

# Westport Flood Protection - Frequently Asked Questions

## The Kawatiri Business Case

**Q. Is the ring-bank the best option for Westport?**

A. The ring-bank is one of a combination of measures to help protect Westport from flood events in the future.

Extensive climate change scenario, option and risk-assessment analysis has been carried out by expert flood risk modelling and flood risk mitigation engineers and consultants. Using the findings of this work, a Technical Advisory Group (TAG) has recommended preferred structural and nature-based solutions (the 'Westport flood risk mitigation scheme') best able to contribute to the mitigation of the effects of Westport flood risks.

The TAG report provides information about the design, alignment, property, resource management, construction, project management and cost elements of TAG's preferred Westport flood risk mitigation scheme. Recommendations are then made to enable the preferred option to be progressed for inclusion in the business case seeking central government co-investment in the proposal.

**Q. How did the ring-bank price escalate to \$19.5M over a couple of years?**

A. The original \$10.2m figure was a high level estimate that had not been subject to rigorous engineering analysis. This analysis has now been undertaken as part of the preliminary work planned for the first 12 months after Council adopted the Long-term Plan 2021-31 (LTP) in October 2021.

Original funding estimates for the flood protection scheme had not taken into account the potential impacts of climate change. This is one reason, amongst others, which is impacting the cost of the project.

**Q. Why is Kawatiri Business Case this package so different than what was presented last year as part of the West Coast Regional Council (WCRC) Long-term Plan (LTP)?**

A. The Kawatiri Business Case was developed by the Westport Flood Recovery Steering Group at the invitation of the Minister of Local Government, Hon. Nanaia Mahuta.

The Councils were asked to provide an integrated package of flood resilience options, and investigate all the likely adverse impacts, resulting in a more far-reaching flood protection scheme than initially considered in the LTP.

A Technical Advisory Group (TAG) was established by the West Coast Regional Council (December 2021) to identify preferred flood risk mitigation structural and nature-based protection options. A proposal from TAG was presented to the full West Coast Regional Council on 14 June. This proposal is included in the Kawatiri Business Case for co-investment.

Rigorous river modelling and engineering analysis was undertaken, and we now know what the preferred scheme will cost, and that it is in excess of what we had originally consulted on in the WCRC LTP process.

Some of the very best senior river engineers were engaged to model the water behaviour in the rivers around Westport. Many will have listened to Matt Gardner and seen his excellent

modelling, tested against the event experienced in July 2021. He ran the models through different climate scenarios to determine what might be best for Westport's future, and how embankments could protect the town.

The TAG considered the various scenarios before preparing and identifying what construction would benefit Westport, and what would not.

**Q. Who is going to pay for the ring bank around Westport?**

A. Following consultation on the Long-term Plan 2021-31, the West Coast Regional Council agreed to progress with a \$10.2million flood protection project for Westport.

Government asked the Buller Recovery Steering Group to submit a co-investment plan with a 'multi-tool' package of options – this is now known as The Kawatiri Business Case.

The Kawatiri Business Case was submitted to the Minister of Local Government on 30 June 2022 seeking co-investment, in partnership with the local community, on the recommended integrated package of resilience measures. Part of this was the Westport Flood Protection embankment which after rigorous engineering modelling has had its costs escalate.

The Minister of Local Government is now working with Ministerial colleagues to consider the proposal. If supported the proposal will be taken to Cabinet later this year. It is important to note that Crown funding or financing for any co-investment proposal is not guaranteed.

If co-investment funding is secured, the West Coast Regional Council and Buller District Council will be able to confirm exactly what flood resilience activities will be undertaken.

**Q. Why are other options being considered in the 'multi-tool' business case that was put forward to the Minister on June 30?**

A. As part of the co-investment business case the Minister requested that the Councils provide an integrated package of flood resilience options, and investigate **all** the likely adverse impacts of flooding. This relates to more than just flood protection structures.

The Buller Recovery Steering Group was then tasked to develop The Kawatiri Business Case to seek co-investment from the Crown, in partnership with the local community.

The task of the Business Case was to identify and recommend an integrated package of longer-term flood recovery priorities, including the full range of solutions that are needed to make Buller more resilient to floods, both now and in the future.

