE

Drainage	Assess flow (0.03), repair and upgrade drains/culverts (0.15) on Māori land in Tangoio, Arapawanui and Hapū assets to increase drainage capacity.	0.180	0	0.180
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PRIMARY SECTOR				
Productive and smart land use	Assess cyclone impacts and smart land use options for Hapū assets and Māori multiply-owned blocks in Tangoio and Arapawanui (in partnership with land owners). Receive advice and implement actions for forestry and farming (to arrest erosion and increase soil fertility).	tbc	0	0
RECOVERY TRANSITION				
Emergency Preparedness	Strengthen our Hapū and isolated communities Civil Defence Planning with: <ul style="list-style-type: none">○ emergency training (0.050)○ emergency plan (0.010)○ resourced Hapū and community hubs (0.100)○ Starlink internet (0.026)○ agency engagement	0.186	0	0.186
TOTAL		13.273m (other costs tbc with agencies)	2.585m (tbc via TPK)	13.273m

Whakatīnanatanga

Section 8: Implementation

MTT will establish a new Recovery Team structure that will be organised into key work streams. The team will be responsible for developing project plans that involve personnel such as project leads/managers, kaiawhina (whānau support and outreach), advisors, and specialists. This team will need to inform and engage with Pou leaders within HBRC, HDC and government agencies. External funding is expected to resource these roles and delivery.

As outlined in section 5.2, once resources are secured the new Recovery Team will be responsible for developing a monitoring and evaluation framework to ensure that MTT is engaged in the planning, implementation and reporting of all activities.

The monitoring and evaluation framework will guide the reporting on output and outcomes relevant to our Hapū, Takiwā, Marae and communities.



Ngā Whakaputanga

Section 9: Appendix

1. Exploring options for our Marae to mitigate flooding

Over the last 13 years, our Hapū together with our Marae Trustees and MTT, have been on a long journey, exploring options to relocate Tangoio Marae or protect and develop the Marae at the current location. In short, the Hapū have most recently decided in 2021 to relocate the Marae to the old Tangoio Native School site (Block 32), 300m from the current site. Although still on the valley floor, Block 32 is one metre higher than the current Marae site and modelling showed that a raised platform in that location would offer flood protection that had many advantages compared with a redesigned stopbank at the current Marae site. A master plan for the development has been drafted and approved by the Hapū, and resource consent applications have been filed with the Hawke's Bay Regional and Hastings District Councils in the months just prior to Cyclone Gabrielle. Brief timeline:

2010 - mandate to seek funding to relocate the Marae

At Hui-ā-Kaumātua and Hui-ā-Hapū our whānau agreed to seek funding from the Crown to relocate our Marae. After our Treaty Settlement our whānau would make an informed choice to relocate or protect and develop our Marae at the current location.

2012 - Crown contribution of \$2m

The Crown paid \$2 million towards a Marae Fund.

2013 - MTT additional contribution of \$1m

Our Deed of Settlement was signed and MTT added another \$1 million from the Settlement to the Marae Fund. Interest from the Marae Fund was used to fund improvements, maintenance and insurance payments for the Marae, and to assist with the work of the Marae Options Committee and Marae Development Committee summarised below.

A Marae Options Committee was formed to investigate options for the Marae.

2014-2015 - seeking funding for research

A detailed work programme was developed and funding sought for research about flood risks.

2016-2017 - NIWA research

The Hapū engaged in an 18-month research project '*Exploring coastal adaptation pathways for Tangoio Marae*' with the National Institute of Atmospheric Research Limited (NIWA)

funded by the Deep South Challenge. [Exploring coastal adaptation pathways for Tangoio Marae | Deep South Challenge](#) This project collated information on past floods in Tangoio, carried out hydrological (simulation of water movement on the land surface) and hydrodynamic (simulation of water movement in rivers, and coastal areas) modelling to identify how our Marae might mitigate flood impacts from Te Ngarue Stream. We also co-developed a flood adaptation game 'Marae-Opoly', to help our Hapū assess how sea level rise and extreme floods might impact the Marae. The game helps players (and communities) work through uncertain and complex climate change impacts – making trade-offs and developing strategies for the future, and assessing how well these strategies have served them.

2017-2018 - Marae Options Committee reports that the Marae will stay

The Marae Options Committee comprised 16 Hapū members representing our Kāhui Kaumātua, Marae Trustees, MTT Trustees, Kōhanga Reo representatives and representatives of the whānau and rangatahi. They explored options to relocate Tangoio Marae or protect and develop the Marae at the current location. In terms of offsite options the Committee explored sites that were:

- within 40 minutes drive from Napier (and within our Takiwā)
- at least 0.8 ha of land (less parking than the current site) and
- not exposed to risks of flooding, coastal inundation and liquefaction (unless the liquefaction risk could be mitigated) and did not have more than a low risk of tsunami.

An initial 74 properties that were identified as possibilities were whittled down to just three properties (as some properties were eliminated for various reasons such as access issues or the high level of earthworks that would be required for development). The owners of those three suitable properties were approached, but were not interested in selling.

Various onsite options were also explored including a long stopbank to protect the Marae and papakāinga on adjoining properties. This option was not viable because flood waters come from the awa and also run-off from the hills (so a long stopbank would trap the run-off). Other options that were considered were raising part of the Marae, or the entirety of the Marae property and adjoining papakāinga properties. These options were considered to be too expensive at \$8.2-\$10.8 million. Engineers, Tonkin + Taylor assisted with the flood modelling of options and advised that the western stopbank (at the back of the Marae along the edge of the back carpark) would not protect the Marae in a large flood. Remedial works included replacing the existing stopbank (made of silt from Cyclone Bola) with high-quality fill, increasing the height of the stopbank by 0.5m so that it is higher than SH2 which adjoins the Marae, widening the stopbank, and extending it so it joins up to SH2. Detailed design of the stopbank would be required in the next stage of the project and would be designed to withstand a Probable Maximum Flood, which is the largest flood that could theoretically occur at the current Marae site.

In December 2018, the Marae Options Committee reported to the Hapū that there was only one feasible option - to rebuild the existing, western stopbank. For more information on their report and related video see [Marae Options Video: Preparing our Marae for the future](https://www.tangoio.maori.nz/Marae-Options-Video-Preparing-our-Marae-for-the-future) | [Maungaharuru-Tangitu Trust \(tangoio.maori.nz\)](https://www.tangoio.maori.nz)

2019-2021 - a new site becomes available & the Hapū decide to relocate

In 2019, a new Marae Development Committee was established and comprised representatives of the Kāhui Kaumātua, Marae Trustees, MTT and whānau. Its purpose was to implement the development of the Marae including the western stopbank. While this work was underway, we learned of the upcoming sale of the farm neighbouring the Marae by the Doohan whānau. The Doohans generously offered to koha a 2.7 ha block adjacent to the western stopbank, and also agreed to sell seven other parcels of land in the Tangoio Valley, including the site of the old Tangoio Native School (Block 32) which was approximately 300m from the current Marae site. Transfers were completed in October 2020. New engineers, WSP, were appointed. WSP re-modelled the flooding in the valley and determined that a greater part of the wider catchment needed to be included in the modelling (which had not happened in previous modelling). These adjustments in the modelling identified floodwaters from three sources - the awa, run-off from the hills and overland from the upper valley. The objectives of the stopbanks were to achieve a dry footprint for the Marae (inside the waharoa), provide options for landswaps (to accommodate the stopbanks on neighbouring land and provide alternative land for neighbours) and to protect the Kōhanga which is sited on the Marae, but outside the waharoa. Five stopbank options were modelled. Two were partially successful. The newly purchased Block 32 was also modelled as it was a metre higher than the existing Marae. The modelling showed that if a platform was raised on the block, it could provide adequate protection for a Marae development with minimal impacts on neighbours. Overall it had more advantages than the stopbank options. The Marae Development Committee recommended the Block 32 option to the Hapū and after two hui-ā-hapū, the Hapū decided to relocate the Marae to Block 32.

