

Te Tai Tokerau Resilience Action Plan

Rationale and Approach

This document is the companion to Te Tai Tokerau Resilience Action Plan.

Ko au te maunga, ko te maunga ko au

Ko au te awa, ko awa ko au

I am the mountain, the mountain is me

I am the river, the river is me

Nei ra te mihi kauanuanu ki te hunga kua whiwhi i tenei karere

“In all my years, it’s never been like this. Our roads have never ever washed away in all generations = my grandfather’s generation, my mother’s generation, never. Now, it’s my grandchildren, and this is the first time our roads have all washed away”.

Cyclones Hale and Gabrielle hit Tai Tokerau hard. The severity and damage caused by these weather events was the worst in a generation and highlighted the vulnerability of our communities to natural hazards, especially in the more remote parts of the region. It was a real wake up call for ensuring our communities are prepared to deal with these extreme events. In the wake of these events, Te Tai Tokerau has undertaken a significant programme of work on how to deal with natural hazards.

In the wake of the cyclones, leaders across the region have considered what is required to strengthen the resilience of Northland communities so that they can better withstand the impacts of natural hazards and continue to operate through and after them. As part of this, Minister Davis and the Regional Recovery Governance Group commissioned the development of the Te Tai Tokerau Resilience Action Plan. It identifies the short-, medium- and long-term activities and investments necessary to increase regional resilience.

Te Tai Tokerau experiences a range of natural hazards - droughts, wildfire, landslides, floods, waves and tsunamis. The impacts of these hazards are felt differently across Te Tai Tokerau depending on the nature of the hazard and the resources and preparedness of the people in different locations. A particular focus for resilience in Northland is the remote communities at the “end of the road”. Historical levels of investment made by the government, councils and infrastructure providers have not been sufficient to position these communities to be resilient to natural hazards. After a natural hazard event, these communities are more isolated than others from recovery efforts and everyday services.

“It took a lot on whānau to be able to mahi the long days, nights responding to a range of situations 9-10 days plus a few days the previous week over this time – we supported (scared whānau, people alone, elderly, families, people with no resources, medical events, violence, ram raids, were all involved in our mahi).

We opened the marae, whānau came for meals, fresh water, to wash, to find company, to try and find out information, we visited people in our community, fed out 300 plus meals a day, ran hot kai stalls at Opononi shop, stacked the pataka daily, drove to Waimamaku to get supplies, helped families clean out freezers, moved trees and branches for families, found people to help people with damaged houses”.

The Process of Developing the Northland Resilience Plan

This document sets out the rationale and approach taken to developing the Te Tai Tokerau Resilience Action Plan (the Action Plan). The sections of the report set out the key elements of our work in preparing the Northland Resilience Plan, including:

- Section 1: Description of the impact of the cyclone events on Northland
- Section 2: Engagement with remote communities
- Section 3: Alignment with existing regional plans and strategies
- Section 4: Discussions with infrastructure providers and social service providers about the priority actions for resilience and the issues to address in servicing remote communities
- Section 5: Conditions necessary for implementing the Action Plan

What is Resilience?

A community's level of resilience relates to its ability to withstand or to recover quickly from difficulties. The National Disaster Resilience Strategy defines resilience as:

*The ability to **anticipate** and **resist** the effects of a disruptive event, **minimise adverse impacts**, **respond** effectively, **maintain** or **recover functionality**, and **adapt** in a way that allows for **learning** and thriving.¹*

A similar, simpler definition of resilience is used in the government's work programme on lifting the resilience of New Zealand's critical infrastructure:

A system's ability to absorb, adapt, and recover from stresses and shocks.²

The work on critical infrastructure defines shocks as sudden, sharp events that have the potential to disrupt normal operations, such as earthquakes. Stresses, in contrast, are longer-term, chronic conditions that negatively affect physical assets, operational processes and organisations. Stresses increase the likelihood of a shock occurring or increase the impact of a shock were it to occur.

Resilience to shocks and stressors requires more than having the right physical assets in place. Resilience requires strategic capability to deal with the asset failures that come with natural hazards. To be resilient, communities need to have leadership, networks and relationships, and organisational processes in place before an event, so that they can recover and thrive afterwards.

Resilient communities are adaptable, flexible, strong, well resourced, and able to withstand adversity and grow in response to it.³ A primary focus for building resilience is on building social capital – the relationships, connections, and community participation that occurs on-the-ground between individuals and groups. These connections provide a foundation which enables people to support each other and respond to adverse events. Social capital and social connections are mostly place-based and shaped by the character and context of places.

Given New Zealand's growing experience with natural hazards, it is now recognised that the impact of hazards requires higher levels of preventative investment in infrastructure assets and preparedness. These reduce the levels of investment required after an event, such as replacement of infrastructure assets and care for people affected by the event.

The National Disaster Resilience Strategy sets out the following priorities to improve resilience to disasters:

- Managing risks: what we can do to minimise the risks we face and limit the impacts to be managed if hazards occur
- Effective response to and recovery from emergencies: building our capability and capacity to manage emergencies when they do happen

¹ Ministry of Civil Defence and Emergency Management, National Disaster Resilience Strategy, 2019, p2

² Department of Prime Minister and Cabinet, Strengthening the resilience of Aotearoa New Zealand's critical infrastructure system, public consultation document, 2023.

³ Community Resilience, A rapid review of 'what matters' and 'what works', Ministry of Social Development, April 2021, p2.

- Enabling, empowering, and supporting community resilience: building a culture of resilience in New Zealand so that everyone can participate in and contribute to communities' – and the nation's – resilience.

The Northland Civil Defence Emergency Management (CDEM) Plan mission is: *To strengthen the resilience of Northland by managing risks, being ready to respond to and recover from emergencies, and by enabling, empowering and supporting individuals, organisations and communities to act for themselves and others, for the safety and wellbeing of all.*

There are three aspects of improving resilience in Te Tai Tokerau:

1. Strengthening the ability of communities, businesses and region to respond during events
2. Lifting the level of everyday resilience so that the impact of natural hazards is lessened
3. Determining the long-term changes needed to lift resilience in the face of climate change

Regional actions related to resilience are set out under these headings later in the document.

Becoming resilient is like becoming fit. It involves setting a goal, maintaining a level of commitment and applying effort to achieve and maintain the goal. In the case of resilience, this involves identifying the areas where resilience needs to be strengthened, determining what level of resilience is sought, identifying actions to strengthen resilience, and prioritising and implementing these actions.

While not addressed in the Action Plan, it is important to recognise the investment required in emissions reductions as part of the efforts to mitigate climate change - which will reduce the frequency and severity of events experienced by communities. Emissions reductions need to be driven at the central government level – domestically and internationally. However, local government also play a role – for example in providing and promoting public transport, providing cycle ways, and regulating high emitting land uses.