**Q. What is the P.A.R.A. frame work that is being used in The Kawatiri Business Case?**

A. The Kawatiri Business Case outlines a mix of **Protect, Avoid, Adapt** and **Retreat** options and priorities, the full range of solutions that are needed to make Westport more resilient to future floods, both now and in the future. This is known as the **P.A.R.A.** framework.

The PARA model is adopted from overseas, where it is commonly used for managing sea level rise and flood risk to communities. The model appealed to Buller Recovery Steering Group because:

- The PARA model helps categorise the complex range of tasks that are required to manage climate related issues. It broadly aligns with the four Rs of CDEM. It reflects the application of what we see as a necessary 'multi-tool' approach.
- It shows how resilience is not the domain of a single organisation. One of the challenges with achieving true resilience is the need to integrate across organisational boundaries and to find compromise.
- There is a range of co-benefits available from investing in resilience. The model provides for this to be brought into relief.
- Not everything has to happen at the same time. Often there is a temptation to 'solve' the problem by making all the decisions today. In fact, there is a range of short (ST), medium (MT) and long-term (LT) options available (figure x). Some decisions can be deferred until further knowledge is available – adaptive pathways - this is covered in more depth later in the proposal.

**Q. What are the Key Recommendations in The Kawatiri Business Case?**

**A** The Kawatiri Business Case outlines the full range of solutions that are needed to make Westport more resilient to future floods, both now and in the future. The plan was developed using the **Protect, Avoid, Adapt** and **Retreat** options and priorities known as the P.A.R.A. framework:

**PROTECT**

A Technical Advisory Group (TAG) was established by the West Coast Regional Council (December 2021) to identify preferred flood risk mitigation structural and nature-based protection options. Seven options were considered by the TAG, factoring extensive climate change scenarios (specific detail can be found in the Kawatiri Business Case).

The favoured Westport flood mitigation scheme is as follows:

1. Rock lining repair works for bank protection near O'Conor Home (two sections) and Organs Island. (This work is being progressed regardless of whether co-investment can be obtained).
2. A combination of concrete wall, single board walls and double earth filled walls, with the use of each being selected to best suit site specific circumstances.
3. Embankments and walls with alignment, heights, and other design parameters to reflect the results of modelling and hydrological effectiveness research carried out by Land River Sea Consulting Ltd, and design considerations put forward by G&E Williams Consulting Ltd.
4. Extension of the flood risk mitigation at Carters Beach to the east to include houses along Schadick Avenue and to provide additional flood risk resilience to additional houses and the critical lifeline utility services provided by the airport.
5. Revegetation of a relic Buller River meander near Organs Island.
6. Re-grade the bed of Abattoir Creek to enable more flow to be diverted away from this 'at risk' area of urban development.

**AVOID**

The Kawatiri Business Case:

- Requests a fast-track mechanism for Te Tai o Poutini Plan ((TTPP) the combined district plan for the West Coast) appeals - a special order (or other mechanism) to be enacted that allows appeals on the Westport hazard provision of the TTPP to be limited to points of law only.
- Seeks to amend the Building Code for finished floor levels, or to otherwise give flexibility to apply an appropriate standard for the area concerned.

## RETREAT

The Kawatiri Business Case:

- Recommends the Government resources a development plan for the Alma Road area to ensure positive community outcomes.
- Proposes that a feasibility study be undertaken in FY 22/23 by Buller District Council, supported by Kāinga Ora and Kānoa, with a view to securing further land parcels in order to sustain a growth zone for Westport that is in a low-risk area.
- Recommends establishing an initial fund of \$10m to allow for some local relief for areas that will not be protected by the flood protection embankment such as Snodgrass Rd property owners.

## ACCOMMODATE

The Kawatiri Business Case:

- Proposes that the Government fund the secondment of a Resilience Officer, reporting to the Chief Executive of Buller District Council.
- Recommends investing in wave height gauging stations so that modellers can use more reliable wave height and sea level rise information. Currently there is no accurate sea level gauge on the West Coast, nor accurate wave height buoy.
- Proposes that separate provision be made for stormwater infrastructure to remove accumulated local stormwater. These would provide for the removal of the additional groundwater that may accumulate in the lower parts of Westport because of sea level rise.
- Identifies a pathway forward in regards to insurance. The proposals outlined in the Kawatiri Business Case are seen as an opportunity to build confidence that Westport manages risks well, related investment and planning is credible, the community is resilient, and the community is adapting appropriately to the potential effects of climate change.