2022-2023 - Master plan for the new development & filing of consent

Architects Evatt Martin, project managers Halcyon and quantity surveyors Rider Levett Bucknall were appointed to help design, manage and cost a Masterplan for the development of the Marae on Section 32. Options were presented to the Hapū over several hui and a final option approved in August 2022. On 2 November 2022 consent applications were filed with the Hawke's Bay Regional and Hastings District Councils. Limited notification for the consent applications was provided by Hawke's Bay Regional Council on 9 February 2023. The Hastings District Council consent has not yet been limited notified.

2. Impacts on Health & Wellbeing

MTT's Initial Response

The initial response phase, in the first week after the cyclone, was necessarily mainly focused on Hapū members we could physically access. Most of our Takiwā was inaccessible due to roads and bridges being unpassable. Visits were made to all 109 Kaumātua in Napier and 499 other Hapū members in Napier, with 237 care packages delivered.

After the initial response phase, when power returned to the main cities, we were able to access some isolated whānau in our Takiwā and the focus turned to their recovery. We designed a comprehensive survey (using ArcGIS Survey 123 software). We have been surveying whānau whose homes are in our Takiwā, one per household, to obtain good information on their needs and that of their communities. As of 28 April 2023, we have the results from 15 households and the surveying mahi continues.



Figure 1. Satellite imagery post-cyclone showing the Takiwā (teal line) and locations of Hapū homes within the Takiwā (red dots) and in surrounding areas (green dots).

Health & Wellbeing Data for whānau living in our Takiwā

The health and wellbeing of whānau living in our Takiwā was heavily impacted by Cyclone Gabrielle. We are using the well-known Te Whare Tapa Whā model (Durie 1998) to assess impacts on whānau wellbeing using our survey. Participants (typically one per household) are asked (among other things) to rate their wellbeing in relation to different dimensions of Te Whare Tapa Whā. The graphs below show a decline in wellbeing after the cyclone, across all measures.

Cyclone Impacts on Wellbeing

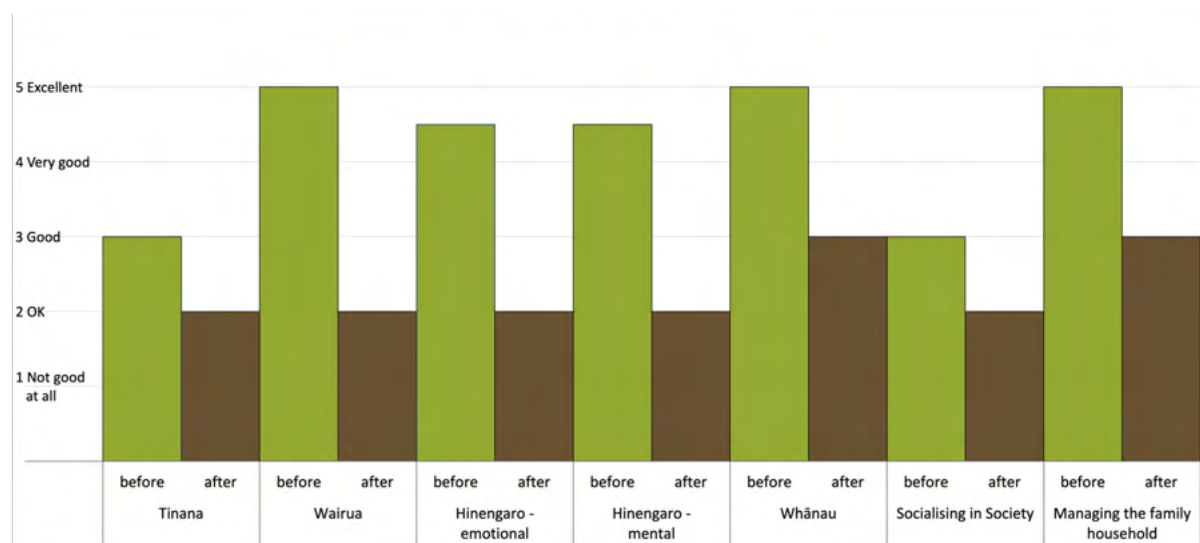


Figure 2. The most frequent wellbeing rating of 15 Hapū members whose homes are within the Takiwā, before and after Cyclone Gabrielle.

