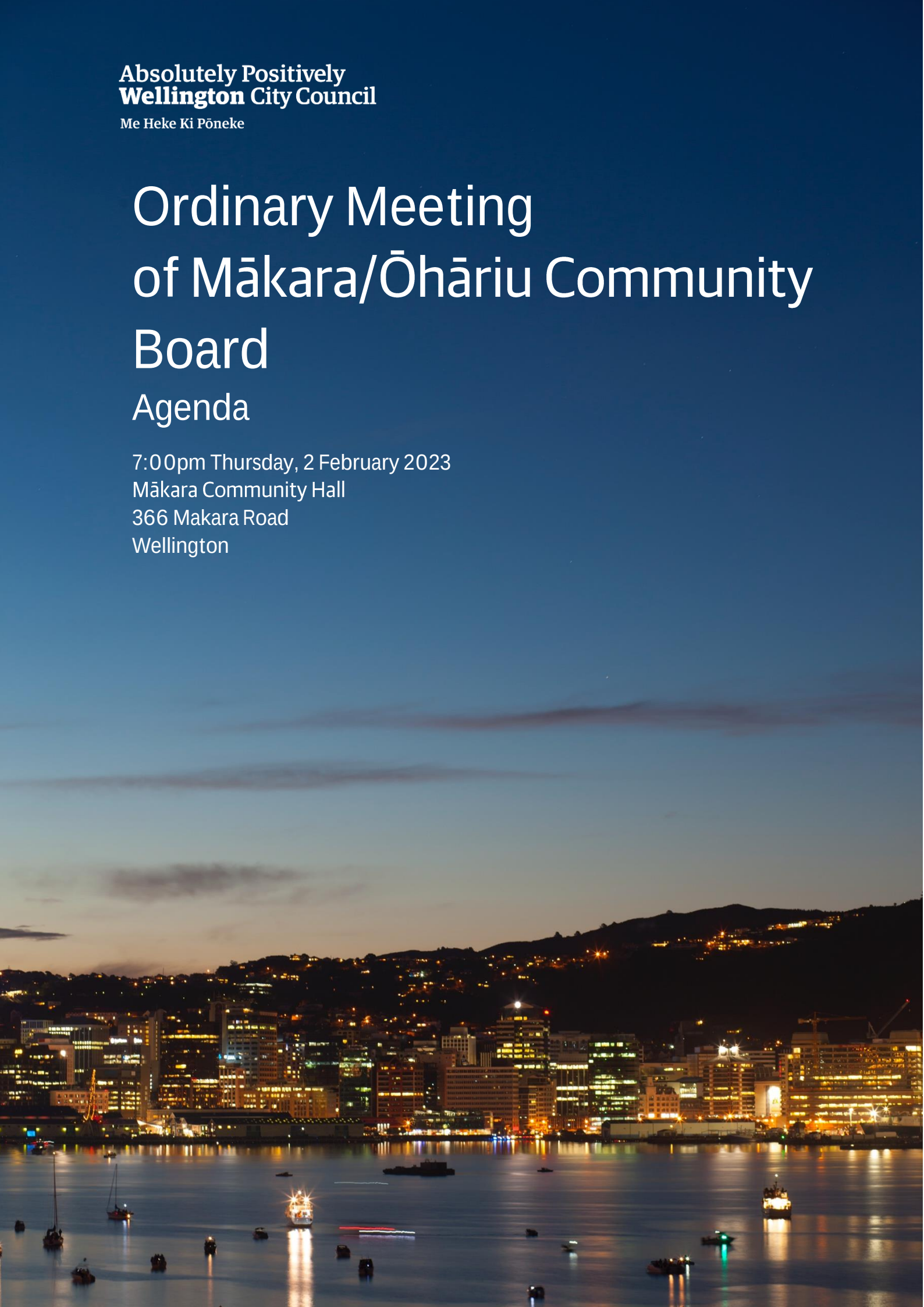
Absolutely Positively
Wellington City Council
Me Heke Ki Pōneke

Ordinary Meeting of Mākara/Ōhāriu Community Board

Agenda

7:00pm Thursday, 2 February 2023
Mākara Community Hall
366 Makara Road
Wellington



MEMBERSHIP

Christine Grace
Darren Hoskins (Deputy Chair)
Mark Reed (Chair)
Chris Renner
Wayne Rudd
Hamish Todd

Have your say!

You can make a short presentation to the Councillors, Committee members, Subcommittee members or Community Board members at this meeting. Please let us know by noon the working day before the meeting. You can do this either by phoning 04-803-8337, emailing public.participation@wcc.govt.nz or writing to Democracy Services, Wellington City Council, PO Box 2199, Wellington, giving your name, phone number, and the issue you would like to talk about. All Council and committee meetings are livestreamed on our YouTube page. This includes any public participation at the meeting.

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1. Meeting Conduct

1.1 Karakia

The Chairperson will open the meeting with a karakia.

Whakataka te hau ki te uru,	Cease oh winds of the west
Whakataka te hau ki te tonga.	and of the south
Kia mākinakina ki uta,	Let the bracing breezes flow,
Kia mātaratara ki tai.	over the land and the sea.
E hī ake ana te atākura.	Let the red-tipped dawn come
He tio, he huka, he hauhū.	with a sharpened edge, a touch of frost,
Tihei Mauri Ora!	a promise of a glorious day

At the appropriate time, the following karakia will be read to close the meeting.