**Q. Will there be a referendum to decide what options will be chosen?**

A. No

**Q. Will there be consultation with the public about the options in the Kawatiri Business Case, and any additional funding potential required?**

A. If co-investment funding is secured, the West Coast Regional Council and Buller District Council will be able to confirm exactly what action will be undertaken under the P.A.R.A. framework outlined above.

A key component of this will be robust consultation and engagement with the Westport community. The Council's priority is the wellbeing of the Community and working together to secure the positive future of Westport.

**Q. Will there be a need for a special public consultation process due to the changes from what was proposed in LTP?**

A. Yes – this will be required.

Once co-funding is confirmed and we know what we are able to construct, landowners that are affected by the flood protection will be consulted with directly, as per normal practices for construction works of this nature.

Long-term resilience measures will be discussed and consulted on at length over the coming years through a variety of mechanisms and organisations. These include the WCRC and BDC, in particular the recently announced Buller Climate Adaptation Plan development.

Other processes that are likely to involve public consultation, relevant to long term resilience planning, include the Resource Management Act Reform, and the Future of Local Government Review.

**Q. What is the process from here?**

A. The Kawatiri Business Case was submitted to the Minister of Local Government on 30 June 2022 seeking co-investment, in partnership with the local community, on the recommended integrated package of resilience measures.

The Minister of Local Government will then work with other Ministerial colleagues to consider the proposal. If supported, the proposal will be taken to Cabinet later this year. It is important to note that Crown funding or financing for any co-investment proposal is not guaranteed.

If co-investment funding is secured, the West Coast Regional Council and Buller District Council will be able to confirm exactly what action will be undertaken under the P.A.R.A. framework outlined above.

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## Technical Questions

**Q Why won't there be a causeway excavated on the Snodgrass peninsula?**

The TAG investigated the effects of constructing a floodway along the lowest lying area of land in the Snodgrass area. The idea explored was whether this would provide relief from flood flows upstream of the State Highway 67 causeway. TAG explored whether excavation of the causeway could eliminate the road flooding on the embankment access road to the State Highway, and whether an excavation could lower upstream flood levels, and hence lower the cost of flood defences at other locations.

Despite these potential benefits, this option would be difficult to operationalise. The reasons for this include the:

- Benefits in terms of lower flood levels in the Orowaiti are relatively small.
- Costs would be high because:
  - Bridging or constructing a set of box culverts would be required for floodwaters to pass under the State Highway.
  - There is a substantial area immediately downstream of the State Highway that has been filled. This fill would have to be removed at considerable cost.
  - There are several homes located on or near the proposed causeway and these would need to be relocated at considerable expense.

**Q. Why will there be no Orowaiti cut?**

A. An 'overflow cut' option has been put forward by some Westport residents for consideration by TAG. The proposed cut was suggested as best located where the Orowaiti estuary bends to

the east. The proposed cut was envisaged as allowing flow to go directly out to the sea, through the spit.<sup>1</sup>

Advice provided to TAG by Gary Williams is the long length of a cut between the estuary and the current coastline, and the lack of hydraulic grade would make any overflow option at this location inefficient.<sup>2</sup> Further, Mr Williams informed TAG:

- The cut would have to be wide and shallow to have sufficient capacity while still fitting the level limitations of the estuary and sea.
- The tidal range at this location gives rise to a small useable height range across the spit.
- Maintenance of the cut would need to be relatively constant, with associated costs.
- An opening in this area would increase the risk of sea surge and tsunami hazards to residents of Westport.

**Q. Why is the Snodgrass Road Area being left un-defended?**

A. The TAG team fully explored the option of providing flood mitigation structures at Snodgrass. After deep consideration and despite having notified an initial intent to construct flood risk mitigation walls at Snodgrass, they reluctantly no longer see favour in this option.

Their reasons are that the:

- Construction of flood risk mitigation structures at Snodgrass would significantly increase water levels for upstream properties over a length of 6km. This would require higher structures for the Westport ring bank on the other side of the Orowaiti estuary, as well as increasing flood depths on land within the (unprotected) Orowaiti overflow area upstream. The higher structures would have further adverse amenity impacts on affected landowners, and it may be difficult to gain resource consent.
- Snodgrass area is inherently vulnerable, under present climatic conditions – and even more so, under climate change-induced sea level rise and groundwater inflow conditions. Coastal flooding and groundwater ponding are likely to occur more frequently in the future even if flood risk mitigation structures were to be put in place.
- Cost benefit of investment is not as attractive as the investments in the Westport ‘ring-bank’ or at Carter’s Beach.
- Resource consents for structural solutions may be difficult to obtain because the:
  - Toe of many parts of the embankment would extend into the estuary.
  - Public access would become increasingly constrained.
  - Structures may need to be of significant height thus creating unwanted amenity impacts for residents and visitors to this area.
- There are likely significant constructability issues which are yet to be investigated in detail, including complex road crossings.