Whānau self-rated wellbeing before and after the cyclone

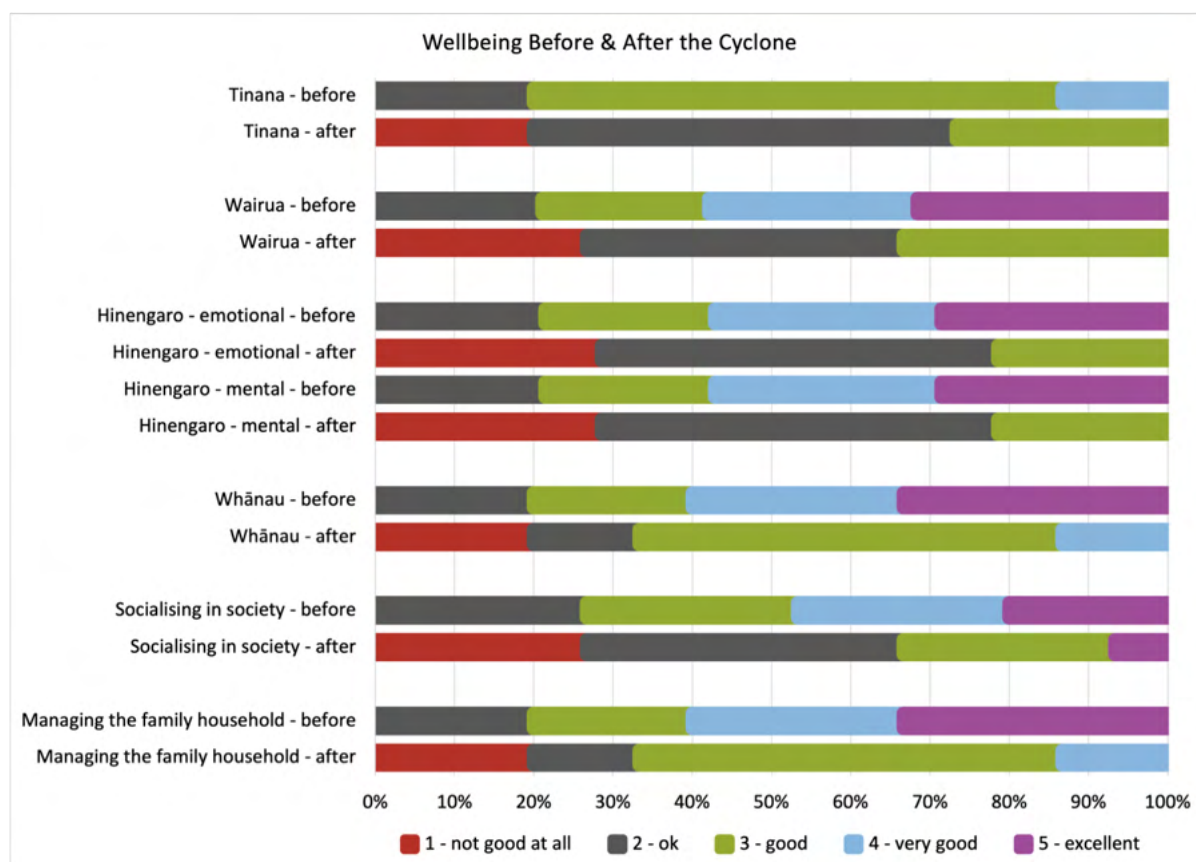


Figure 3. Wellbeing ratings of 15 Hapū members whose homes are within the Takiwā, before and after Cyclone Gabrielle.

Pūtea Manaaki Emergency Relief Fund

MTT established the Pūtea Manaaki Emergency Relief Fund for Hapū members in significant hardship (application form accessible to view at this link: <https://tangoio.maori.nz/putea-manaaki-emergency-relief-fund/>)

The 41 applications to this fund gave us better insight into the severe impacts of the cyclone on Hapū members throughout Hawke's Bay, and two in Auckland.

Reaching out to Hapū members outside our Takiwā

We used our MTT Registration Database to identify 109 hapū households in hard hit suburbs of Hawke's Bay. The addresses were then visualised on ArcGIS Pro using post-cyclone 0.5m satellite imagery provided by [LINZ](https://linz.govt.nz/). The properties that appeared most damaged numbered 36. We called all of these whānau. Many of the phone numbers were no longer active so the effort to contact them is ongoing.

3. Impacts on Te Taiao

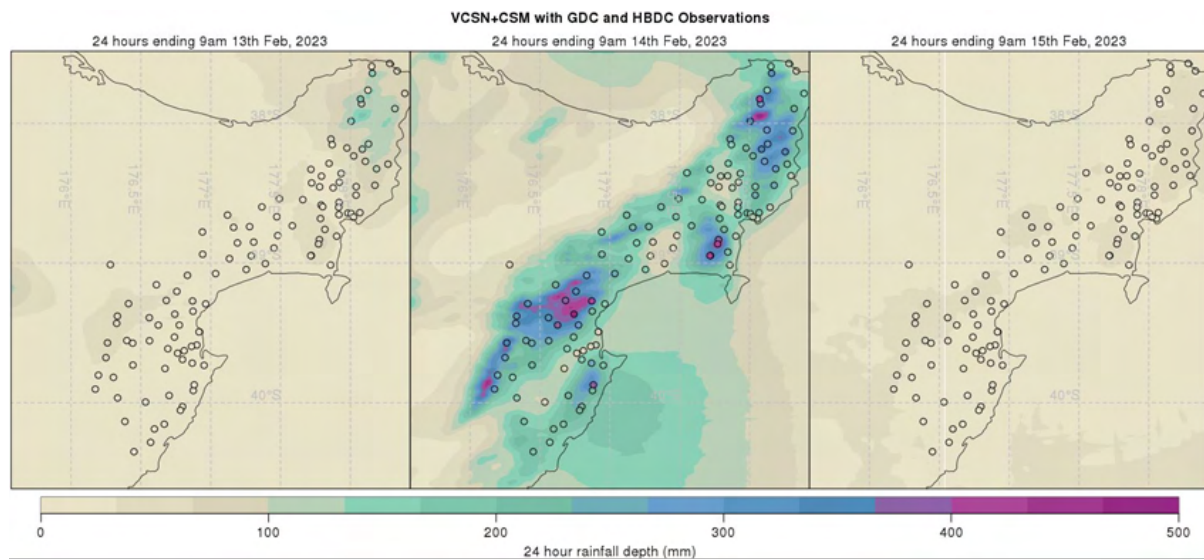


Figure 4. 24-hour rainfall totals over the region during the event taken from HBRC and GDC rain gauges (circles) and interpolated using NIWA's 1.5km resolution weather model as a guide.



Figure 5. Satellite imagery (Sentinel) of the Arapawanui River catchment and Tangoio Beach taken in October 2022 (upper image) and immediately after cyclone Gabrielle (19th February 2023). Red and green boxes denote areas shown in greater detail in Figure 6 and Figure 7.