Unuhia, unuhia, unuhia ki te uru tapu nui	Draw on, draw on
Kia wātea, kia māmā, te ngākau, te tinana, te wairua	Draw on the supreme sacredness To clear, to free the heart, the body
I te ara takatū	and the spirit of mankind
Koia rā e Rongo, whakairia ake ki runga	Oh Rongo, above (symbol of peace)
Kia wātea, kia wātea	Let this all be done in unity
Āe rā, kua wātea!	

1. 2 Apologies

The Chairperson invites notice from members of:

1. Leave of absence for future meetings of the Mākara/Ōhāriu Community Board; or
2. Apologies, including apologies for lateness and early departure from the meeting, where leave of absence has not previously been granted.

1. 3 Conflict of Interest Declarations

Members are reminded of the need to be vigilant to stand aside from decision making when a conflict arises between their role as a member and any private or other external interest they might have.

1. 4 Confirmation of Minutes

The minutes of the meeting held on 8 December 2022 will be put to the Mākara/Ōhāriu Community Board for confirmation.

1. 5 Public Participation

A period of at least 10 minutes shall be set aside near the beginning of Mākara/Ōhāriu Community Board meetings to enable members of the public to make statements about any matter on the Agenda for that meeting. The total time set aside for public participation may be extended with the majority agreement of the Board.

1. 6 Items not on the Agenda

A motion relating to any matter not on the Agenda may be made without notice, by the unanimous resolution of the meeting. The Chairperson shall explain to the meeting why the item is not on the agenda and the reason why discussion of the item cannot be delayed until a subsequent meeting.

2. Reports

MĀKARA BUND REVIEW

Kōrero taunaki | Summary of considerations

Purpose

1. This report to Mākara/Ōhāriu Community Board considers the efficacy of a shingle bund placed at the backshore of Mākara Beach to reduce over-topping impacts.

Strategic alignment with community wellbeing outcomes and priority areas

	Aligns with the following strategies and priority areas: ☒ Sustainable, natural eco city ☒ People friendly, compact, safe and accessible capital city ☐ Innovative, inclusive and creative city ☐ Dynamic and sustainable economy
Strategic alignment with priority objective areas from Long-term Plan 2021–2031	☐ Functioning, resilient and reliable three waters infrastructure ☒ Affordable, resilient and safe place to live ☐ Safe, resilient and reliable core transport infrastructure network ☐ Fit-for-purpose community, creative and cultural spaces ☒ Accelerating zero-carbon and waste-free transition ☐ Strong partnerships with mana whenua
Relevant Previous decisions	

Financial considerations

☒ Nil	☐ Budgetary provision in Annual Plan / Long-term Plan	☐ Unbudgeted $X

Risk

☒ Low	☐ Medium	☐ High	☐ Extreme

Author	Shaw Mead, Ecological and Physical Coastal Consultants Ltd Sam O'Neill, Ecological and Physical Coastal Consultants Ltd
Authoriser	Chris Mathews, Manager Waste, Water and Resilience Siobhan Procter, Chief Infrastructure Officer

Taunakitanga | Officers' Recommendations

Officers recommend the following motion

That the Mākara/Ōhāriu Community Board:

1. Receive the information.

Whakarāpopoto | Executive Summary

2. The attached report has considered the efficacy of a shingle bund placed at the backshore of Mākara Beach to reduce over-topping impacts.
3. Increasing the beach crest height/freeboard would result in reduced over-topping during events, although ensuring that a bund remains intact during an event would require additional works. A bund itself will likely be ineffective, as well as unrequired at this point in time.

Takenga mai | Background

4. Mākara Beach experienced significant coastal inundation on the 20th of Feb 2018 as a result of large waves and low pressure associated with ex-Tropical Cyclone (ex-TC) Gita.
5. Following a community-led collaborative climate change adaptation project supported by the Wellington City Council (WCC), some potential solutions to prevent further damage from similar future events have been proposed.
6. The material produced for the Workshops as part of the community-led collaborative climate change adaptation project have been reviewed, while this report aims to review the efficacy of a shingle bund placed at the backshore of Mākara Beach to reduce over-topping impacts.

Kōrerorero | Discussion

7. The most recent LiDAR survey at the site effectively reduces the current vulnerability to over-topping events.
8. The downward trend of vertical land movement (recently determined as -1.93 mm/yr) increases in the rate of climate-induced SLR (e.g. by slightly more than 0.2 m for a 100-year planning horizon), which means that long term planning for SLR will be shortened for particular projections for a long-term coastal adaptation plan for Mākara Beach.
9. When the extreme over-topping event caused by extra-TC Gita is consider with respect to its likely return period, it is found that it was extremely rare and far in excess of a 1 in 100-year return period event (i.e., beyond a 100-year planning horizon). This suggests that it is unlikely that works to increase the beach crest are urgent/required at present.
10. With respect to natural hazards for the site, the flood hazard is considered to be the most relevant. Due to poor land-management over the past 60 years or more, the Mākara River/Estuary channel has filled-in significant with terrestrial sediment, and is still infilling at very high rates; this reduces the capacity for flood waters to be discharged to sea and exacerbates the impacts of floods.