Section 1: Weather Event Impacts – 2022/23

The February 2023 weather event was one of the worst in New Zealand’s modern history⁴. On 14 February, a National State of Emergency was declared for only the third time in New Zealand.⁵ The impact of the cyclones was the peak event of a long period of intense rainfall and heavy winds striking Te Ika-a-Māui. This succession of events caused vast damage to property and the environment, caused the death of people, displaced thousands (often for extended periods of time) and disrupted and damaged businesses and regional economies.

Physical Impacts

Rainfall, Flooding and Winds

Drawing on reports from NIWA⁶ the February rainfall was exceptional:

- Parts of the North Island received at least 400% of their normal February rainfall:
- Napier had its 3rd wettest month since records began, receiving over 600% its normal rainfall (and 45% of its annual normal)
- The highest 1-day rainfall was 316 mm, recorded at Tūtira (Hawke’s Bay) on 13 February.

Previous rainfall throughout the 2022 – 2023 summer was also extremely high – it was the 2nd wettest summer on record for the North Island. The Auckland region received over 5.5 times its normal summer rainfall and 63% of the entire annual normal. It was the wettest summer on record for several major centres, including Napier, Auckland, Whangārei, Gisborne, and Tauranga. Multiple sites recorded rainfall events exceeding one in 100-year intensities over 48 hours periods.

Cyclone Gabrielle also brought destructive winds, with 18 locations observing a record or near-record high summer wind gust and the highest wind gust was 150 km/h on 12 February, observed at Mokohinau Islands southeast of Whangarei. Gusting winds reached speeds of 165 km/hour.⁷ High winds, falling trees and windblown debris were major causes of damage to the power network in Northland.

⁴ <https://niwa.co.nz/news/in-numbers-new-zealands-wild-summer-weather>

⁵ Cyclone Gabrielle 2023 Regional Recovery Plan for Northland – Te Mahere Whakaoranga mo Te Tai Tokerau, p2, 2023

⁶ <https://niwa.co.nz/news/in-numbers-new-zealands-wild-summer-weather>

⁷ Cyclone Gabrielle 2023 Regional Recovery Plan for Northland – Te Mahere Whakaoranga mo Te Tai Tokerau, p2, 2023

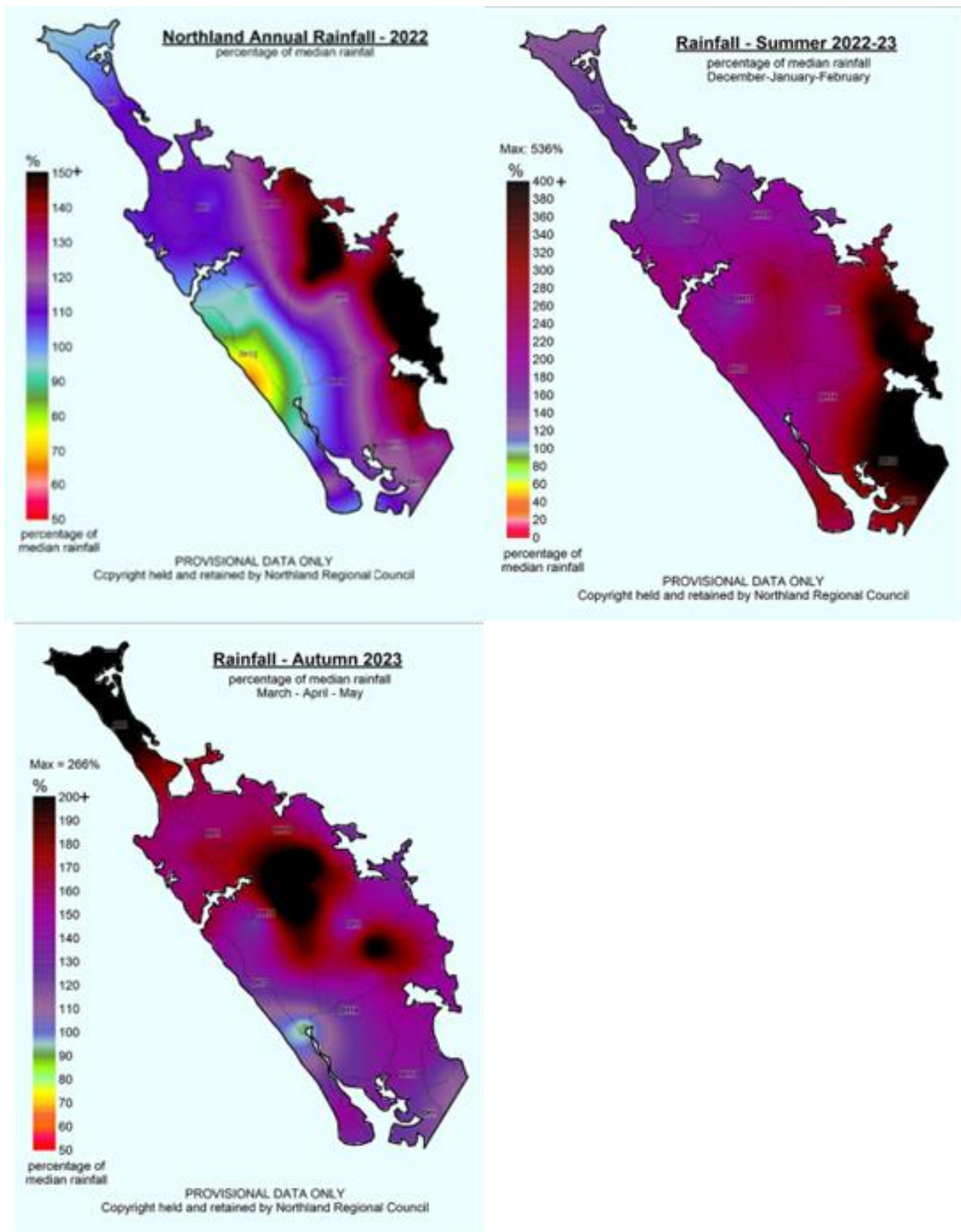


Figure 1: Northland Regional Council Rainfall Mapping

Storm Surge

Cyclone Gabrielle generated significant wave heights, storm surge and wave run-up. The biggest wave recorded during the event was 10.9m in the Bay of Islands. Storm surge is the abnormal rise of water

generated by a storm, over and above the predicted tides. Storm surge of over 0.5 metres was experienced in places along the northern and eastern coasts of the North Island as well as parts of the South Island as the system moved away to the east.

Coastal inundation and flooding were amplified due to storm surge associated with the cyclone – either by directly inundating the coastal area or by reducing the efficiency of the rivers draining into the sea.⁸

Landslips

As a result of the cyclone, tens of thousands of landslides occurred across the North Island. As the ground affected by these landslides is now weakened with cracks, loose debris, and plenty of water, many will continue to move slowly and can cause ongoing damage to the land and structures built around them. In some cases, additional rainfall or shaking from an earthquake may be enough to ‘re-activate’ landslides and debris fields, generating hazardous rockfalls and debris flows that could impact people or property⁹.