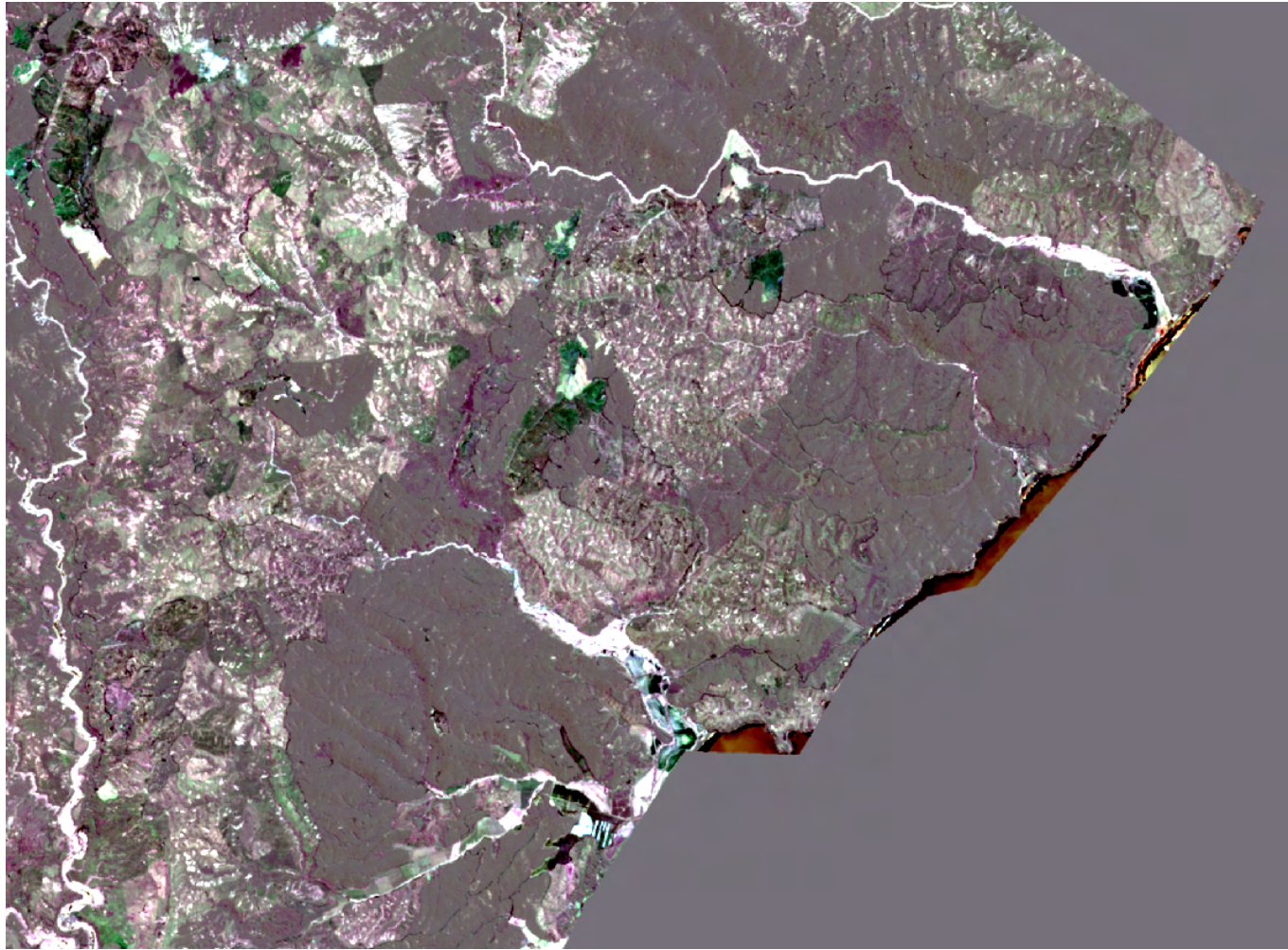


Figure 6. Difference map highlighting areas of significant change (indicated by the very light and very dark colouration) between the October 2020 satellite imagery and post-cyclone Gabrielle (19th February 2023).



Figure 7. Satellite imagery of Tangoio beach and the Arapawanui river mouth in October 2022 (left) and immediately following Cyclone Gabrielle (right). The images give an impression of the extent of floodwater inundation and silt deposition within the lower reaches of the river.



Figure 8. Satellite imagery of the upper catchments of the upper Arapawanui River catchment in October 2022 (left) and immediately following Cyclone Gabrielle (19th February 2023, right). The lighter (white) areas in image on the right are landslides and areas of soil loss from unvegetated hill country.

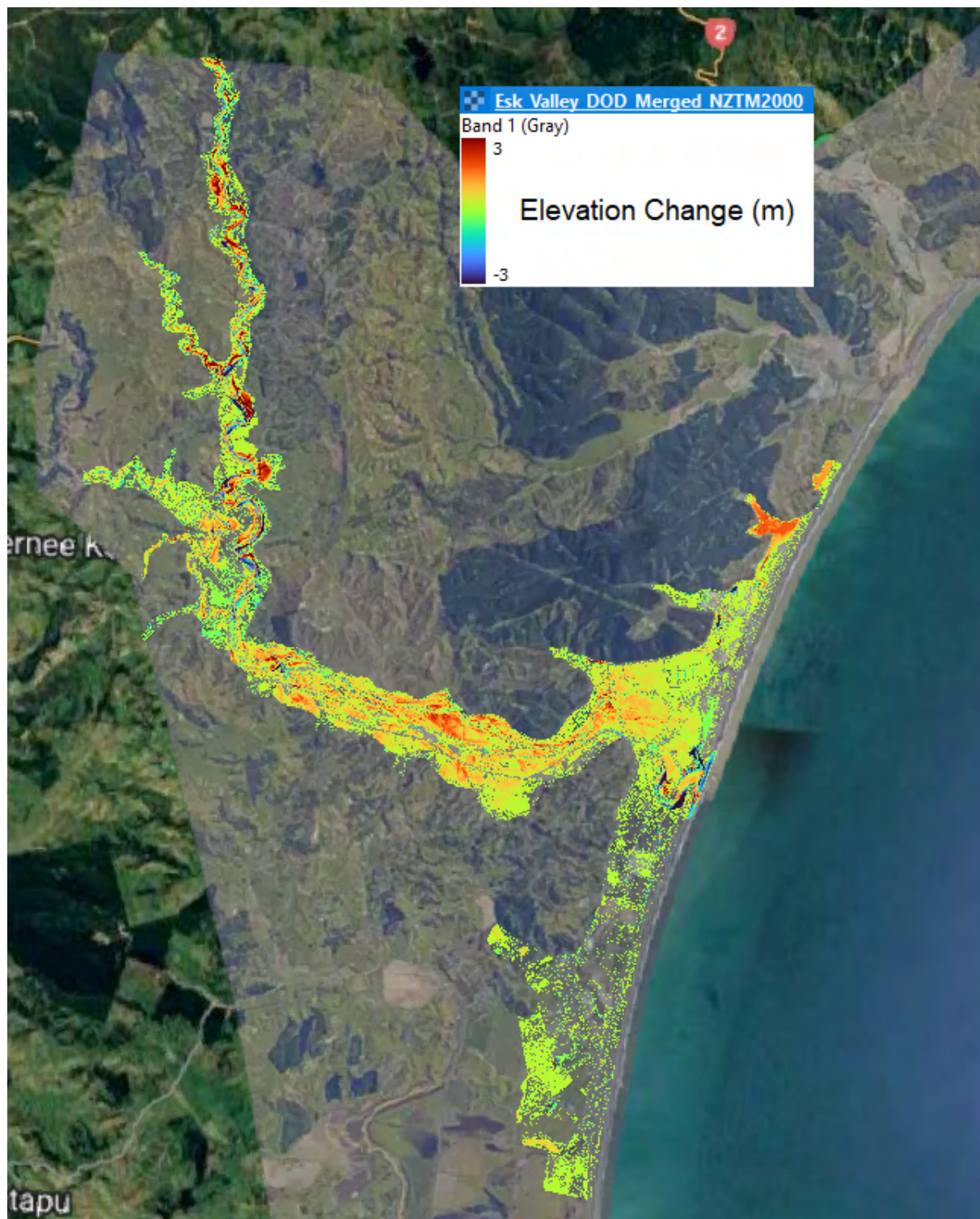


Figure 9. Changes in the elevation of the Esk River valley associated with Cyclone Gabrielle. Large volumes of silt were distributed throughout the flood plain with silt deposits of up to 3 m depth (dark red) in some areas.