Ngā mahinga e whai ake nei | Next actions

11. WCC to facillitate a meeting with GWRC and community representatives to discuss potential flood mitigation meaures.

Attachments

Review of the Efficacy of a Shingle Bund to Protect Mākara Beach from Over-Topping During Extreme Events

Prepared for:

Absolutely Positively
Wellington City Council
Me Heke Ki Pōneke

Review of the Efficacy of a Shingle Bund to Protect Mākara Beach from Over-Topping During Extreme Events

Report Status

Version	Date	Status	Approved by
V1	17 November 2022	Final Draft	SO

It is the responsibility of the reader to verify the version number of this report.

Authors

Shaw Mead *BSc, MSc (Hons) and PhD*

Sam O'Neill *BSc, MSc (Hons)*

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1 Background

Mākara Beach experienced significant coastal inundation on the 20th of Feb 2018 as a result of large waves and low pressure associated with ex-Tropical Cyclone (ex-TC) Gita. Following a community-led collaborative climate change adaptation project supported by the Wellington City Council (WCC), some potential solutions to prevent further damage from similar future events have been proposed. The material produced for the Workshops as part of the community-led collaborative climate change adaptation project have been reviewed, while this report aims to review the efficacy of a shingle bund placed at the backshore of Mākara Beach to reduce over-topping impacts.

Mākara Beach is a small town of approximately 100 residents, situated on Wellingtons west coast, northwest of Wellington CBD (Figure 1-1). There is a fetch of ~200 km to the southern side of Cape Taranaki and ~85 km to the northern tip of the Marlborough Sounds leaving narrow swell corridor of ~18° to the northwest for cyclone swells to propagate through (Figure 1-2).

Figure 1-1. Mākara Beach location map.

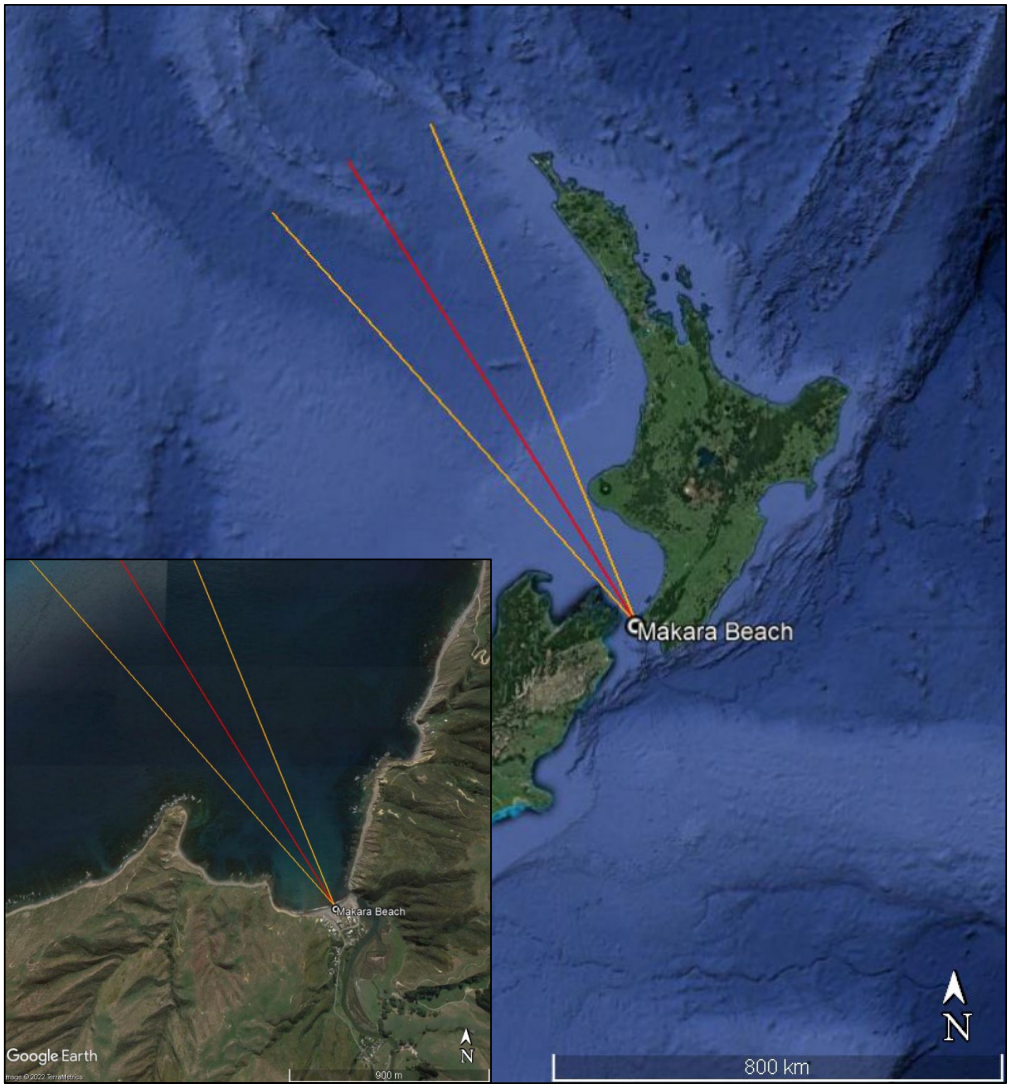

Figure 1-2. Mākara Beach swell northwest corridor.

