

# RIVER FLOOD RISK RESILIENCE – LESSONS FROM CYCLONE GABRIELLE

3 March 2023

## EXECUTIVE SUMMARY

- Cyclone Gabrielle has been a **wake-up call** for everyone. A **step-change** is required to investment in river-related community flood-risk resilience-improving infrastructure.
- The **authorising environment and social licence** to make this step-change has never been stronger.
- The shared goal should be to make New Zealand's river-related flood risk management infrastructure '**fit for purpose**' **within a decade**.
- A decision by Government to co-invest \$257m in Budget 2023 (as described in the 'Before the Deluge' report) would enable **92 projects to be completed within three years** (an average of \$85.5m pa). Regional authorities will contribute over \$170m toward these projects.
- On-going capacity and capability enhancements, to enable the effective and efficient delivery of current and proposed works, require establishment of a **longer-term pipeline** of resilience enhancing projects.
- Following the devastation of Gabrielle, additional Government investment – over and above that described in the 'Before the Deluge' report should therefore be made, as detailed in the table below. **Government co-investment should be around \$200m pa for the next three years and then be \$250M pa by FY 2026/27.**
- A dedicated fund to support a pipeline of works for a decade would result in savings and more **effective, efficient, and timely actions** to substantially reduce flood risk at most vulnerable locations.
- The benefits of doing this are significant. Capacity and capability would be built and retained right through the chain of provision. Inter-regional cooperation and procurement savings would be optimised. Consenting and community involvement activities would be more strategically approached and basically **more would be done consistently better**.
- **Regional authorities have already committed investment of \$200m pa** toward flood-risk resilience improving infrastructure. They will work with their communities to ramp-up their co-investment share over the next ten years.
- The list of matters of **national interest** that will be served by a return of Government to the co-investment table is overwhelming.
- **Lives and livelihoods** will continue to be at significant risk as has been evidenced by Gabrielle unless additional investment is made.

- Investment in river-related flood-risk infrastructure is a pre-requisite to investment in enhancing the security of other network utility infrastructure services ('investment in **river management infrastructure to achieve improved infrastructure resilience**') and to give business the confidence to reinvest.
- **Proven governance and delivery systems** exist within regional authorities. Building trust, confidence and securing respect from central government for the functional leadership and competence of regional authorities is critical.
- The current 'Climate Resilience Flood Protection Programme Advisory Board,' is capable of refinement to **protect Government's co-investment interests** in an expanded ten-year programme.
- Spatial planning and managed retreat tools are important parts of a necessary **multi-tool approach** to the management of flood risks. The tool in the toolbox with **most immediate, practical, affordable, and visible beneficial effects**, is to enhance investment in river-focused flood risk resilience-improving infrastructure.

**In brief: confirmed, substantial and immediate co-investment in a long-term pipeline of river flood-risk resilience-improving infrastructure is the priority means of restoring the 'flood-damaged' confidence of New Zealanders.**

Table one: Government co-investment

FY 2023/24	FY 2024 / 25	FY 2025 / 26	FY 2025 / 27	FY 2027 / 28	FY 2028 +
Co-investment for 92 projects described in 'Before the Deluge'					
\$93m	\$88m	\$70m	\$6m		
Additional co-investment request - post Cyclone Gabrielle					
\$100m	\$100m	\$150m	\$200m	\$250m	\$250m
<b>TOTAL</b>					
<b>\$193</b>	<b>\$188</b>	<b>\$221</b>	<b>\$206</b>	<b>\$250</b>	<b>\$250m</b>

## BACKGROUND

### Partnership between Kānoa and Te Uru Kahika

Thank you for the on-going support Kānoa have provided for the flood risk resilience-improvement efforts of Regional Authorities / Te Uru Kahika and their River Management Special Interest Group (SIG). Thanks too for your consideration of Government co-investment in the 92 projects described in the sector's December 2022 report 'Before the Deluge'.

### Fresh look at the requests contained in the 'Before the Deluge' report

Cyclone Gabrielle has been a wake-up call for everyone. LGNZ's Regional Sector Group (RSG) were on task when considering this on 17 February 2023. As part of their discussion, they requested Te Uru Kahika take a fresh look at the 'Before the Deluge' report. Te Uru Kahika now seek an urgent meeting with you to talk about what more could be done to make more progress, more quickly, to add necessary flood risk resilience to flood-risk communities.