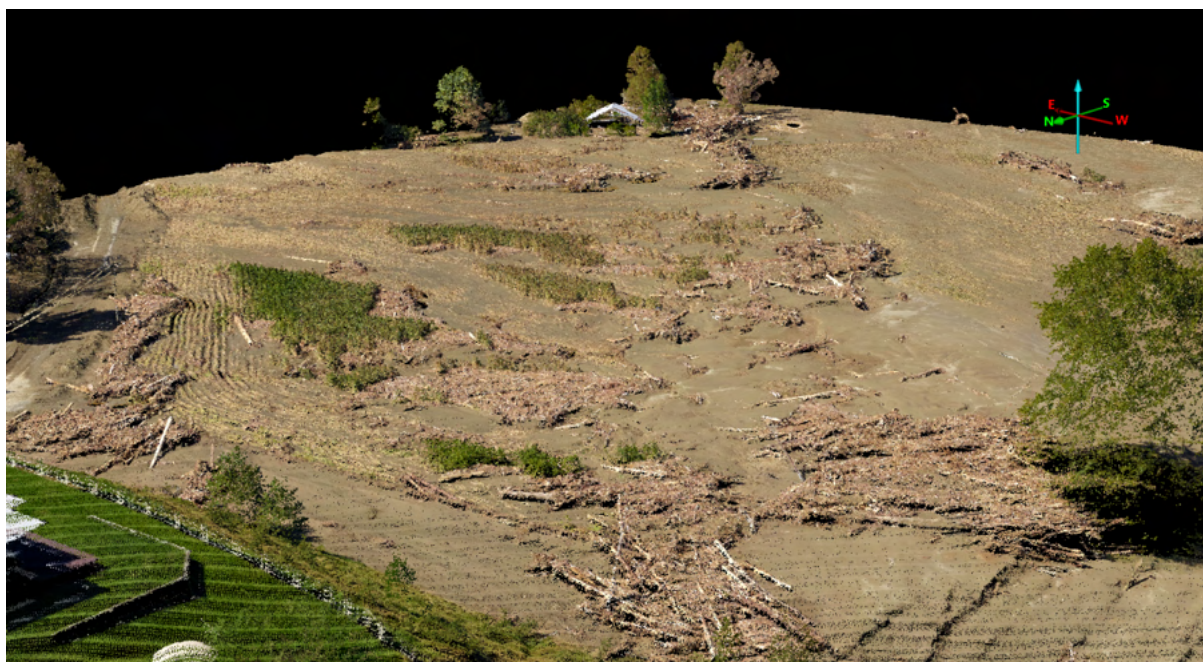
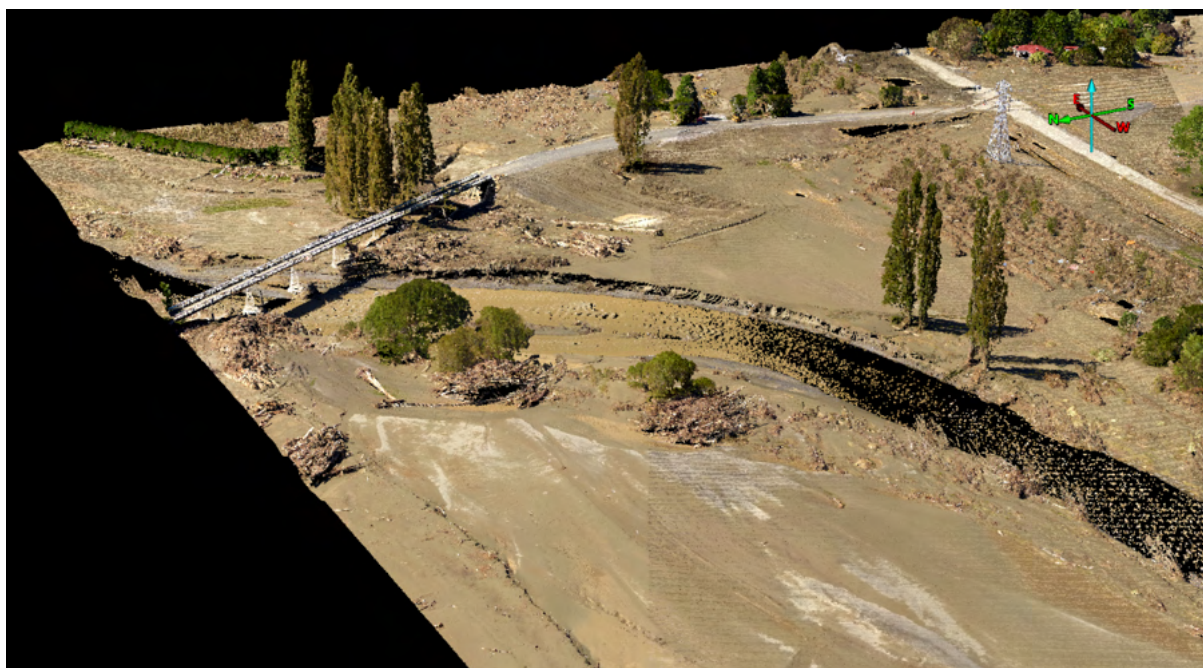


Figure 10. LiDAR (coloured 3-dimensional point clouds) images of woody debris and sediment deposits distributed by flooding in the Esk Valley associated with Cyclone Gabrielle.