2 Extra-Tropical Cyclone Gita Swell Characterisation

Figure 2-1 below shows the cyclone tracks that have passed within 500 km of Wellington in the period 1969 – 2022. In total there are 23, however only 12 of these approached from the northwest like extra-TC Gita did. This translates to 0.23 cyclones arriving from the northwest per year on average (i.e., 1 every 4 years). It should be noted that because Gita had downgraded to extra-TC status by the time it was 500 km from Wellington, it is not included as one of these 12 cyclones. So, accounting for extra-TC's, the annual frequency of these types of events is slightly higher.

Also of note is that extra-TC Gita was considered 'unusual' because it maintained its cyclonic identity well south of where TC's usually lose their form. Most of New Zealand lies poleward of 35°S latitude (approximately Kaitaia, and approximately 700 km from Wellington), so it's difficult for a TC to maintain its identity as it approaches the island nation. Gita was remarkably resilient, and maintained a symmetric warm-core cyclone well south of this boundary and traversed sea surface temperatures of around 25°C; normally too cool to sustain tropical development[1].

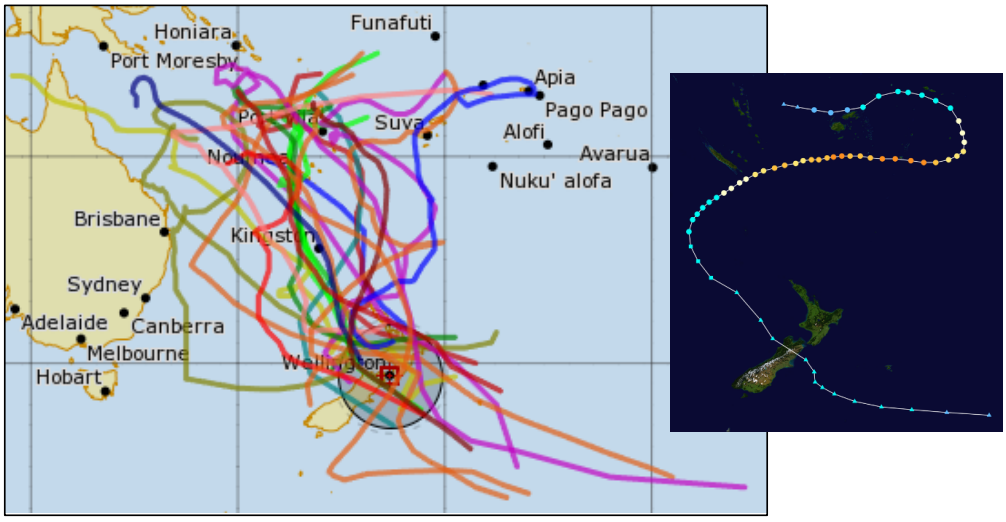

Figure 2-1. (Main) Cyclone tracks that have passed within 500km of Wellington in the period 1969 – 2022. (Right) Cyclone Gita's track (source: Bureau of Meteorology, 2022).

To consider the return period of a TC Gita type event, long-term hindcasted wave data was extracted from the ERA5 Global Wave Model (Hersbach *et al.,* 2018) at the location shown in

[1] https://www.wunderground.com/cat6/two-unusual-tropical-cyclones-affect-australia-and-new-zealand

Figure 2-2 for the period covering 1979 – 2021, at a temporal resolution of 3-hours. This dataset was filtered to include only waves from the northwest quadrant (with a direction between 270-360°). The return period for metocean events can be considered as simple has the non-direction maximum significant wave height, or consider several factors that are associated with the kind of event. In this case, we are considering wave over-topping, which is a result of the combination of wave height, wave period and still water level (the latter of which is effected by storm surge and wave set-up) with respect to a particular crest height (e.g., Mead, 2014; Mead, 2021). An additional factor in this case is the restricted direction that the event must come from; as described above, there is only an 18° swell corridor).

An extreme value analysis was carried out on the filtered data using the WAFO (2011) toolbox developed by the faculty of Engineering, Mathematical Statistics, Lund University, Sweden, which is a commonly used statistical toolbox for carrying out univariate extreme value analysis. The routines in WAFO were used for fitting a statistical distribution to the occurrence of wave heights. The analysis was carried out using a Peaks over Threshold method and fitting the resultant data to a Generalised Pareto Distribution using a threshold of 4 m to define what constitutes an extreme event. The results of this analysis are shown in Table 2-1.