Landslips were a major cause of infrastructure damage in Te Tai Tokerau. Landslips have impacted all classes of roads from SH1 (Dome Valley, Brynderwens, Mangamuka Gorge) right through to local roads and private road access. Similarly, Northland Transport Alliance (NTA) reported 645 individually-identified new slips caused by the combined Cyclone Gabrielle / Mangawhai extreme rainfall events¹⁰ and 450 District Council maintained roads impacted (*closed or reduced capacity*) – again, the highest on record.¹¹ This occurred in the context of pre-existing slips and damage to the road network. Pre-Cyclone Gabrielle there was an average of one recorded slip per km (1126 live slips across 1,110 km) along critical and important routes, with 557 affecting a live lane¹².

Power supplies and three waters infrastructure were also damaged by landslips. For example, two towers carrying high voltage electricity lines feeding Northland were compromised by landslips.

Changeable Conditions

While Northland is still dealing with the impacts of the cyclones and the extended wet weather period, weather patterns are due to change by the end of the year. By early 2024, a drought is expected, and wildfires may become the main threat to prepare Northland for.

Social/Community Impacts – “5 hours to get the milk and bread”

Stress, anxiety, loss – these impacts are harder to measure by numbers in the way that numbers of landslips or hours without power can be measured. Communities continued to face stress well after

⁸ <https://blog.metservice.com/TropicalCycloneGabrielleSummary#:~:text=Storm%20surge%20of%20over%200.5,moved%20away%20to%20the%20east.>

TropicalCycloneGabrielleSummary#:~:text=Storm%20surge%20of%20over%200.5,moved%20away%20to%20the%20east.

⁹ Experts look at impacts of rainfall on ground damaged by Cyclone Gabrielle; <https://www.gns.cri.nz/news/new-news-page-8/>

¹⁰ Compounding Effects Of 2022/23 Extreme Weather Events, NTA, March 2023, p6

¹¹ Cyclone Gabrielle 2023 Regional Recovery Plan for Northland – Te Mahere Whakaoranga mo Te Tai Tokerau, p17, 2023

¹² Actions To Address The Compounding Effects Of 2022/23 Extreme Weather Events; NTA, May 2023, p 4

the event as transport remained fragile, as some people remained cut off from their homes. There was a great deal of anxiety caused by the extended breakdown in communications both with authorities and services and with whanau and friends. Reliable information was hard to obtain, and uncertainty was distressing. Kaumatua feared losing independence and tamariki lost connection with schooling/kura.

Communities found strength in themselves and through informal connections outside of the disaster area. Strength was apparent in manaaki – in giving and caring for one another.

IMPACTS

Major impacts included damage to State Highway 1 between Northland and Auckland, with access to the region significantly restricted for some days. Other concerns and impacts included:

- access to food and fuel;
- wind and tree damage causing widespread power outages across the region (peaking at about 46 000 customers at one time, and 64 000 total customers affected across the event);
- widespread communications outages (approximately 30 000 customers);
- approximately 60 grocery stores and supermarkets had interrupted delivery of food and other essential items; and
- a total of 86 Northland schools sustained damage of varying levels from minor to extensive.

The electricity outages occurred across the full extent of Northland, approximately 60% of the Northpower's total network was affected and over 400 lines went down during the event. Multiple substations and feeder lines of both Northpower and Top Energy were affected throughout the event.

During much of the event, many Northlanders were also without communications:

- more than 200 communications towers were non-functional for two days;
- approximately 40 000 Spark customers did not have mobile/cell phone coverage; and
- 29 100 customers were without fibre connections.

This limited the ability of families and communities to know if others were safe and for other critical infrastructure providers, and emergency services, to be contacted.

Throughout Northland, 17 houses were red-stickered (entry prohibited/assessed as unsafe to inhabit), and 30 yellow-stickered (restricted access/assessed as significant damage and/or risk).

Seven vessels sunk at their mooring due to rain or waves and a further 17 ran aground. Three beacons were destroyed. All shipping was suspended in Northland's harbours.

Northland farms were significantly affected. Nearly 70% of the region's kūmara crop was destroyed, more than 250 dairy farms without power during the event, and at least 150 dairy farmers had to dump milk. Some stock animals were killed, and fruit and vegetable crops damaged.

Cyclone Gabrielle 2023 Regional Recovery Plan for Northland – Te Mahere Whakaoranga mo Te Tai

Section 2: Engaging with Remote Communities on Resilience and Self-Reliance

Remote Te Tai Tokerau communities are particularly vulnerable to the impacts of natural hazards (shocks) for a number of reasons (stressors):

- Lower levels of provision of key infrastructure, such as communications and power
- Underinvestment in maintenance of infrastructure, such as roading
- Lower availability of people to maintain and repair infrastructure and equipment
- Few warm, dry homes available for people looking for accommodation
- Lower levels of disposable income
- Low levels of engagement in formal processes of governance and planning

“Our whānau starting point is survival – working and living in a state of emergency.”

Some of these stressors are the cumulative result of previous shocks. What has led to “stressed” housing, for example, includes long-term poverty and inequity, Covid, droughts and flooding.

The combination of factors outline above means that when natural hazards occur, the infrastructure systems in remote areas are more likely to fail, it takes longer to get infrastructure systems up and running again, and people experience greater stress and hardship through the event or the consequent infrastructure outages and recovery activities.

“Our isolation is, it’s our greatest asset, but it’s also our weakest, and so when they say, “Oh, just get a grant for this, just get a grant for that, go and apply for that.” Well, if no one’s going to travel that distance, and it’s going to cost us an arm and a leg for someone to leave Dargaville, come down to us, give a quote, and then come back, they’re not going to come.”

Through this work on resilience the government, councils and providers will be positioned to deliver on their obligations in a way that sets communities up for the future, including preparing for climate change. Over time, this investment will minimise the costs faced by providers in delivering on their statutory obligations and strategic objectives. As noted by the government’s work on critical infrastructure, it is more cost effective to invest upfront, and even “overinvest” in excess capacity, than to undertake clean up and rebuild after an event.

Community Voice

Including the community in the design of the region’s approach to resilience is a key part of fostering a sense of ownership for their resilience. MBIE’s Extreme Weather Science Response ¹³ recommends that recovery efforts are centred around empowering and involving affected communities. It enhances levels of trust, promotes social cohesion, and builds resilience from the ground up. This involves actively engaging the community in setting priorities and keeping them informed as work

¹³ MBIE Extreme Weather Science Response Funding – Supporting Critical Infrastructure Recovery, Critical infrastructure recovery: Key lessons, July 2023, p5.






progresses. Ownership of resilience as an issue to be addressed is a key element of a more resilient community.