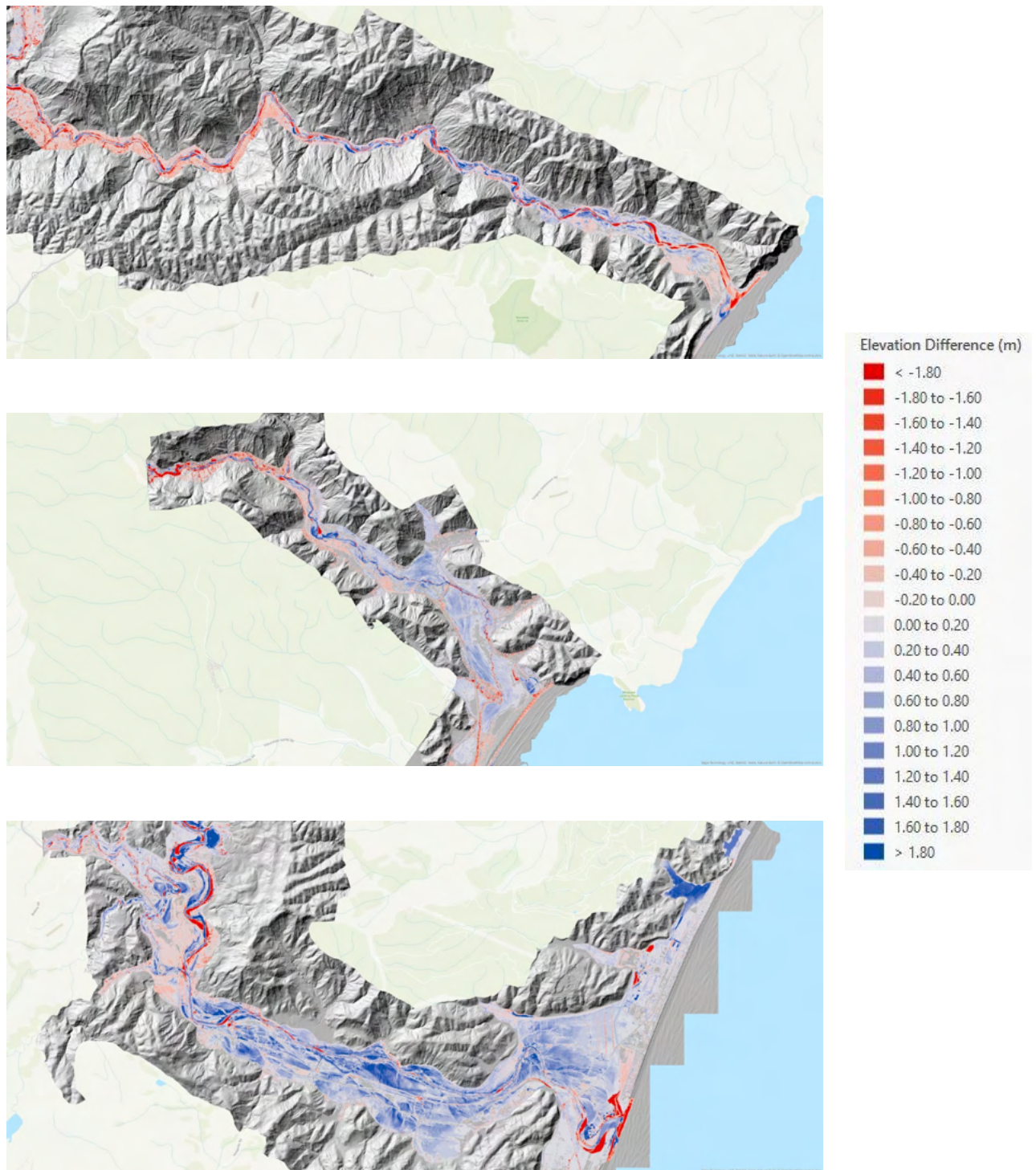


Figure 11. Elevation Change Modelling

The above three images show modelling elevation changes for the Arapawanui (top), Tangoio (middle) and Esk (bottom) catchments calculated by comparing LiDAR datasets at 1 m resolution from the post-Cyclone Gabrielle lidar and the Provincial Growth Fund lidar commission by HBRC and flown in November 2020.

The maps of change are coloured to show elevation gains and losses, which likely represent areas of sedimentation (increasing elevation) and areas of erosion (reduced elevation). The elevation

changes are thresholded, so that changed less than 10 cm (both positive and negative) are not shown as these lie within the uncertainty of the datasets.

The analysis of change is also restricted to show only changes in and around the valley bottoms. Further work is needed to quality assure these results and to create enhanced models of elevation uncertainty that can be used to support more refined modelling of the impacts of Cyclone Gabrielle.

The above images were sourced by Waterways Centre for Freshwater Management, University of Canterbury and University of Lincoln (Waterways Centre) and, the National Institute of Water and Atmospheric Research Limited (NIWA) for its internal purposes only and is provided by Waterways Centre and NIWA on an “as is” basis. Waterways Centre and NIWA does not make any representation or warranty as to the accuracy, completeness, reliability or fitness for any purpose of the images and the information contained within it, and excludes all liability for any expense, damage or loss (whether direct or indirect) suffered or incurred by any person in connection with the use of or reliance on the images and the information they contain.

4. Impacts on the State Highway

This Appendix provides an update on the State Highway network in the Takiwā, as at 1 May 2023, provided by Waka Kotahi. In total, there are 92 damaged sites between Tangoio and Wairoa. They range from smaller dropouts to large underslips where the road has been severely undermined. Please see below three maps listing the damaged sites in the Maungaharuru-Tangitū Trust Takiwā.

Please note: These maps are indicative and are Waka Kotahi maps produced by their teams as part of their wider work on the emergency response (not specifically for Maungaharuru-Tangitū Trust and the recovery plan that the PSGE is working on).

Waikare Gorge bridge:

The bridge across the Waikari River had been fully washed out. It is the only bridge on the Hawke's Bay State Highway network that has been washed out. We are in the process of constructing a temporary Bailey Bridge and are aiming to open it by the end of May (in one go with State Highway 2).

State Highway 5:

SH5 also suffered major damage in Cyclone Gabrielle. The road remains fragile and the risk of slips is still high, especially during heavy rain. There are also 32 damaged sites along the route, ranging from minor dropout to significant under slips and washouts, for example

- SH5 Eland large underslip: road is currently down to one lane. Design is underway with construction anticipated to start in the second week of May to reconstruct the road as it was.
- SH5 Te Haroto large scour where road is reduced to one lane. Design is underway with construction anticipated to start mid-June to reconstruct the road as it was. Large box culvert inlet improvements will also be completed.
- SH5 Glengarry large underslip – currently under construction, anticipated 10-week programme to reconstruct the road (expected completion end of June).
- SH5 Mangakōpikopiko stream – 3 large sites where stream has scoured up to edge of road, temporary work started this week (1 May) to protect the road until a permanent design / solution is completed.

In summary, the planned works cover:

- SH5 – several priority sites, including the Mangakōpikopiko Stream Scour sites (x3)
- SH2 – two items: a temporary buttress required at one site and upcoming abseiling/scaling work to remove big rocks above the road