### Goal

Te Uru Kahika's goal is to have New Zealand's river-related flood risk resilience-improving infrastructure fit to meet agreed levels of service within a decade. The sector would like to work closely with Kānoa to achieve this goal.

### Focus of this memorandum

The focus of this report is on flooding from rivers.<sup>1</sup> It is this flooding that poses the biggest risk to life. It is here that the national interest and the need for Government co-investment is most immediately apparent - as tragically exposed on the Heretaunga Plains and elsewhere during recent events.

Floods from rivers are New Zealand's major natural hazard. The risk of damage from these events is exponentially ramping-up because of climate change. Improving community resilience against the risks posed by the exceedance of river channel capacity, by adapting and improving river flood management infrastructure, is viewed by Te Uru Kahika as the matter Government should be giving priority attention to as it undertakes its post-Gabrielle analysis.

### Structure and purpose

With the effects of Cyclone Gabrielle in mind, the purpose of this report is to provide information to support a request for increased co-investment (over and above that in the 'Before the Deluge'

---

<sup>1</sup> Flooding is caused by the exceedance of the channel capacity of either natural or infrastructural fluvial / river or pluvial systems or by coastal inundation.

report) and making necessary refinements to the institutional arrangements to achieve the sector's desired river flood risk resilience-improving infrastructure goal.

The report is in two parts. The first part summarises Te Uru Kahika's refreshed investment proposal, and the rationale for putting it forward. The second part (attached as an appendix) provides additional information about the mechanisms needed to support and deliver these investment proposals.

## REFRESHED INVESTMENT PROPOSITION

### **Flooding effects of Gabrielle and other recent cyclones**

Cyclone Gabrielle has had a catastrophic impact on many sites located across 30% of New Zealand's land mass. This land mass contains 50% of the nation's population and 50% of the nation's earning capacity. Much of this is in the north-eastern part of the North Island.

As of 25 February, 11 people died, 10,000 people were displaced and 10,000 insurance claims have been lodged with IAG. Minister of Finance Hon Grant Robertson has estimated that the cost of recovery from the damage caused by Cyclone Gabrielle will exceed \$13b.

The double whammy of Cyclone Gabrielle was that it compounded the effects of Cyclone Hale on Northland and Auckland and doubled-down on the all-too-regular flooding affecting Coromandel.

At other locations, and equally challenging, were the August 2022 floods impacting Nelson, Marlborough and Canterbury, and earlier flooding in Southland. On top of that, Westport is still reeling from their July 2021 floods with many residents still lying awake at night worrying about the next flood.

One in seven of New Zealand's residents live in areas that may be affected by floods. The assets exposed to flooding in Aotearoa have a value of \$135b. These residents and these assets are fundamental to the effective functioning of the economy and the cohesiveness / comfort of communities.

### **Longer-term co-investment proposal**

The impact and flooding caused by climate change - particularly that resulting from the associated increase in the frequency of subtropical storms, implies that securing a permanent river flood risk resilience-improving infrastructure budget line item, within Budget 2023 and within future Budgets, is critical.

A step change to New Zealand's approach to the scale and speed of the provision of flood risk resilience-improving infrastructure is required. Gabrielle dramatically changed the authorising

environment for both Government and Local Government decision-making about river flood management infrastructure. The public's support of Government and regional authorities for expanded investment is unlikely to be challenged.

Commitment to a regular budgetary 'line item' will enable an on-going pipeline of river flood risk resilience-improving infrastructure works to be rolled-out over the next decade thereby enabling the sector to move past short-term and somewhat ad-hoc funding solutions. The focus will move to the long game.

Regional authorities have already committed \$200m pa for investment in flood-risk resilience improving infrastructure. They have stated they will work with their communities to ramp up their co-investment share over the next ten years.

Te Uru Kahika's earlier reports (2018, 2019 and 2022)<sup>2</sup> provided the case for Government co-investing \$150m per annum. Since those reports were prepared, inflation, the expanded awareness of the effects of climate change and increases to the cost of construction suggest Te Uru Kahika's earlier requests were undernourished by 30%, and possibly more. Nor did these requests take full account of the effects of climate change.

Te Uru Kahika would therefore like Government to co-invest approximately \$200m per annum in FY 2023-25 and then \$250m per year in subsequent 'out years'. With comparative ease, Te Uru Kahika is confident it could provide Kānoa with a list of additional priority projects for co-funding over the next three years. This is a matter requiring Government's highest priority attention.

### **Confirming the priority of the 92 projects listed in 'Before the Deluge' – rapid reassessment**

The 92 projects included in the current 'Before the Deluge' report are all 'ready-to-go' and they are all capable of being completed within just over three years.

