

Hawkes Bay Regional Council

Wairoa Mouth Cutting Procedures

1 July 2024

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Summary comments based on initial site inspection

Introduction

I have undertaken a brief review of the procedures Hawkes Bay Regional Council (HBRC) use and the actions they took about the opening of the Wairoa River Mouth over the period 21 -30 June 2024. The aim of the review is to give advice as to how those procedures could be improved in the future. Understanding how those procedures were implemented in the recent event is part of that process. I visited Wairoa and the River mouth area on Sunday 30th June with Mark Hudson of HBRC and discussed the matter with staff in the Napier office on 1 July 2024.

I undertook the work as the River Managers Special Interest Group Convener of Te Uru Kahika, the body representing most Regional and unitary authorities around New Zealand. I have 45 years' experience in the field of Flood Risk Management and River Engineering. This has included a number of years working on rivers on the east coast of the north Island and with managing all aspects of river mouth cuts in the Wellington region for 18 years.

Opening Statement

Wairoa has experienced another devastating flood. My thoughts go out to the community who have suffered further losses and to all of those who have put in extraordinary efforts to help with the recovery.

The damage was the result of a coincidence in peak river levels and peak sea swell and storm surge conditions. This combination of events, coinciding in peak levels at the Kopu Rd area on 26th June 2024, is what has caused the flooding of the lower parts of Wairoa Township. Internal stormwater and sea water may also have been a

factor. Observations of the areas flooded showed very little silt, indicating the floodwater may have come from sources than just the Wairoa River.

The Wairoa River mouth is in a relatively natural state with no manmade structures influencing its position. The mouth generally migrates south naturally because of sea conditions and river flows. HBRC has river mouth cutting procedures in place to keep the mouth in a more flow-efficient easterly position. At the time of the flood, the mouth was in a westerly position part way along the Whakamahi Lagoon. A partial manual cut was also in place at the time of the event. The river also created 2 new outlets naturally during the event. A new outlet in the vicinity of Pilot Hill, to the west of the partial manual cut, and a second one to the east near the end of the Ngamotutu Lagoon. The partial cut did not develop during the event but a lowered foredune was evident (about 3.0mRL) following the event. The timing of the development of the natural mouth and the partial cut will have influenced flood levels in the Kopu Rd area. The naturally developed cuts did not develop in time to reduce flood levels in the Kopu Rd area.

I believe staff were following the procedures set out. They made the decisions they thought appropriate based on the information they had at the time. They had considered the various forecast information and mouth position from the week beginning 17th June 2024. They initiated preparation for a mouth cut on 21 June 2024 and started work on 25 June 2024. They were part way through that cut when the flood occurred.

Events of this type are likely to become more frequent. Options for managing this risk are being considered as part of the wider Wairoa flood resilience work currently being undertaken. These flood risk management options need to include stopbanks, channel dredging, mouth training, mouth cutting, house raising, managed retreat and many other options. It is unlikely that any one measure, and particularly mouth cutting, is going to be sufficient to manage future flood risk.

Until such time as these alternative measures are in place, I recommend additional monitoring be put in place and that current procedures and decision-making responsibilities be updated and improved by adopting the recommendations for improving procedures – as listed later in this letter.

The event of 25-26th June 2024.

HBRC considered a range of forecast and observed information relating to the flood risk from the Wairoa River and elevated sea levels and large swells.

The procedures considered comprised:

1. Lagoon and River Mouth Instructions 261-004 Wairoa River (the primary document).
2. Pryde Contracting Notes and Methodology.
3. “Good to knows for Mouth cutting” Wairoa Bar Opening.

In discussion with staff and the site visit, it is clear that all procedures were taken into consideration with respect to making decisions on the cutting of the Wairoa Bar from early in the week before the event through to the decision to prepare for a cut on Friday 21st and the start of the cut on Tuesday 25th June 2024. By that time, it was too late to complete the cut on the 25th June and the flood and sea swell events on the night of the 25th June and the morning of 26th June 2024 overtook events with a main new mouth establishing naturally.

None of the procedures provide the definitive action sequence for staff. Judgements must be made, with the best information and experience available at the time. Staff need to be supported in making those judgements.

Improvements to the Procedures

There are useful improvements that can be made to the procedures to improve the decision making. It will never be possible to have all the information, or all the parameters required for an effective cut, to be available at the same time. Judgement is therefore always going to have to be used. The most important requirement is to have the right staff person from HBRC with both the authority and the experience to make the decision to proceed with a mouth cut. While only one person is likely required at any one time, two people will actually be required to provide sufficient cover and redundancy to provide what is in essence a 24/7 – 365 day a year role.

Improvements to the procedures and the information available could comprise:

1. The right staff person from HBRC with the appropriate delegations and experience to make the final call including informing the GM assets and the CEO if the decision is considered contentious.
2. Integration of the documentation of the procedures (currently 3 documents) into one place.
3. Consideration of use of the SH2 bridge recorder stage information to access the “efficiency of the mouth.”
4. Camera observations of the beach and mouth.
5. Early involvement with local Iwi.
6. Early involvement with Wairoa District Council staff.
7. Consideration of wind and barometric set up as well as swell forecasts.
8. Setting up of a 3 year period contract with an appropriately experienced contractor.

9. Additional bathometric survey data updated at 5 yearly intervals or after a major flood.

To complete the documentation of these procedures I would recommend a workshop session be convened in Wairoa with the necessary staff from HBRC, WDC, Iwi and the preferred contractor to finalise these procedures into an agreed document. A meeting in advance of the workshop with HBRC staff is recommended to set terms of reference. Once the workshop session is complete and new draft procedures are developed, is proposed to meet with relevant Wairoa District Councillors and Iwi to discuss the draft before it is finalised by the HBRC CEO.

The draft Tonkin and Taylor report of June 2024, prepared as part of the options assessment for improving flood resilience in Wairoa, provides a useful start point for the factors that will need to be considered at the previously mentioned meetings.

Implementing all these recommendations will have cost implications. It would be likely that the mouth is cut more often. The chances of an unsuccessful cut will be reduced but not eliminated. Budget provision for this needs to be made now and locked in through subsequent annual plans.

Further work required to finish the assessment

Further work is required to finish this assessment as most of the information to date has come from observations and my own experience. I have briefly looked at a range of documents and there is further supporting material available, but I have had insufficient time to collate all that information.

I am happy to work with HBRC on how this additional work could be undertaken using their own staff, contractors and the consultants currently engaged in the various workstreams related to flood management on the Wairoa River.

There is a considerable amount of information available, but it needs to be better collated for the particular purpose of updating and providing clear mouth cutting procedures, now and into the future.

The future procedures will depend on what other flood mitigation measures are selected for improving flood resilience to Wairoa township. What is clear is that Wairoa Township cannot rely on mouth cutting as the primary form of flood risk management

because of the operational difficulties and uncertainties of always keeping the bar in an ideal position ahead of a flood, sea swell event or combination of the two.

Graeme Campbell

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