“We don’t give up. Just haere tonu”

To develop the Action Plan, we worked with remote communities to understand their experiences through the cyclones, their vision of what resilience means for them and the actions and investments that they and others could make to improve their resilience.

We undertook an in-depth process of engaging with remote communities across Northland over a two-month period in the locations below on the map. We heard from communities what will be most important for ensuring they can continue to operate with mana motuhake (self-determination and self-reliance). Communities want to be self-reliant and, as much as possible, to manage their own way through events.



	Pataua Island, Taiharuru, Ngati Korora
	Pipiwai Valley, Kaikou, Ruatangata
	Rawene, Opononi, Maraeroa, Pakanae - Te Whakarongotai, Aotea, Waiwhatawhata and Te Whakamaharatanga Waimamaku, Koutu, Whirinaki, Omapere, South Hokianga
	Taemaro Bay, Ngati Kahu ki Whangaroa
	Kaitaia, Panguru, Herekino

From our engagements, a vision has emerged of what a resilient community looks like and the outcomes that would support this vision.

Vision

People living safely and well in their homes and on their whenua
in the face of increasing natural hazards

Outcomes

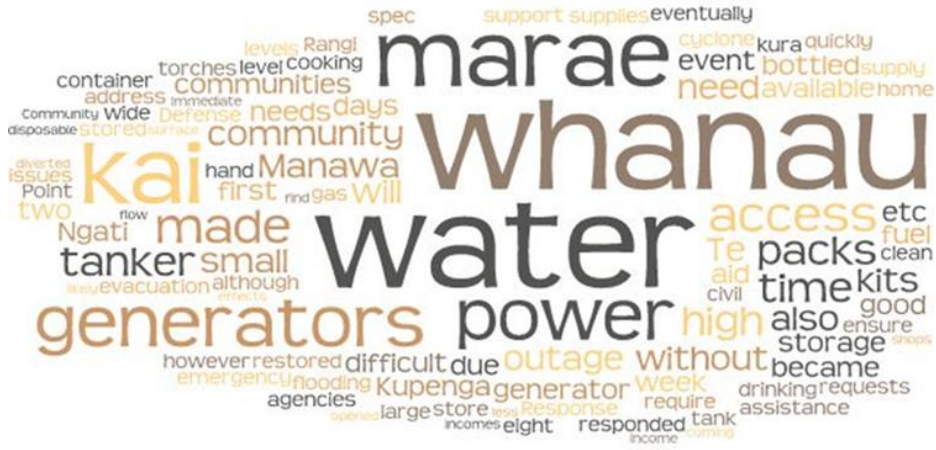
We will know this vision has been achieved when:

1. Whanau and communities are prepared for responding to events
2. Community connections are strong
3. Homes are places that support resilience and self-reliance of whanau
4. Whanau can access their homes and whenua
5. Whanau are self-sufficient in the face of disruptions to external services and supplies
6. Whanau and communities make informed choices about living with natural hazards and climate change impacts

Achieving the vision and outcomes is the basis on which the Action Plan was developed. These align with the three aspects of building resilience in Te Tai Tokerau that were noted earlier in the report, as set out below:

Type of resilience	Investment required
1. Strengthening the capability of communities, businesses and the region to respond during events	Ensuring communities have the key equipment and skills to manage through events as they occur: Investments will involve establishing “manaaki hubs”, understanding the resources available in the community, providing training in emergency skills and self-sufficiency, and ensuring strong lines of communications with CDEM and service providers during events.
2. Lifting the level of everyday resilience so that the impact of natural hazards is lessened	Resilient roads and homes: ensuring whānau reside in warm, dry homes with reliable access to the outside world, such as schools and health services. Investments will involve improvements to the rural housing stock and the private roads and driveways connecting homes to the transport network. Community self-sufficiency: ensuring those whānau who choose to live remotely can continue to live well during severe events. Investments will involve strengthening local sources of food and water supply, power and communications to support good living whether communities are on or off “the grid”.
3. Considering what long-term preparation in needed to lift resilience in the face of climate change	Preparing for climate change: exploring what climate adaptation will mean for individual communities. Investments will involve community planning, physical mitigations and choices about where to live.

The Action Plan sets out in detail what would be involved in each of these areas and the actions required to take them forward. Below is a ‘word cloud’ that shows some of the key phrases that have come through our engagements with remote communities as priority action areas.



Community Action

Greater resilience enables remote communities to continue to function while natural hazards take place and normal services are being restored. Community resilience is about communities managing through difficult events without having to wait for others to come to resolve the issues they face. In many cases, Northland communities did this for themselves and for others through and after the cyclones.

Investments that strengthen resilience should be made before further natural hazard events take place. This will position communities to take care of themselves effectively should they be cut off again. The communities themselves are making their own investments in necessary equipment and skills development. As far as possible, they wish to be self-reliant.

“People living in the community are the best people to do the mahi and engage with our people and we can do it with a little more tautoko. We did do it...and learnt so much.”

The process of discussing resilience through this process is already strengthening the resilience capability of these communities. Those local heroes that took part in this work continue to be the community activators. Through a range of methods, they are identifying what is needed in preparation for other disasters and to maintain and build on whānau/community resilience. Their communities have begun to undertake their own actions to improve their resilience.

The word cloud below describes the issues that have up in discussions with remote communities when they think about their actions for building resilience.



The communities expressed a real desire to partner with others to increase their resilience through preparedness and readiness to respond. With this in place, whānau living in remote communities feel confident and competent to stay safe and well through whatever threatens their environment, and wellbeing. As a result of being part of preparing the Action Plan, communities have been encouraged and motivated in a range of community activities that foster a whole of community approach, including:

- Community days promoting whānau preparedness
- Communities requesting preparedness resources (Information sheets, templates, survival kits, Rongoa)
- Community response planning, including identifying water self-sufficiency approaches
- Marae collective planning hui and hosting agency-community hui
- Community asset mapping
- Linking in with services and organised groups such as lifesaving clubs, ratepayers meetings
- Sourcing philanthropic support for recovery and preparedness of marae/whānau
- Agencies looking at this model of engagement to form their own community insight groups

The outcomes that were identified by remote communities provide guidance for what is needed for community resilience across the region. While the focus has been on remote communities, they have identified actions that would support any community to be resilient. Other communities may already have some but not all of the necessary resources and arrangements in place. Remote communities have identified the full range of requirements for communities to be resilient.

Section 3: Review of Existing Northland Plans and Strategies

The second element of the Northland Resilience Plan is the review of existing plans and strategies. Within these plans we have identified the actions and aspirations relevant to the three aspects of resilience (capability to respond during events, everyday resilience and preparing for climate change).

Alignment of Existing Plans with Actions identified by Remote Communities

In some areas, these actions align with the issues raised by remote communities. The tables below set out the actions from existing plans that are the same or similar to those in the Action Plan. Actions in existing plans are generally related to specific groups or locations within the region. It would be beneficial to align these actions with the broader work programmes recommended in the Action Plan, to ensure learnings are shared and efficiencies gained.