These projects were identified and prioritised without the benefit of the devastating effects of Gabrielle and Hale foremost in mind. In the light of the learnings from these cyclones, Te Uru Kahika would welcome the opportunity to work with the Kānoa 'Climate Resilience River Communities Governance Board' to undertake a rapid re-assessment of these projects. The purpose of this re-assessment would be to reconfirm the relative priority and scale of assistance to be provided to these projects.

---

<sup>2</sup> 'Hiding in Plain Sight' 2018; 'Central Government Co-investment in River Management for Flood Protection', July 2019; Central Government Co-investment in River Management for Flood Protection - Supplementary Report', January 2022.

### Accelerated investigation of ‘near ready’ projects

If the Wairoa River flood and Tolaga Bay flood scheme investigations had been more advanced, then works to improve the flood resilience of these communities would have been included, alongside the other 92 flood risk resilience-improvement proposals described in the ‘Before the Deluge’ report. This did not occur because both communities have limited local rating bases, thereby constraining the funding required to accelerate the completion of necessary investigative flood risk resilience-improving infrastructure plans.

Te Uru Kahika is also aware that, for the want of immediate additional funding, the proposed Heretaunga Plains flood risk resilience-improvement works – as described in the ‘Before the Deluge’ report, may have saved parts of Waipawa and several other Hawke’s Bay communities from the ravages of Gabrielle’s devastation.

Te Uru Kahika seek your consideration of the importance of co-investing in selected and urgent ‘investigative, design and approval’ initiatives to achieve the more rapid deployment of additional river flood risk resilience-improving infrastructure works.

Te Uru Kahika recommend Government commit co-investment of \$50m toward this work in FY 2023 and that this work be undertaken as soon as possible. This would thereby assist to enable further priority projects to be made ready for roll-out in 2024.<sup>3</sup>

### Amended total sum requested from Government

FY 2023/24	FY 2024 / 25	FY 2025 / 26	FY 2025 / 27	FY 2027 / 28	FY 2028 +
Co-investment for 92 projects described in ‘Before the Deluge’					
\$93m	\$88m	\$70m	\$6m		
Additional co-investment request - post Cyclone Gabrielle					
\$100m	\$100m	\$150m	\$200m	\$250m	\$250m
<b>TOTAL</b>					
<b>\$193</b>	<b>\$188</b>	<b>\$221</b>	<b>\$206</b>	<b>\$250</b>	<b>\$250m</b>

<sup>3</sup> Local authority insurance and NEMA assistance will allow the damage done by Cyclone Gabrielle to existing structures to be fixed on a like-for-like basis.

## INVESTMENT BENEFITS / RATIONALE

### **Cost / benefit of further co-investment in flood risk resilience infrastructure**

Higher levels of co-investment in flood resilience-improving infrastructure would unquestionable have reduced the size of the impost of recent cyclones. Te Uru Kahika knows for example, that if \$10m had been invested prior to 2021, Westport may not have needed the investment of over \$100m to recover from the July 2021 event.

A secure pipeline of committed future work will enable flooding effects and their associated costs to be managed downwards. A secure pipeline will enable capacity and capability to be built, long term authorisations to be secured, agency relationships to be enriched, a strategic approach to be fully developed and applied and the community confidence would be placed on a sustainable footing. The key to these efficacy gains is to make decisions that move far beyond the stop-start experiences of the past.

In general terms, the sector's experience suggests the return on investment in flood resilience infrastructure is in the range of 1:6 to 1:8. These cost-benefit ratios are seldom matched within any other area of public sector expenditure.

### **Proven effectiveness of current river flood risk resilience-improving infrastructure**

In many locations, existing flood risk resilience-improving structures stood-up well to Gabrielle. Communities were saved from potentially greater catastrophe because of these previous investments.

The recent Kānoa co-investment in the strengthening of the Taradale stop-bank helped to protect the Taradale community and much of Napier from flooding.

Similarly, the upgraded city-side works constructed as part of the Gisborne / Waipapoa River flood control upgrade, stood-up well to the test thrown at it by Gabrielle and largely saved Gisborne City from being flooded.

In addition, the upgrade of the Awanui scheme in Kaitaia saved upwards of \$50m of potential damage that otherwise may have been caused by the 1:100-year storm event that occurred on 18 August 2022.

All these examples further confirm the cost benefit of investment in flood risk resilience-improving infrastructure.