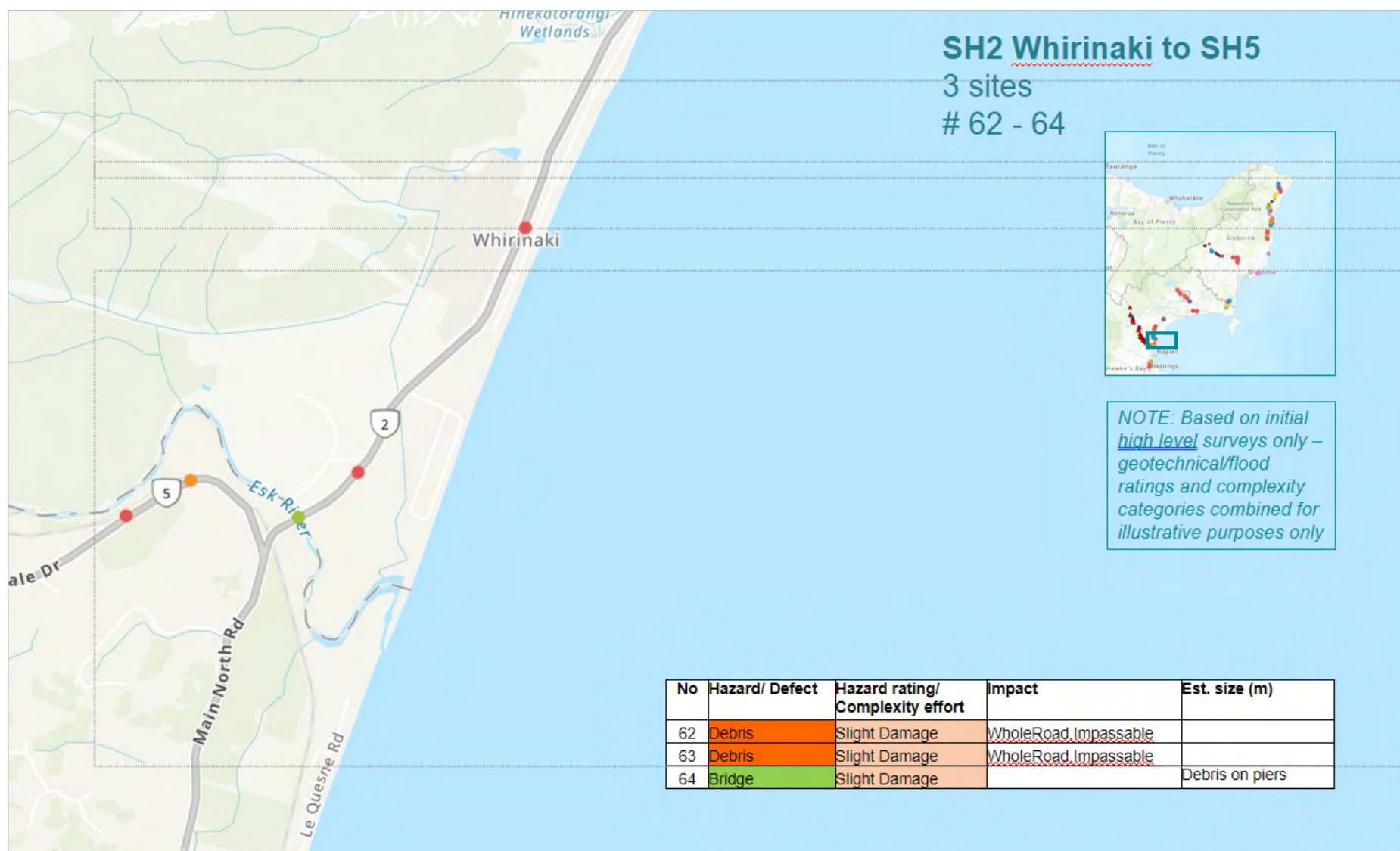


Figure 12. Update on the State Highway network, SH2 Whirinaki to SH5, as at 1 May 2023, provided by Waka Kotahi.

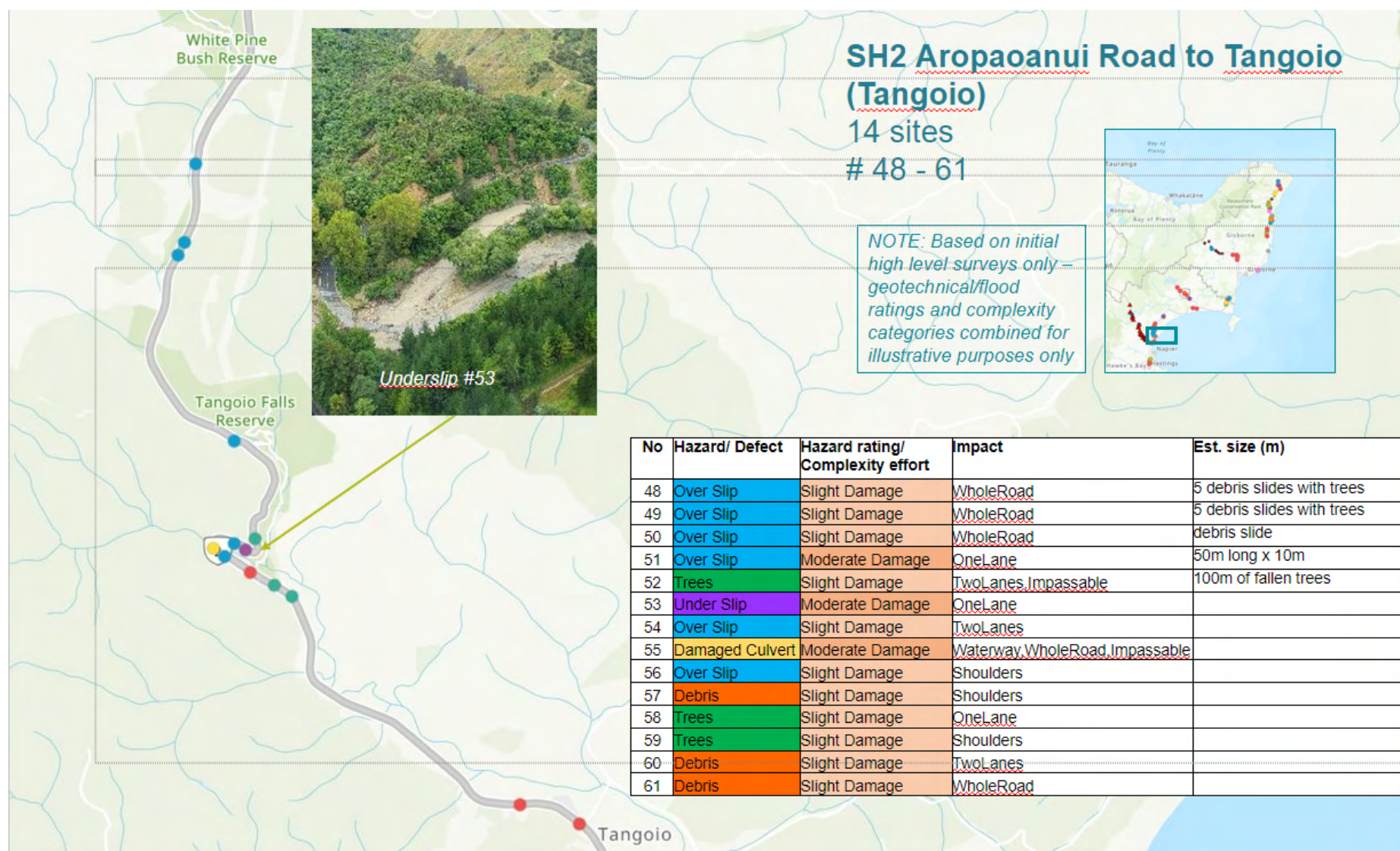


Figure 13. Update on the State Highway network, SH2 Arapawanui to Tangoio, as at 1 May 2023, provided by Waka Kotahi.