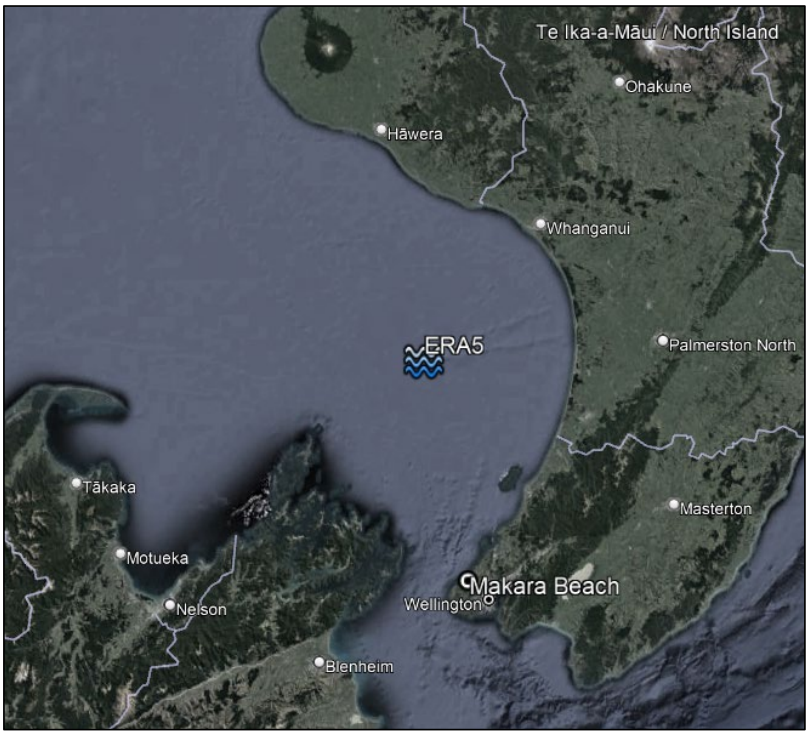

Figure 2-2. Map showing the location of Mākara Beach and the ERA5 wave data extraction location.

Table 2-1. Return Intervals and associated wave heights with a direction between 270-360°.

RI (yrs)	Hs (m)
1	4.836
5	5.652
10	5.961
30	6.404
50	6.592
100	6.831

The ERA5 wave data recorded a peak significant wave height of 6.285 m as extra-TC Gita approached New Zealand. These significant wave heights, from the northwest quadrant, have a Return Interval of 24.62 years. Peak periods at this time (20-Feb-2018 09:00:00 UTC) were 11.7 s with a mean direction of 326°. However, as noted above, the wave height is only one component that leads to extreme over-topping.

When wave direction and wave period are also considered, it becomes clear that the wave conditions generated by extra-TC Gita, which impacted Mākara Beach, were unique in the wave record and can be considered as very rare. To illustrate this, Figure 2-3 below shows that not only was extra-TC Gita the largest wave event from the northwest quadrant, but also the most northerly of the >6 m events. This is a major contributing factor to the damage that was caused in Mākara Beach.

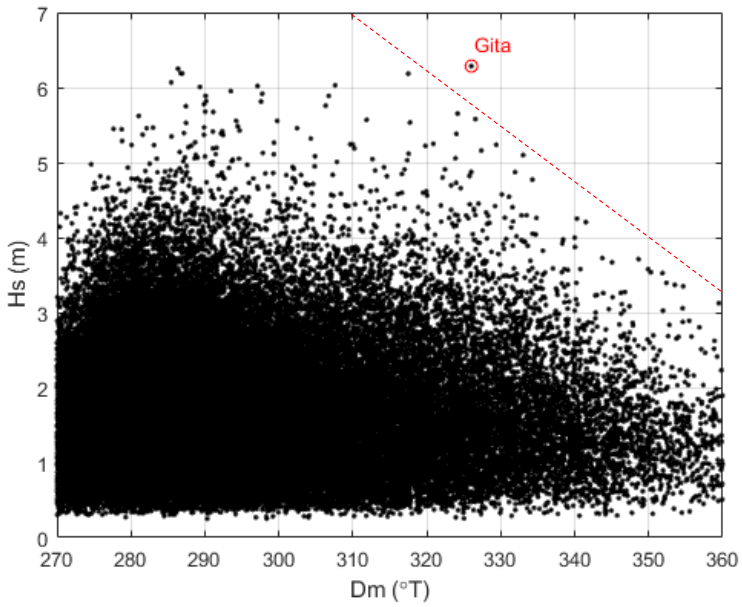

Figure 2-3. Significant wave height (Hs) plotted against mean wave direction (Dm). Ex-TC Gita is circled in red.

Additionally, Figure 2-4 shows that Gita produced some of the largest combined wave heights and periods in the entire record (i.e., in the 42 years of data back to 1979). Figure 2-5 is the same plot as Figure 2-4, but displayed as a probability density function, and shows that Gita's wave height and associated period (6.285 m at 11.7 s) has a joint probability of 0.000014084% (i.e., a completely unique event in the wave record). This is equivalent to an approximately 1 in 7 million return period event, which is extremely rare, although to put this into context, there is a 1 in 292.2 million chance of winning lotto with Powerball; very extreme events still occur. It is also important to recognise that extreme events tend towards a horizontal asymptote with increasing return periods (Figure 2-6), since there are physical restrictions in terms of fetch, duration and wind speed that create waves at any location. This means that once you get beyond a few hundred years between return periods, there is little increase in wave height; i.e., there is likely little difference in a 1 in 1,500 year return period and a 1 in 7 million one.