### **Collateral benefits**

A confirmed long-term pipeline of co-investment in river flood risk resilience improving infrastructure is critical to the task of restoring the damaged confidence of the communities and the economies of many parts of New Zealand.

Investment in river flood risk resilience-improving infrastructure is a pre-requisite to decisions about investment in the security of most other utility network infrastructure services. Flood protection infrastructure protects infrastructure.

Te Uru Kahika support the need for a full tool-box of ready-to-go solutions, however for many established urban environments (compared to new urban areas), they argue that the ‘right tools’ for the management of river flood risks may not be spatial planning or managed retreat. This is because the political challenges associated with putting these tools in place are formidable. In addition, the cost of implementation will be extraordinarily large. By comparison, flood protection structures are a highly visible and practical forms of comparatively immediate action.

This is not to say that ‘managed retreat’ has no short-term value. Some managed retreat is urgent. Current and obviously-beneficial managed retreat initiatives should be dealt with on a case-by-case basis. The necessary (but not yet approved) purchase of seven properties on Westport’s Snodgrass Peninsula is an example of where this approach should be applied. Examples also exist in Hawke’s Bay.

Stated more simply, Te Uru Kahika knows the most immediate intervention with most immediate beneficial effect is to improve flood risk resilience by providing more river management infrastructure. They believe there is no excuse for delaying progress on flood risk resilience-improving infrastructure decisions, that have 90% certainty, while endlessly thinking about the finer detail of policy affecting spatial planning and managed retreat. A multi-tool approach is required but perfect solutions under times of stress – such as those at present, are the enemy of good solutions.

## **FLOOD RISK RESILIENCE INFRASTRUCTURE RECOMMENDATIONS - POST CYCLONE GABRIELLE**

1. Urgently meet with leaders of Te Uru Kahika to confirm a commitment to Government co-investment in river flood risk resilience-improving infrastructure of approximately \$200m in FY 2023-2025 and \$250m in subsequent out-years.
2. Work with Te Uru Kahika to undertake a rapid re-assessment of the 92 projects identified in the 'Before the Deluge' report to enable them to better reflect the learnings and priorities arising from Cyclones Gabrielle and Hale.
3. Co-invest \$50m into the investigative work required to get selected flood risk resilience-improving projects, such as that at Wairoa and Tolaga Bay, to a point where necessary infrastructure can be quickly constructed.

## APPENDIX ONE: ANCILLARY MATTERS

### **Alignment with network utility and other agencies**

The continued functionality of many network utility services was severely compromised by the effects of Cyclone Gabrielle. These networks are in critical need of additional protection. The failure of Tairāwhiti / Gisborne and Hawke's Bay communication services and power transformers at some locations had a definitive and compounding effect on the stress levels being experienced by affected communities during Gabrielle. What's needed is an enhanced ability for flood risk mitigation infrastructure to underpin the security of other network infrastructure.

In addition, the lack of alignment of Te Uru Kahika flood resilience-improving infrastructure proposals in Southland, the West Coast, Hawkes Bay and likely in other locations - has in the past – (with likely continued effects in the future - unless amended), undermined the effectiveness of these proposals.

Institutional arrangements are required that bring all affected parties – including insurers, affected government departments and research agencies, to the table. Aligned decisions are required about the preferred priority and level of service of river flood risk resilience-improving infrastructure at all locations – particularly where allied infrastructure either compounds flooding risks or is itself at risk.

### **Respecting regional authority 'hands-on' community and flood risk responsibilities, knowledge, and relationships**

Most Te Uru Kahika councils are in a solid space to effectively manage the planning and delivery of flood risk resilience-improving infrastructure. This has been enhanced by good, well-trialled and effective sharing and assistance across councils. The previous and on-going work of Te Uru Kahika's River Managers SIG has been a demonstrably valuable means of contributing to these gains.

Te Uru Kahika intend that in the future, collaborative arrangements will become more structured and will be further enhanced by formalisation of current inter-council arrangements.

Regional authorities are connected to their iwi, hapu, marae, communities, and regional economies. Te Uru Kahika urges Government to respect the functional leadership and competence of regional authorities. Te Uru Kahika want to be at the heart of an improved set of national flood risk resilience-improving structures and processes. Government are critical partners in this – but the skills lie in the regions.