Strengthening Capability to Respond During Events

Action	Potential alignments identified in existing plans and strategies
Manaaki hubs	<ul style="list-style-type: none"> Investment in Ngāti Kuri's cultural facilities such as Marae so they can be used as civil defence emergency hubs as well as Government agencies working with Ngāti Kuri to invest in fit for purpose multi-use civil defence hubs in Ngāti Kuri rohe; <u>Ngāti Kuri Environmental Mgmt Plan 2018</u> Investment in Te Roroa's cultural facilities such as Marae so they can be used as civil defence emergency hubs; <u>Te Roroa Iwi Environmental Policy - Reviewed 2019</u> Adaption planning & flax-root level resilience initiatives; Cyclone Gabrielle 2023 Regional Recovery Plan for Northland, p27 Communities and businesses understand their risks and are prepared; <u>CDEM Group Plan</u>
Emergency event training and information programme	<ul style="list-style-type: none"> The majority of Far North residents live in rural and remote areas with poor mobile coverage, which can result in delays in emergency services arriving. St Johns already offer a refresher course online but with support this could be expanded to include a First Aid Certificate; <u>FNDC 'Nothing but Net' Digital Strategy 2020</u>

Lifting Everyday Resilience to Lessen the Impact of Natural Hazards

Action	Potential alignment
Severely damaged and/or unusable roads and other access ways that are the only access to homes	<ul style="list-style-type: none"> Review all watercourses and drainage channels along all roads within the rohe to ensure that flow rates are able to be contained within channels; Seal all roads; Improve safety of roads within their rohe; Te Kahukura a Ngāti Korokoro, Ngāti Wharara me Te Pouka, Hapū Environmental Management Plan 2008 Improvements to unsealed road network; KDC Infrastructure Strategy 2021, p10 Systematic upgrade and replacement program for bridges in Kaipara District out to 2031; KDC Infrastructure Strategy 2021 p10 & p85
Improving housing	<ul style="list-style-type: none"> Research and implement appropriate mechanisms that give Māori the opportunity to develop papakāinga, for example through access to capital; Te Kahukura a Ngāti Korokoro, Ngāti Wharara me Te Pouka, Hapū Environmental Management Plan 2008 Research and implement appropriate mechanisms that give Māori the opportunity to develop papakāinga, for example through access to capital; Te Kahukura a Ngāti Korokoro, Ngāti Wharara me Te Pouka, Hapū Environmental Management Plan 2008
Water tanks and other water self-sufficiency initiatives	<ul style="list-style-type: none"> Encourage all consumers to install private water storage facilities and encourage new developments to have a water storage tank in place to reduce takes from streams; Te Kahukura a Ngāti Korokoro, Ngāti Wharara me Te Pouka, Hapū Environmental Management Plan 2008 Ensure drinking water availability in vulnerable communities; Cyclone Gabrielle 2023 Regional Recovery Plan for Northland, p27 Investigate and implement small water solutions across Te Hiku; Tai Tokerau Northland Economic Action Plan 2019 Refresh. JTHWP Economic Development, Capability Development, and Infrastructure
Long-term viability of 'last kilometre' comms	<ul style="list-style-type: none"> Increase internet access for school children in the Far North where 86% of schools are low decile and no/poor internet access in the home is common; FNDC 'Nothing but Net' Digital Strategy 2020
Community asset mapping	<ul style="list-style-type: none"> Analyse the viability of various land uses with a focus on self-reliance, sustainability and optimal land use; Te Roroa Iwi Environmental Policy - Reviewed 2019 Support and assist marae committees and papakainga to further develop their marae and kainga on a sustainable basis. Collaborate with other Taitokerau Iwi to work with councils and other agencies to develop policy for marae development zones that recognises the cultural and social importance of marae to tangata whenua and the wider community; Ngāti Hine Environmental Management Plan 2027 Investigate opportunities such as resource and food provenance focussed on local markets to ensure low "food miles"; Te Roroa Iwi Environmental Policy - Reviewed 2019

Preparing for Climate Change

Action	Potential alignment
Natural hazard data collection	<ul style="list-style-type: none"> Patuharakeke Trust Board (PTB) will seek funding and support from appropriate agencies and stakeholders to examine the risks climate change poses, our vulnerability and adaptive strategies we can take to protect our community, values and taonga tuku iho; Patuharakeke Hapū Environmental Management Plan 2014
Funding for sea level rise and flooding adaptation responses	<ul style="list-style-type: none"> New or replacement embankments needed and drainage improvements required in vulnerable areas; Cyclone Gabrielle 2023 Regional Recovery Plan for Northland, p37 Improvements to stop banks - Te Kopuru to Dargaville, Dargaville to Awakino Pt East and Raupo; KDC Infrastructure Strategy 2021 Improve stop bank resilience for future events including assessment of future weather events; Cyclone Gabrielle 2023 Regional Recovery Plan for Northland, p37

Actions in Existing Plans and Strategies to Support Wider Regional Resilience

As well as lifting the resilience of communities, business and regionwide resilience also needs to be strengthened. Many of the plans and strategies underway across the region set out actions that will strengthen resilience, even where this is not their primary objective. Actions identified in the region's existing plans that will lift the wider resilience of the region include:

Sector	Priority for investment
Transport network	Strengthening key transport routes and detours (including the Brynderwyns and Mangamuka), improving unsealed roads drainage, repairing local roads
Flood management	Flood modelling of land drainage networks, stop banks, stormwater attenuation
Three waters infrastructure	Water supply and the impacts of flooding on the effectiveness of stormwater and wastewater systems
Business resilience	Building understanding and awareness of resilience among businesses.
Tree removal	Removal of fallen trees from in rivers and near powerlines and roads
Emergency coordination	Establishment of a Northland Multi Agency coordination Centre

The Action Plan identifies the most important actions for resilience from within these existing work programmes and recommends investment in those actions that will strengthen resilience.

Section 4: Engaging with Infrastructure and Service Providers

The third element of developing the Northland Resilience Plan was engagement with infrastructure providers and community service delivery agencies. This provided an understanding of the challenges providers face in servicing communities and what providers see as important for supporting community and regional resilience.

Infrastructure Providers

The work of infrastructure providers relates to critical infrastructure, including:

- the transport network
- power
- telecommunications
- water and wastewater
- flood mitigation
- investments for climate change adaptation

Resilient transport and power networks are necessary for towns and cities to operate effectively for their citizen and businesses. These two infrastructures are foundational regional investments. Functional roads and power provide an essential platform for delivery of other services and to support community resilience. For example, during recovery events, provision of communications services relies on roading access (to repair damaged communications infrastructure) and particularly on power (to operate both the infrastructure and people's individual devices).