**Q. Why can’t we just dredge the river?**

A. Some Westport residents have suggested flood risks could be mitigated by more extensive dredging of the bed of the lower Buller River.

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<sup>1</sup> The changes in the profile of the coastline and in the Orowaiti estuary over time, because of the coastal protrusion of the harbour moles, were demonstrated in slides presented by Matt Gardner at the Councillor briefing held on 26 May 2022

<sup>2</sup> The complexity of Orowaiti ‘cut’ options are summarised in a report commissioned by WCRC in 2015. <https://www.wcrc.govt.nz/repository/libraries/id:2459ikxj617q9ser65rr/hierarchy/Documents/Publications/Natural%20Hazard%20Reports/Buller%20District/Westport/Orowaiti%20Cut%20%28Westport%20Flood%20Protection%29%20-%20Niwa%20recommendation%20May%202015.pdf>

The extraction of gravel material from the bed of the river has been investigated and reported by Matthew Gardner<sup>3</sup>

Matthew Gardner and Gary Williams informed TAG the:

- Buller River has the power, in large flood events, to determine its own bed levels and bed profile and will scour and deposit bed material to suit its very high magnitude sediment transport capacity.
- The Buller River channel, along its lower reaches and out to the river mouth bar, has been dredged for harbour development and maintenance purposes for many years. Rock tide walls have been used to confine flows in the main channel. This experience has indicated this has not had much effect on the bar or on channel depths.
- Dredging / gravel extraction is costly and without commercial demand for the aggregate, dredging will come at significant ongoing cost.
- The benefits of gravel extraction are also not reliable, with small river floods having the ability to replace extracted gravel overnight.
- With the above points in mind, it was considered that dredging would not contribute much to flood risk mitigation solutions in Westport.

**Q. Why is revegetation of a relic Buller River meander near Organs Island being suggested?**

A. The area of land on the true right of the Buller River near Organs Island includes the old channel of the Buller River.<sup>4</sup> The TAG propose this area be revegetated as a wide area of native riparian forest.<sup>5</sup> The TAG proposed this would be established over three phases of five years each. The area would thereby provide a vegetative filter and moderator of flood overflows down the Orowaiti River and estuarine system.

An additional benefit of this proposal is that - as this vegetation is established, the hard control of the rock lining could be relaxed, with the river thereby able to move within this wider space, prior to its re-entry into the sharp bend downstream at the valley side bluff. Revegetation would also reduce long-term rock maintenance costs of the flood mitigation scheme, while allowing a more natural river movement within a forested floodplain environment.

While there are some property issues to resolve, this revegetation is likely to generate co-benefits for indigenous flora and fauna, and carbon sequestration, and could potentially attract external sources of funding.

**Q. Why is re-alignment proposed at Abattoir Creek?**

A. The current alignment and grade of Abattoir Creek was identified by the TAG as contributing to the unwanted re-direction of flood flows toward areas of Westport urban development. The TAG propose the grade of the bed of this Creek be altered to divert more flow away from this 'at risk' area of urban development.

**Q. Why aren't culverts being considered on the embankment adjacent to the Orowaiti State Highway bridge?**

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<sup>3</sup> 'Buller River Gravel Extraction Recommendations,' Gardner 2020.

<sup>4</sup> This land is currently administered by LINZ and leased for grazing. The lease comes up for renewal in June 2022. WCRC is liaising with LINZ.

<sup>5</sup> See Figure 14 in the attachment prepared by Gary Williams.

A. The possibility of removing the hydraulic restriction caused by the Orowaiti embankment was assessed by the TAG. The TAG recommended that this should not be pursued. This is because it would:

- Have little flood mitigation effect as the causeway was mostly 'drowned-out' in large flood events.
- Not generate sufficient cost / benefit.
- Need to take place in a sensitive area of estuarine mud flats thereby likely making resource consent for this work difficult to acquire.