Te Uru Kahika are concerned about the lack of seamless connectivity between the flood risk management roles played by DIA, NEMA, MfE, MBIE, Waka Kotahi and Crown Research

Institutes. A strong platform is required to help ensure that everyone is singing off the same song sheet to:

- Get the right flood management infrastructure in the right place at the right time.
- Make optimal contributions to the climate change adaptation initiatives described – or likely to be described, in the Natural and Built Environment Act, the Spatial Planning Act and the Adaptation Act.
- Stay ahead of critical future information needs e.g., by ensuring LIDA information is available nation-wide.

### **Refining cost share / co-investment ratios**

Co-investment rates for the 57 resilience projects approved by Government in 2021 (65% for wealthier regions and 75% for less wealthy regions) are viewed by Te Uru Kahika as being reasonably equitable. The 'Before the Deluge' report suggests a cost share arrangement of 60% and 75%.

These cost share arrangements should be further refined to reflect the 'nature of the work' to be undertaken more clearly. Te Uru Kahika's early thinking is to perhaps cost share at rates of 75% for 'new' works, 50% for upgrades, and 33% for maintenance works. Around these rates there could be some flexibility to adjust them by no more than +/- 10%. Such decisions could be delegated to a 'fit for purpose' governance group (see below). Te Uru Kahika would welcome the opportunity to work with Kānoa to further these options.

### **Governance of co-funded flood risk resilience-improving infrastructure**

An enhanced oversight Board and Agency could be established, to sit within and be serviced by Kānoa. The purpose of this would be to provide oversight to the 92 + projects described in the 'Before the Deluge' report and the additional projects that may be added to this list with expanded Government co-investment.

This Board should have appropriate skill - based membership, strong Te Uru Kahika / regional authority representation and powers to make decisions - albeit within appropriate policy / delegation / accountability frameworks.

The overall purpose of the proposed refreshed governance arrangements would be to oversee the efficient and effective delivery of co-funded river flood risk resilience-improving infrastructure projects across Aotearoa.

As noted earlier, the proposed enhanced Board could also provide a platform for application of an integrated multi-departmental / agency approach to the provision of flood resilience-improving infrastructure.

In addition the proposed 'Board' could have powers to facilitate and promote appropriate standards of work and approve co-funded projects and relevant variations to these projects.

The title of the enhanced governance arrangement could be the 'River Management Flood Resilience-Improvement Infrastructure Board'.

Kānoa is the appropriate home for the proposed Board because the bones of the proposed enhanced arrangement already exist within this agency. This is via the current Kānoa 'Climate Resilience Flood Protection Programme Advisory Board'. The capabilities, operational reach, people, and systems developed by Kānoa and the Board, have been proven to work effectively, with appropriate reach into all regions.

### **Proposed Te Uru Kahika flood resilience infrastructure information gathering**

Based on current regional and unitary council LTPs, their total 10 year planned investment into flood resilience infrastructure is \$3.1b. As recent experience shows, and in the face of evolving climate change and cost of construction / inflation challenges, additional work is required to confirm a preferred future investment quantum and framework.

Te Uru Kahika have agreed on a 2023 work programme to add detail to their preferred future investment framework. The features of this programme include the following workstreams:

- Clarify the preferred future level of service for all 367 current flood protection schemes – with the expectation that 1:100 is the minimum that should be sought.
- Define the cost to achieve that expected level of service.
- Define the priority to be accorded to flood risk resilience-improving infrastructure projects across Aotearoa.
- Negotiate the cost-share proportion with Government for different types of flood risk resilience-improving works.
- Define the intended benefits, including the cost savings from damage averted, accruing because of the proposed interventions.
- Define how proposed investment in flood risk resilience infrastructure relates to different PARA (protect, accommodate, avoid and retreat) measures, as well as insurance sector plans and Te Mana o Te Wai and environmental considerations.
- Develop protocols through which the relationship between proposed flood risk resilience-improving infrastructure proposals and Waka Kotahi, Kiwi Rail, and other network utility infrastructure resilience plans may be aligned.

## ANCILLARY RECOMMENDATIONS

1. Support Te Uru Kahika as it continues to build flood risk resilience-improving collaborative capacity and capability arrangements.
2. Give near future consideration to how the central government / Te Uru Kahika co-investment formula may be further refined to better reflect regional needs and the nature of proposed river flood risk resilience-improving works.
3. Consider establishing an enhanced Kānoa 'River Flood Risk Resilience-Improving Infrastructure' Board and Agency.
4. Support Te Uru Kahika as it seeks to better define and participate in the delivery of an enhanced multi-tool, multi-agency, and environmentally sensitive flood risk resilience-improving investment programme.