Transport

Northland is vulnerable in terms of its connectivity to the rest of New Zealand. Without high quality transport infrastructure (reliable major roading routes and secondary detour routes, supporting rail and sea capability, and a network of airports across the region), natural hazards compromise access to and around the region for long periods of time.

State Highway Network

There are many known sites of instability on state highways. Currently the State Highway network in Northland is delivering a very low reliability of service evidenced by closures on the Brynderwyns and Mangamuka Gorge and fragility of associated detour routes. Current recovery repairs and new conditions for Network Outcomes Contracts (i.e. operations and maintenance) need to be consistent with the Crown Resilience package and will target a \$25M subsidence strategy for Northland incorporating all the following approaches:

- Hard engineering fixes for repairs
- Upgraded drainage systems (primary cause of failure)
- Nature based solutions – planting programs (in conjunction with 3 waters catchment management requirements) to slow instability
- Temporary edge restraints
- Top up levelling – releveling road surface without other work.

Local Roads

The estimate (May 2023) of additional funding required to provide a more reliable, resilient local road network in Northland is \$185.5M¹⁴. This funding is essential to provide Northland with a safer, more resilient local road network. The required improvements including upgrading of highway detours, and accelerated repairs to slips on category 4 and 5 roads. Over 450 roads were adversely impacted including closures by the cyclone and repairs are progressing. The overall local road resilience strategy is based on categorising local roads according to criteria including, but not limited to use, destination and location such as: schools, marae/churches; quarries; living zone (District Plans); forestry; width rating; remoteness; if it is a detour route, and land use (as examples).

Rail

KiwiRail continues its program of rail infrastructure upgrade to improve freight carrying capacity in Northland with the following initiatives:

- Upgrade of Whangarei to Otiria line and terminals.
- Progressing the Marsden link
- Repairing and improving resilience of the North Auckland line

The upgrade of Whangarei to Otiria line and terminal (from Kauri north) is on hold pending discussions with Ngati Hine. This investment will reduce the burden on the roads by providing an alternative route for freight. Like other infrastructure, it will require ongoing maintenance to remain resilient over time.

The North Auckland line (Whangarei to Auckland) remains closed with as KiwiRail finishes major repairs following damage to the line during Cyclone Gabrielle. No date has been set for when the North Auckland line will reopen. KiwiRail is awaiting confirmation of funding from insurers (re-instatement works) and Govt (improvement works) as to the funding they will have available to build more resilience into the North Auckland line. KiwiRail is aiming to have all necessary land purchased for the Marsden Point link by end of 2023 (as at August 2023 73% of the land had been purchased). Current funding will not be enough to build the line.

Air and Marine Transport

Far North Holdings continues a program of marine infrastructure upgrades (jetties, wharfs and shore protection) to build the resilience of these facilities for regular passenger transport, commercial activities and emergency capability. Far North Holdings owns and operates the Bay of Islands Airport and operates Kaitaia and Kaikohe airfields. The Whangarei and Bay of Islands Airports are officially recognised lifeline utilities. Improvements are under consideration for Kaitaia airport to increase its ability to support disaster preparedness.

Northport, situated at Marsden Point at the mouth of Whangarei Harbour, is New Zealand's northernmost deep-water port. It is continuing a program of expansion of the port, contributing to Northland's economic resilience and functioning as an alternative supply point for the region.

¹⁴ Actions To Address The Compounding Effects Of 2022/23 Extreme Weather Events; NTA, May 2023

Power

The Top Energy 2023 Asset Management Plan completed following Cyclone Gabrielle highlights a range of potential future initiatives that may increase the overall resilience of the electricity supply system. This is in the context that there is no absolute guarantee of supply in events like Cyclone Gabrielle and that, as New Zealand moves to greater electrification of the transport system, there will be greater dependency on the supply of electricity.

The Northpower 2023 Asset Management Plan identifies similar factors and trends. It highlights that at this time, Northpower has not yet completed an expenditure forecast of renewal and remediation of the network beyond the immediate work undertaken to reconnect customers. Northpower forecasts investments of \$11.4 million over the next ten years to improve reliability and quality of supply including new monitoring of the network and interconnections of spur lines to reduce the impacts of planned and unplanned outages. The Plan considers the growth in distributed generation in Northland. It does not anticipate that distributed generation would materially impact development plans by requiring network expenditure to be brought forward. However, development of large scale solar or wind generation would require high voltage connections.

Some of the future resilience actions for power supplies in Northland include: reform of tree regulations to allow trimming of trees within falling distance of power lines; transfer of ownership of service lines (private lines) to electricity distribution businesses with a revenue stream to ensure proper maintenance and reconnection; investment to 'harden' existing infrastructure to reduce disruption to end of the line communities and finally investment to reduce the risk of low probability, high consequence failures, such as the failure of the single high voltage transmission line to the Far North.

Ideally, the existing emergency centres across the Far North will have emergency power and communications links established prior to the next event. It is essential that these have satellite communications (Starlink or similar) solar, battery and local standby generation. These provide safe hubs for affected residents who suffer extensive damage to their properties or prolonged power outages.

Telecommunications

Telecommunications physical infrastructure – towers, underground fibre and cabinets were largely resilient to the impacts of Cyclone Gabriel. What has become clear in events of this scale is that power supply outages and road closures that last longer than the capacity of on-site back up power (e.g. batteries) will result in extended telecommunications disruption particularly in isolated and end of the line locations. As part of the emergency preparedness work, the members of the Telecommunications Forum are investigating actions for improved emergency preparedness, fibre resilience and mobile resilience including (but not limited to):

- the adoption of an easy to update tool to provide a centralised view of infrastructure and outage information for use in emergencies;
- considering alternative technology at the end of line spurs for fibre resiliency where fibre delivery is not commercially viable; and
- making arrangements to enable direct-to-satellite connectivity, which will enable mobile phone users to initially send and receive text messages, and later make calls, including to emergency services, if the mobile network is down.

There are gaps in service provision for end of the line copper network and mobile blackspots that are not currently serviced for commercial reasons. There are no plans by telecommunication companies to address this gap.

Water and Wastewater

Far North District Council and Kaipara District Council have identified projects in current infrastructure plans to improve water security in their districts. These plans focus primarily on reticulated supplies. Northland Regional Council (NRC) identified in the Cyclone Gabrielle Regional Recovery Plan 2023 that the NRC Climate Action Team is working towards improving hapu water supplies through two climate change strategies and the Council's Long-Term Plan to deliver a Water Resilience Fund (\$500k pa, set up to ensure drinking water availability in vulnerable communities).

Kaipara District Council and Far North District Council have also both identified infrastructure programs to upgrade existing wastewater systems (network and wastewater treatment plants) to ensure system resilience and to meet consenting conditions for operations.

These programmes relate to reticulated supply. A gap remains for those households and communities without reticulated water. Because of the impacts of climate change on the taiao, there are increasing concerns about the long-term management of wastewater in Northland and discharging to water.