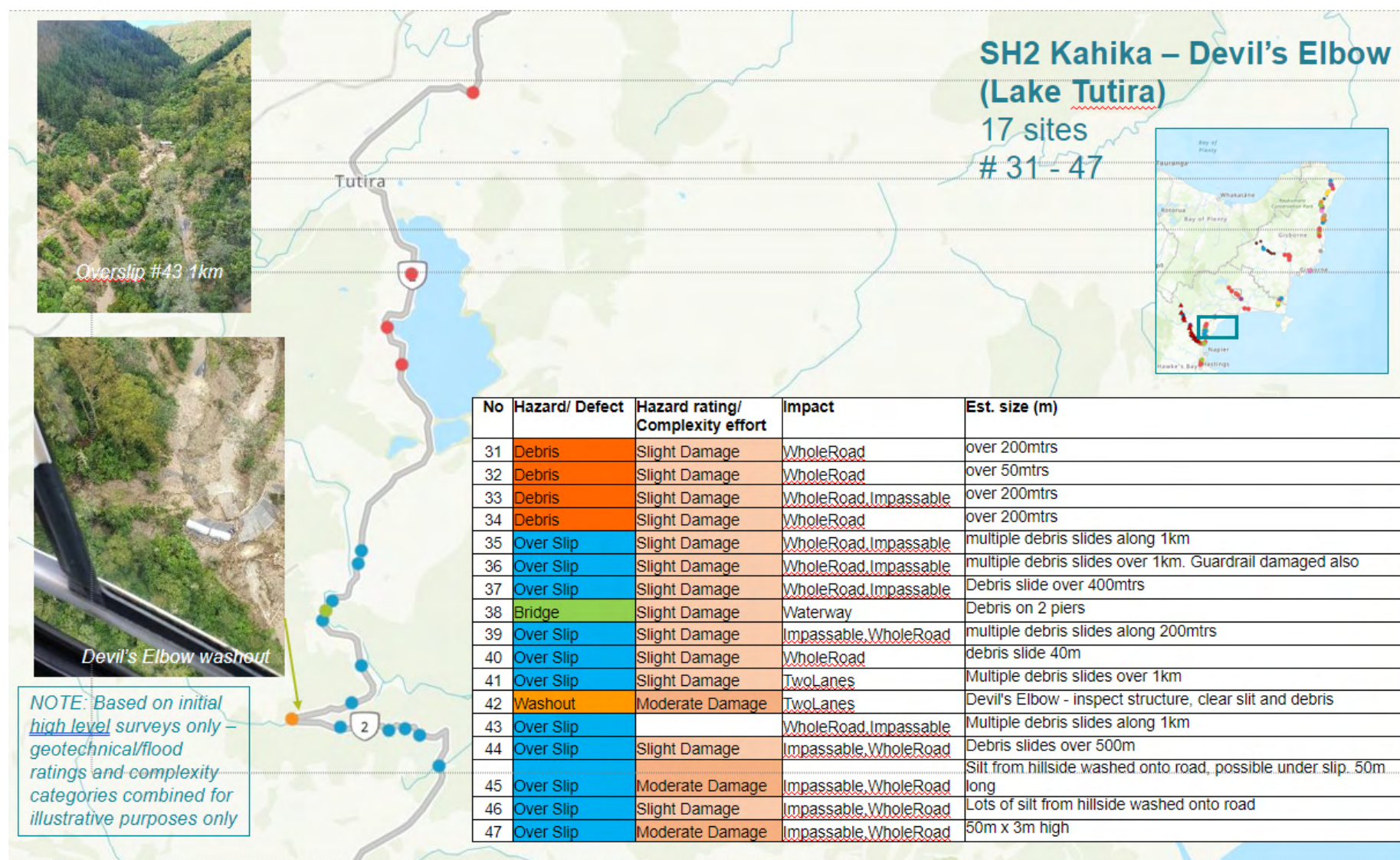


Figure 14. Update on the State Highway network, SH2 Kahika – Devil's Elbow (Lake Tūtira) to SH5, as at 1 May 2023, provided by Waka Kotahi.

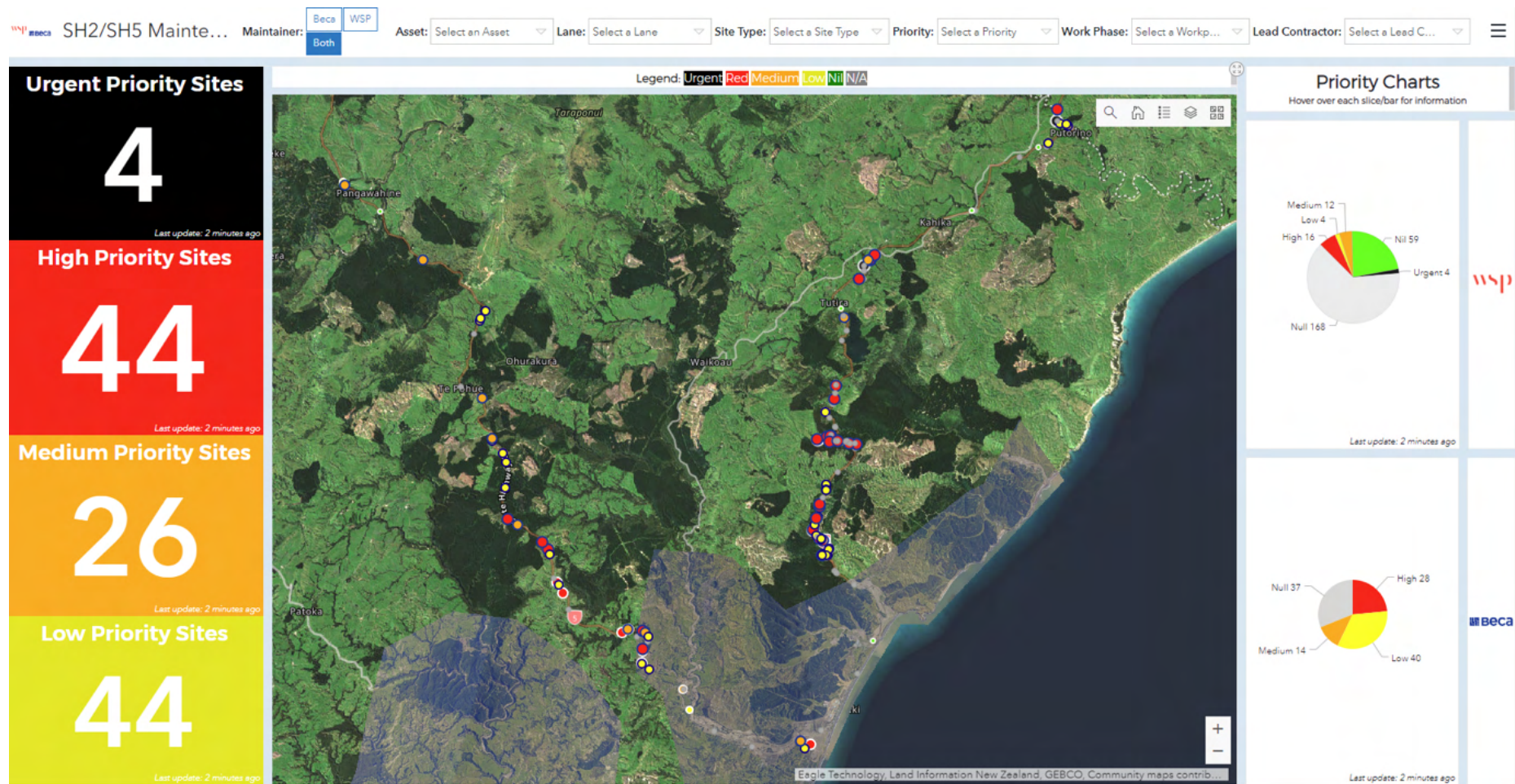


Figure 15. Snapshot of the current situation regarding damaged structures / bridges in the Takiwā, as at 1 May 2023, provided by Waka Kotahi.

Whakaputanga Tuhinga

Section 10: Bibliography

Durie, M. (1998). Whaiaora: Maori health development. Oxford University Press.

Harrington, LJ; Dean, SM; Awatere, S; Rosier, S; Queen, L; Gibson, PB; Barnes, C; Zachariah, M; Philip, S; Kew, S; Koren, G; Pinto, I; Grieco, M; Vahlberg, M; Snigh, R; Heinrich, D; Thalheimer, L; Li, S; Stone, D; Yang, W; Vecchi, GA; Frame, DJ; Otto, FEL (2023). The role of climate change in extreme rainfall associated with Cyclone Gabrielle over Aotearoa New Zealand's East Coast. World Weather Attribution Initiative Scientific Report. DOI: <https://doi.org/10.25561/10262>

NIWA monthly rainfall anomalies for January 2023. Retrieved from: [Climate Summary January 2023 NIWA.pdf](#)



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