This result indicates that the extreme over-topping event at Mākara Beach was very rare (it had not occurred to this extent previously), and significantly greater than a 1 in 100 year event.

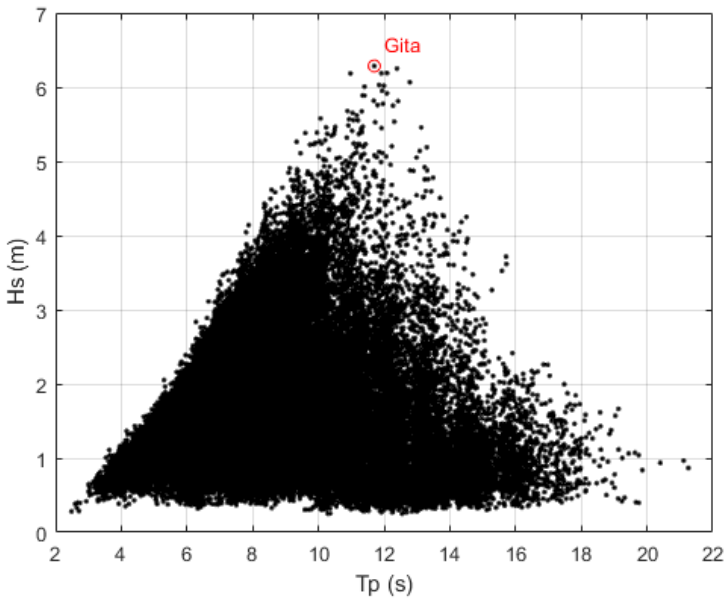

Figure 2-4. Significant wave height (Hs) plotted against peak wave period (Tp). Ex-TC Gita is circled in red.

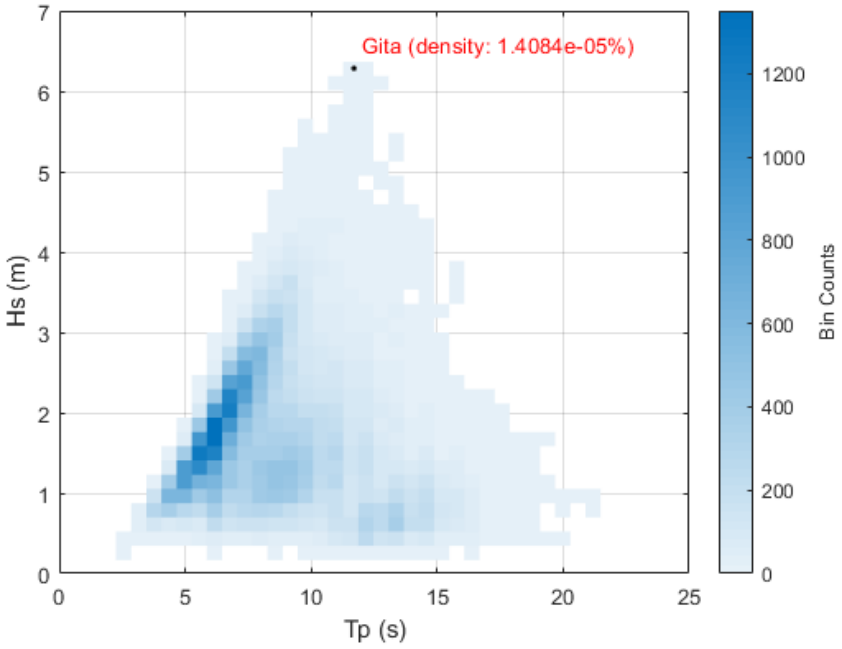

Figure 2-5. Bin plot of significant wave height (Hs) plotted against peak wave period (Tp). Ex-TC Gita shown by black dot.

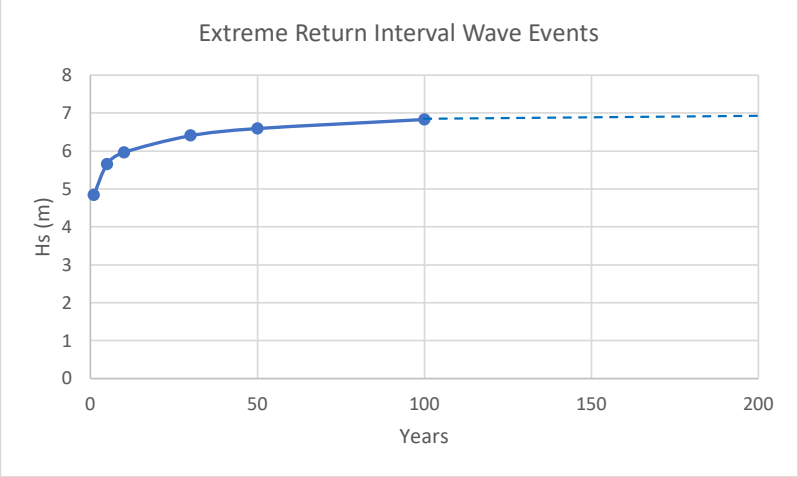

Figure 2-6. Extreme return interval wave events from the north western quarter off the western coast of North Island New Zealand. Extreme events tend towards a horizontal asymptote with increasing return periods, since there are physical restrictions in terms of fetch, duration and wind speed that create waves at any location.