Flood Mitigation

As outlined in the Cyclone Gabrielle 2023 Regional Recovery Plan for Northland, the Northland Regional Council will undertake a regional approach to flood risk management: including a holistic approach to flood modelling, mitigation, adaptation, and emergency management and documenting the cyclone impacts on rivers (including downed trees/flow impedance), reviewing and continuing river stop bank/flood prevention works.

A cross-organisational approach to flood risk management is being developed by Northland Regional Council. A number of business cases have been developed and submitted for consideration in the Long Term Plan (as of end July 2023). These are yet to be approved. They include:

- 12 structural flood management projects at various scales and stages of implementation
- marae flood resilience programme for 35 flood-affected marae
- additional staff to lead hapu engagement across the climate action, Rivers and CDEM teams
- support for community adaptation planning with District Councils
- scoping investigations for a second flood early warning system Radar storm tracking and nowcasting to support during-event responses
- a flood/tide predictive model for the Northern Wairoa/Dargaville.

During Cyclone Gabrielle, thousands of trees fell into rivers across Te Tai Tokerau. These fallen trees and other material in rivers can cause blockages, flooding, risk to downstream bridges, and other impacts. While immediate work can be undertaken to deal with this material, longer term approaches need to consider the reasons for the underlying causes of such a large amount of debris.

The district councils have also highlighted the need to address flood management in urban and rural settings, including the built-up areas of Whangarei, flood management in the North Kaipara Agricultural Delta and the Wairoa River and the Awanui Flood Scheme upgrade currently in progress.

Climate Change Adaptation

Climate change adaptation projects are being initiated by each of the Northland councils. In August 2023, the Joint Climate Change Adaptation Committee approved an implementation plan to deliver on the intent of the Te Tai Tokerau Climate Adaptation Strategy (TTCAS). In the context of the Action Plan, the critical projects outlined of the TTAS implementation plan are:

- Iwi/Hapū partnerships and engagement (2B): Iwi/Hapū are appropriately represented in decision making on climate actions throughout Northland through the implementation of the Te Ao Māori framework in 2024, and have the opportunity to partner with Council/s on climate change projects (estimated cost \$100k each year after establishment)
- Science and risk assessments (3A): Ensure a coordinated and prioritised approach to the delivery of science.
- Climate change in policy (4B): ensure integrated coastal management and adaptation objectives are met in region wide policy. Climate change is considered in new development to enable sustainable development (funded within existing programs).
- Regional adaptation (5A): Adaptation planning occurs in a structured cost-effective manner.
- Community-led adaptation plans (5B): Enable communities to develop adaptation plans that reflect their values.
- Iwi/Hapū adaptation planning (5C): Climate change incorporated in IHEMPs for each hapū and they are well placed to adapt to climate change. Enable Iwi/Hapū/Community-led adaptation planning at appropriate scales for tāngata whenua to incorporate climate change into their planning, and ongoing support for councils to implement the framework.

Components of this work programme could be accelerated such as partnership and support to tangata whenua on adaptation planning.

The following table summarises the priorities for regional resilience that were raised in discussions with infrastructure providers:

Sector	Priority for investment
Transport network	Resilient SH1 plus detour routes (including Brynderwyns and Mangamuka) Local roads – maintenance and operations of local road network
Power	Actions to reduce the likelihood of power outages Provision of secondary sources of power for power outages during and immediately after events (eg stockpile of generators and a protocol for distribution)
Comms	Back up arrangements for connectivity if the mobile network is down
Water	Water provision for communities without reticulated supply
Flooding	Extensive and holistic regional approach to managing flood risk
Climate change	Presentation and provision of projection information to communities Preparation and set up of engagement processes to start planning for adaptation

Regionwide Priorities

The regionwide priorities identified in sections 3 and 4 are set out in detail in the Action Plan and summarised below. These require further investigation, to determine the priority locations for actions across networks, funding requirements and, in some cases, responsible lead agencies.

Sector	Key Areas for Building Resilience	Resilience Investments Underway	Further Investments Required
Transport network	Resilient major byways to support movement in and out of and around Northland	Repairing Brynderwyns and Mangamuka Gorge	Further funding to strengthen detour routes Explore an affordable alternative route to the Brynderwyns
	Local roads – maintenance and operations of local road network	Enhanced maintenance, management of slips	Increase local contribution to repairing local roads. Further funding for drainage related defects
	Resilient alternative modes of transport to enable movement in and out and around Northland	Northland rail upgrade, North Auckland line repairs (further investment requirements to be determined)	Upgrade Kaitaia airport Support for coastal shipping to enable viability
Power	Actions to reduce the likelihood of power outages	Better technology for identifying faults New equipment for limiting impacts of faults, vegetation management	
	Provision of secondary sources of power/standby generation for critical infrastructure and services		Investigation required
Comms	Building greater level of resilience into the communications network – back up power and black spots		Support for access to satellite systems as they become available
Water and 3 waters	Resilience of reticulated water supply systems	Repairs in progress	
Flood mitigation	Cross-organisational regional approach to flood risk modelling	Flood adaptation strategies approved and being implemented	Funding required to support flood adaptation strategy implementation
	Stop banks – capacity assessment		Additional flood modelling of land drainage systems
	Stormwater attenuation		
Climate change	Provision of projection information to communities	Climate adaptation strategy and approach approved	Funding required to fast-track tangata whenua planning, council-iwi partnership
	Preparation and set up of engagement processes		
Business resilience	Building awareness of resilience with businesses	Workshops for businesses on increasing resilience	Explore additional support for business resilience
Tree removal	Removal of fallen trees, provision of firewood and chippings		Funding for Nga Manga Atawhai
Emergency Centre	Establish a coordination centre for emergency services		Fund a Multi-Agency Coordination Centre

Government and Social Service Providers

Government and community service providers deliver support to remote communities during and after natural hazard events. These organisations have provided support during earlier events, such as COVID-19, and so are familiar with the impact that events have on remote Northland communities. These providers agreed to the importance of the actions identified by remote communities for increasing resilience.

