



Enhancing earthquake and tsunami preparedness and response in Kura Kaupapa Māori/Schools in Te Tairāwhiti and Waiāriki, Aotearoa New Zealand

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ABSTRACT

Aotearoa New Zealand is exposed to numerous potentially damaging impacts from various hazard events. The east coast of the North Island, one of the most active seismic regions in New Zealand, faces significant earthquake and tsunami risk. Given the variety of hazards the regions face, how risks are managed within schools needs to be considered. This research aims to understand the challenges and opportunities for enhancing earthquake and tsunami preparedness and response in Te Tairāwhiti/Waiāriki Kura Kaupapa Māori/ Kura ā-Iwi (Total Immersion Māori years 1-13)/ mainstream schools (English & bilingual, immersion unit(s) years 1-13). Seven schools were visited from Gisborne to Torere in September 2022. Information was collected from a hui with school staff. Topics included tsunami zones, evacuation practice, resources for teachers, planning at home, school response plans, stakeholder involvement, and capability development. There are two dominant languages in the East Coast region, Te Reo o Te Tairāwhiti and English. Formalities and prestige are conducted in Te Reo o Te Tairāwhiti. Te Reo o Te Tairāwhiti and tikanga (protocols) o Te Tairāwhiti go in unison. The uniqueness of the Te Tairāwhiti language and protocols promote action and a stronger response to an event. A forward work programme was discussed, with the co-development of plan, maps and signage, care packs, and other community-based activities.

1 INTRODUCTION

Aotearoa New Zealand is exposed to numerous potentially damaging impacts from various hazard events. The east coast of the North Island, one of the most active seismic regions in New Zealand, faces significant earthquake and tsunami risk (Wallace 2020). In terms of recent events, on 5 March 2021 a Mw 7.3 occurred

off the East Coast of the North Island at 2.27am and was felt by local residents, who had to decide whether to evacuate or not in response to the shaking. A tsunami warning was also issued approximately three quarters of an hour after the shaking. This event was followed later in the day by a Mw7.4 earthquake at 6.41 a.m. and Mw 8.1 at 8.28 a.m, with both earthquakes located near the Kermadec Islands, and tsunami warnings issued encouraging East Coast residents to evacuate (Vinnell et al., 2022). Recent storm and flood events (e.g. in 2022 and January 2023) have also highlighted the vulnerability of Te Tairāwhiti communities to other hazards. Given the variety of hazards the region faces, how risks are managed within schools needs to be considered. This research aims to understand the challenges and opportunities for enhancing earthquake and tsunami preparedness and response in Te Tairāwhiti/Waiāriki Kura Kaupapa Māori/schools.

In 2021 the research team engaged with several schools in Te Tairāwhiti and Bay of Plenty regions to explore opportunities for improving seismic resilience. Many of the conversations focussed on the recent 5 March 2021 earthquake and tsunami events for context, but there was also a broader korero about education and information in general. Kaiser et al. (2022) concluded there is a need for continued investment in building knowledge and developing capacity and capability at a local level. The key themes from these hui are summarised in Table 1

The 2021 research was then followed up by another visit in September 2022, which gave the researchers an opportunity to further explore Te Tairāwhiti kura/schools' arrangements regarding education, planning and response for earthquakes, tsunami and other hazards.

Table 1: Key themes from August 2021 hui (adapted from Kaiser et al. 2022)

Key themes	Details
Response to the 5 th of March 2021 earthquake and tsunami events	The kura/schools' responses to the March 5 th earthquake and tsunami events were varied. Half (five) of the kura/ schools decided to close for the day following the initial earthquake during the night and did not need to evacuate as a result.
Evacuation on 5 March 2021	The evacuation routes used by schools were varied, some had to work with difficult terrain or cross major roads in order to get to higher ground which was a concern for younger students.
Communication for 5 March 2021	The manner in which participants were alerted to the tsunami warnings was varied. Some communities received mobile alerts, whilst others did not have mobile coverage and relied on warnings through Radio Ngāti Porou, from civil defence and the police, through door knocking or through social media.
Trust in information	Trust in information and debunking misinformation was a common theme throughout the kōrero. There was some confusion around the tsunami inundation maps and questions of how accurate the red, orange and yellow zones were.
Curriculum/ Marautanga	The integration of disaster preparedness into the kura/ school marautanga/ curriculum was also discussed with participants welcoming opportunities for developing locally and hapū-specific education resources and activities with the kura/schools.