3 Over-Topping Analysis, LiDAR Surveys and Vertical Land Movement at Mākara Beach

Over-topping occurs when a series of factors occur coincidentally, usually due to direct hit by a local storm event with strong onshore winds and low barometric pressure resulting in locally elevated water levels, known as storm surge. That is, a combination of:

- Storm surge due to low atmospheric pressure (1 cm of increased water level for every millibar below average pressure) and strong onshore winds causing wind set-up;
- Large waves;
- Large wave set-up, with longer period waves increasing the amount of set-up, and;
- High tide (spring or king tides will exacerbate the event).

When these factors all occur at the same time, the potential for over-topping is increased (Figure 3-1). These factors can be further grouped, as storm tide, which is a combination of the components that represent a major portion of extreme water levels (Figure 3-1). Storm-tide is defined as the sea-level peak reached during a storm event, from a combination of monthly mean sea-level anomaly (e.g., ENSO, seasonal pressure differences, etc.) + tide level + storm surge. Storms lead to storm surges, a short-term water level rise at the coastline. Storm surge combines low barometric pressure (1 hPa fall in pressure results in a 1 cm rise in water level) and onshore wind. The wave components of set-up and run-up also need to be considered along with the storm tide to determine extreme water levels and inundation.

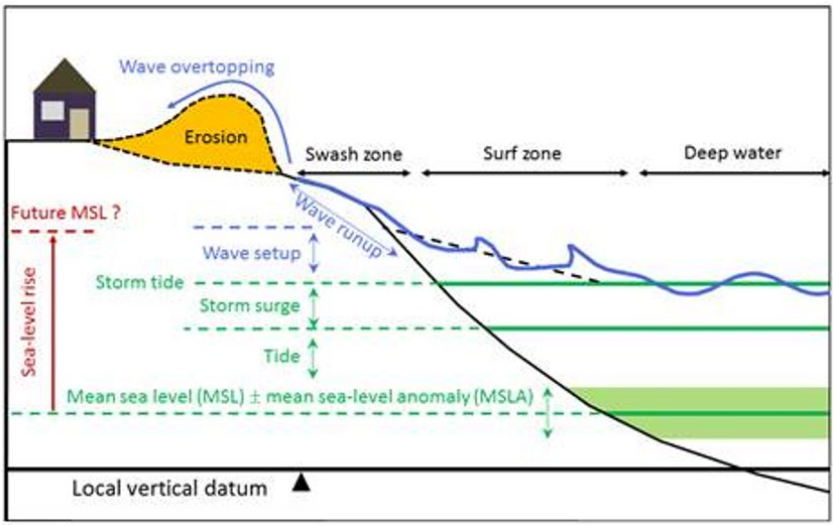

Figure 3-1. Extreme elevated water level is a combination of metocean factors that when combine have the potential to impact on coastal properties even if setback from the beach.

The still water level (SWL) includes the tidal level, inverse barometric pressure, wind set-up and wave set-up, with wave run-up resulting in over-topping where the SWL is high relative to the beach crest level. During the extra-TC Gita event, the tides were high spring tides, at >1.0 m (0.58 m above MSL) (Figure 3-2). Air pressure was up to 22 millibars below average during the extra-TC Gita event (i.e., increasing storm surge by ~0.2 m) (Figure 3-3). In addition, considering depth-limited wave breaking within the embayment based on the nautical charts (i.e., maximum wave height nearshore of 4.3 m), wave set-up is calculated to be 1.92 m above MSL. In combination, the SWL would have been >2.7 m above MSL (Table 3-1).

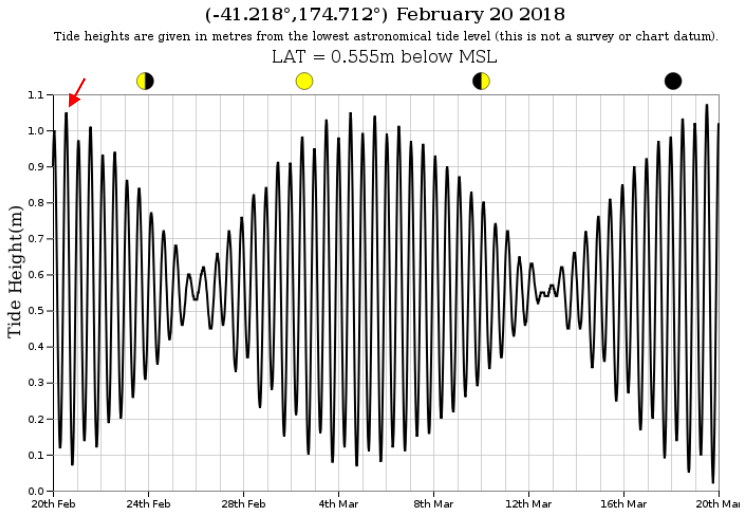

Figure 3-2. The extra-TC Gita event occurred during spring tides (red arrow).