Social service providers raised a number of considerations about lifting resilience that focused on the processes for engaging between providers and communities, both during events and through time. To cultivate enduring community resilience, social service providers saw value in putting in place a more systemic regional approach to prepare for future events, rather than responding to events as they arise. This would be informed by the experiences of communities and providers to date. Key aspects of this approach include:

New approach	Activity
Coordination of the activities of agencies	<ul style="list-style-type: none"> Coordinating engagement with the community, funding for equipment, provision of training, determining when particular agencies lead and other agencies provide support to them in doing so.
Responsiveness to the circumstances of individual communities	<ul style="list-style-type: none"> Putting in place policies and procedures that enable providers to empower those people in communities who take the lead in the initial response to events, regardless of which organisation they work for – iwi, hapu, marae, individuals, fire service etc. Determining respective responsibilities of agencies and communities, e.g. storage and maintenance of equipment in manaaki hubs.
Putting community voice and whanau oranga at the centre of decision making	<ul style="list-style-type: none"> Ensuring community experiences and requirements inform the region’s approach to lifting community resilience. Including those in the community who have led responses to natural hazard events when developing and determining the region’s approach to lifting community resilience
Establishing ongoing arrangements to support resilience as a focus for the region	<ul style="list-style-type: none"> Collective oversight of resilience as a priority for the region, progressed by establishing Response and Resilience as an additional 5th priority of the Regional Leadership Group’s work programme. Continuing to develop the understanding of the extent and location of need, and to refine the costings for investments that will reduce community reliance on outside support during events. Working through in advance how to address the challenges posed by regulations that do not anticipate the flexibility required in natural hazard events and building resilience (e.g. access to funding for unconsented housing)

The priority actions identified by remote communities that relate to service providers include manaaki hubs, water availability, self-sufficiency and housing. The importance of these actions was recognised by service providers and the following issues were raised for attention:

Action	Issue
Manaaki hubs	The location and maintenance of Manaaki hubs during non-emergency periods
Water	Additional funding is needed for water tanks and water self-sufficiency
Housing	<p>Issues in Northland reflect pre-existing needs as well as event related damage. These relate to:</p> <ul style="list-style-type: none"> • Repairing and restoring existing impacted substandard housing on whenua Māori, including non-consented homes • Scaling up the existing model of provision of small homes alongside a collaborative 'cut-through' on consenting issues • Onsite infrastructure investment e.g. onsite wastewater management • Investing in new supply, including grants to subsidise affordable rentals and affordable homes • Actions emerging from the proposed deep dive on housing
Self-sufficiency	National funds are available to assist with aspects of self-sufficiency (e.g., energy, food and health self-sufficiency). The Northland branches of the government agencies that provide funds can assist communities as they make applications, including supporting community members who have provided their own resources during events.

Section 5: Coming Together as a Region to Develop Resilience to Natural Hazards

Lifting the resilience of Northland communities will be a joint effort, involving contributions from government agencies, councils, iwi, infrastructure providers and local communities over a number of years. Leadership and cross-agency coordination will be key to prioritising and delivering on the Action Plan in order to achieve regional resilience.

Lifting resilience in Te Tai Tokerau will require:

- coordination and oversight of the delivery of the Te Tai Tokerau Resilience Action Plan
- funding for better information about levels of resilience, vulnerability and need
- funding for capital works and equipment
- policies and procedures that support delivery of resilience activities to communities
- continued engagement with communities to ensure the plans developed deliver for them

Coordination of Action Plan Delivery

Given the significant number of organisations involved in providing support to remote communities and others in the region, effective coordination and oversight of the delivery of the Action Plan will be essential if it is to achieve its objectives.

Ideally, at the outset of delivering the Action Plan, one organisation would have responsibility for coordinating all other organisations. This will ensure the full suite of investments is delivered, even different parts of the action plan are delivered through different channels. A lead agency would also provide an identifiable point of contact for communities as they navigate who to engage with in implementing actions on their side. Over time, these activities would become part of the 'business as usual' activities of different agencies and this overarching coordination would no longer be needed.

A solution for overseeing delivery in the short-term, and addressing the gaps and issues requiring further work, is to establish a Transition Unit. The Transition Unit could operate for 6 – 12 months. This will give some time for the governance to confirm where long-term oversight of delivery will sit. The Transition Unit can also oversee delivery of funded short-term actions not owned by any other agency. It estimated that the cost of funding such a transition unit would be \$0.5m plus approximately 10% of the delivery cost of any action the unit oversees.

The Northland Regional Leadership Group (or a sub-group of) appears to best placed to provide governance over the Action Plan. The Regional Leadership Group is made up of senior representatives from government agencies, iwi and councils. Its role is to co-ordinate the efforts of government and councils across Northland for cross-cutting issues such as housing, water supply and economic development.

Funding Sources for the Action Plan

Depending on the nature of the actions taken forward, funding for this work will come from a range of sources such as:

- Government funding for cyclone recovery and resilience
- Relevant existing funding from within government agencies
- Council programmes
- Iwi funding
- Whanau and community resources

“In the beginning we were told there were no resources and people could take their own things to the marae. This doesn’t happen when you are leaving home in an emergency.”

Next Steps

The Te Tai Tokerau Resilience Action Plan sets out in detail the actions that will lift the resilience of remote communities and the region as a whole. The list of actions will inform future conversations with central government, philanthropic organisations and other potential funders about areas for investment for enhancing resilience. Once funding is received, it will be necessary to put in place a Transition Unit to oversee the delivery of the Action Plan.

The region’s leadership can move now to put in place a more structured approach to resilience preparation through the Regional Leadership Group. This will be informed by the lessons learnt through COVID-19 and the 2022/23 weather events and would involve the organisations that provide support to those communities dealing with the impacts of events. With an overall objective of ensuring communities can operate self-sufficiently, these arrangements should enable the voice of the community to be reflected in decision-making.

The sooner actions can be undertaken, the better the community engagement will be on lifting their resilience. The impact of recent wet weather events is still present in people’s minds. This is a good context for engaging with communities on putting arrangements in place to prepare for future events, while they are well-informed, motivated and operating proactively on lifting their resilience.

A message from a member of the Hapori Intel Rōpū

I am very appreciated by the efforts of concerns you all have for us, at the end of road in Pataua.

We unfortunately are in between a rock and a hard place, we live on a beautiful island on the east coast it is our heart our home for generations, a place where we want to live because it makes us closer to our loved ones no longer with us our grandparents our parents but they are the substance of our whenua tuku iho(the land handed down).

We live on land because it's financially affordable, the rental properties are so expensive but also so very hard to find availability so many people looking for accommodation and moving back to Tai Tokerau. Never in all my sixty years have our roads ever been this bad.

We have two blocks of land Pataua 4a & 4b. There is 65 people that live on each block 30 of them are school children. We are a proactive whanau we fundraise for our roads 4a & 4b to maintain them over the years and when we need truckloads of metal, we do another raffle.

But the cyclones damage is too much to fix.

And the most sadness is that we don't have any marae for our Hapu out our way.

Nine times out of ten we are stranded on the island, where we can't drive out or off the island or the roads out of Pataua township are also blocked due to slips and trees falling down across the roads, so we are blocked getting into Whangarei.

I have been talking with our families on the Island and they are all very happy that someone is actually concerned about how rough it is for us living on the land we call Home.

Once again i am very appreciated with the time that this team has given me concerning our devastation for my whanau it's been a really tough time and we have all struggled terribly but we never give up HOPE.

Mihi rangatira ki o koutou katoa mo o manaakitanga kia matou o Te Tai Tokerau.