Figure 1: Teaching principal Karla Kohatu, J.C.D.R. Researchers Lucy Kaiser and Kelvin Tapuke viewing the recovery of the 2022 floods.

2 METHODY

Seven schools were visited from Gisborne to Tōrere in September 2022.

- Hatea a Rangi School, Tokomaru Bay.
- Te Kura Kaupapa Māori o Te Whare Tāpere o Whātonga, Rangitukia.
- Rerekohu Area School, Te Araroa.
- Te Kura Kaupapa Māori o Kawakawa mai Tāwhiti, Wharekahika (Hicks Bay).
- Te Kura Mana Māori o Whangaparāoa, Whangaparāoa (Cape Runaway).
- Te Whānau ā-Apanui Area School, Omaio.
- Te Kura o Tōrere, Tōrere.

Information was collected from a hui with school staff at each kura/school. Topics covered included tsunami zones, evacuation practice, resources for teachers, planning at home, school response plans, stakeholder involvement, and capability development. The ultimate aim of the team's research was to determine what

lessons can be learned from the resilience of Te Tairāwhiti school communities and what information and resources they need.

3 KEY REFLECTIONS AND FUTURE PLANS

Activities identified during the visits as being undertaken by kura/schools include individual kura/school leadership critically reflecting on actions of increasing whole kura/school tsunami drills. This included in some cases changing the methodology from individual class evacuation-only models to whole kura/school “tuakana/ teina” (older sibling/ younger sibling) evacuation models to increase faster whole-of-kura/school evacuation rates. Schools also reported that the sharing of practice with other schools provided a good source of evidence. This included exemplary, good and poor practices, and local and international examples of practice.

Some schools discussed increasing the mana “significance” of tsunami evacuation in the kura/school community by prioritising ‘community’ reporting of whole kura/school evacuation times such as at school assemblies by kura/school leadership. Curriculum 2023 planning has focussed on activities that create a care approach rather than a fear-based approach to junior to middle primary school levels, with deliberate use of caring language rather than fear-based language. Curriculum planning has also included developing roles and responsibilities for tsunami evacuation for the primary-intermediate age group(s). A focus has also been on co-constructively increasing staff and student learning engagement.

There are two dominant languages in the East Coast region, Te Reo o Te Tairāwhiti and English. Formalities and prestige are conducted in Te Reo o Te Tairāwhiti. Te Reo o Te Tairāwhiti and tikanga (protocols) o te Tairāwhiti go in unison. The uniqueness of the Te Tairāwhiti language and protocols promote action and a stronger response to an event.

Researchers plan to continue their engagement, learning, and planning with Te Tairāwhiti, and consequently planned activities for 2023 include:

- Collaboratively creating an evacuation care bag for each student.
- Developing a collective kura/school community plan.
- Supporting the leadership to access financial resourcing to build internal kura/school leadership.

4 CONCLUSION

Te Tairāwhiti is exposed to many hazards and risks and has had recent experience of earthquakes and tsunamis. Consequently, preparing and planning for these risks is essential, particularly within places like schools which have a wide reach into communities. Research across Te Tairāwhiti has focused on responses to past events such as the 5 March 2021 earthquakes and tsunamis (Kaiser et al., 2022), and the preparedness and planning that has taken place in schools since then. The most effective mechanism for building preparedness is when good, solid messaging comes from trusted sources in communities. Relationships are essential, but the strength of relationships and positive outcomes of working together are very people and time dependent. All groups need to be physically present, *kanohi ki te kanohi* (eye to eye), and be willing to listen and adapt to what the priorities of communities and schools are. Focusing on that is the way forward for ensuring our communities are prepared for future disasters. Moving forward, creating and maintaining relationships between researchers, kura/ schools and emergency management is essential for enhancing preparedness for future earthquake and tsunami. A forward work programme was discussed, with the co-development of plans, maps and signage, care packs, and other community-based activities.



Figure 2: Shakeout poster from 2022.

5 REFERENCES

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