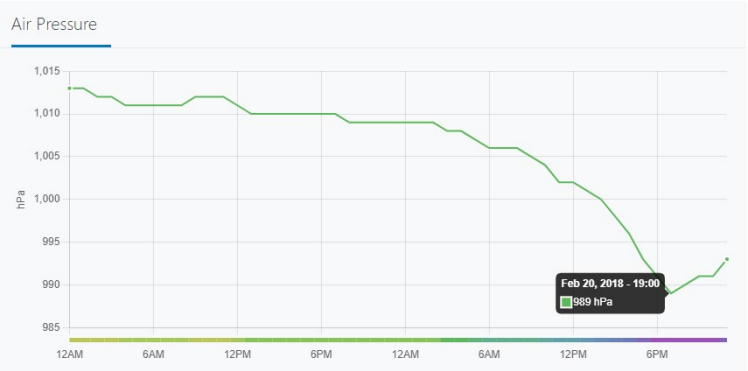

Figure 3-3. Air pressure was up to 22 millibars below average during the extra-TC Gita event (from the Wellington Airport records).

Table 3-1. Maximum water level above MSL during the wave event driven by extra-TC Gita.

Component	Increase in height (m)
Storm surge	0.20*
Spring tide (to MSL)	0.58
Wave set-up (max)	1.92
Max SWL	**2.7**

*this is estimated inverse barometric pressure, without the inclusion of wind set-up, which was likely significant in the Mākara Beach enclosed embayment morphology, and likely close to 0.5 m of total storm surge based on historical extreme storm events in New Zealand.

Similar to the 'worst-ever recorded' over-topping event at Ōwhiro Bay on 15th April 2020 (Mead, 2021), and the extreme over-topping at The Rarotongan resort on 13th July 2022, where over-topping had 'never before occurred' (Mead *et al*., 2022), the combination of very large waves from a particular direction with long period, with onshore winds low barometric pressure and a high spring tide resulted in extreme over-topping at Mākara Beach on 20th February 2018. As found in the previous Section, the joint probability particular swell height, period and direction (within a very small swell corridor) was a very rare occurrence, and the impacts were compounded by the combined components of the spring tide and storm surge at the same time.

As noted in Section 2, the volume of over-topping is also impacted by the freeboard, that is, the height between the SWL (i.e., water level minus waves/wave run-up) and the crest of the beach. As indicated by the XBeach modelling undertaken by Tonkin and Taylor, sea level rise (SLR) will exacerbate over-topping events by effectively reducing the freeboard, meaning that return period extreme events will occur with increasing frequency (Figure 3-4).

One aspect of the over-topping assessment is the differences between the topography for Mākara Beach (which includes the beach crest), and the recent topography due to the updated LiDAR survey. When the recent LiDAR survey data is compared to the LiDAR data available at the time of the XBeach modelling, it is clear that there is a shift in the vertical datum of 0.2-0.6 m (Figure 3-5). That is, the crest of the beach (and area behind, etc.) are higher than previously modelled, with repeat modelling with the new LiDAR data resulting in a reduction to the inland extent of inundation and overtopping volumes.

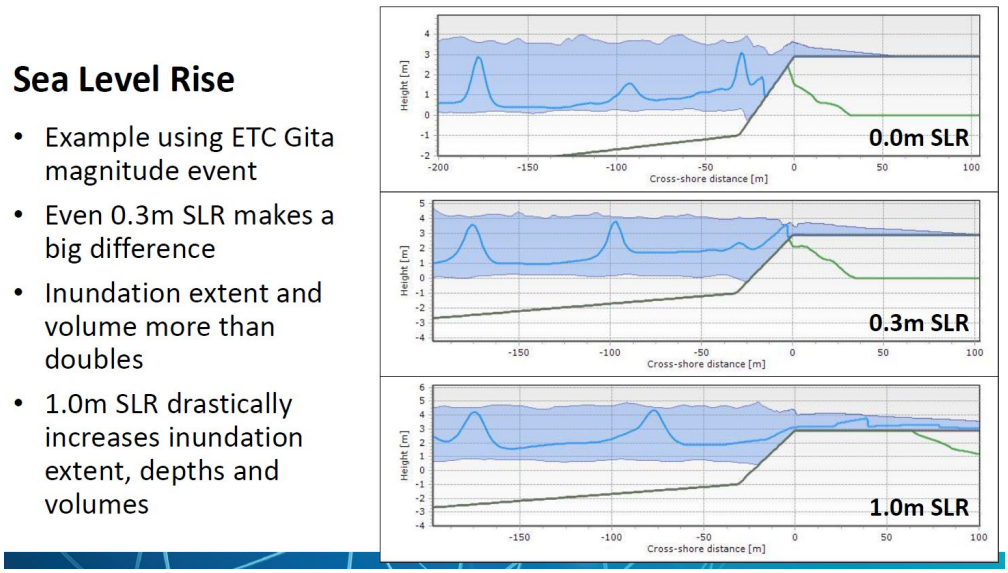

Figure 3-4. XBeach results from the Tonkin_Taylor_Workshop_Three.pdf'.

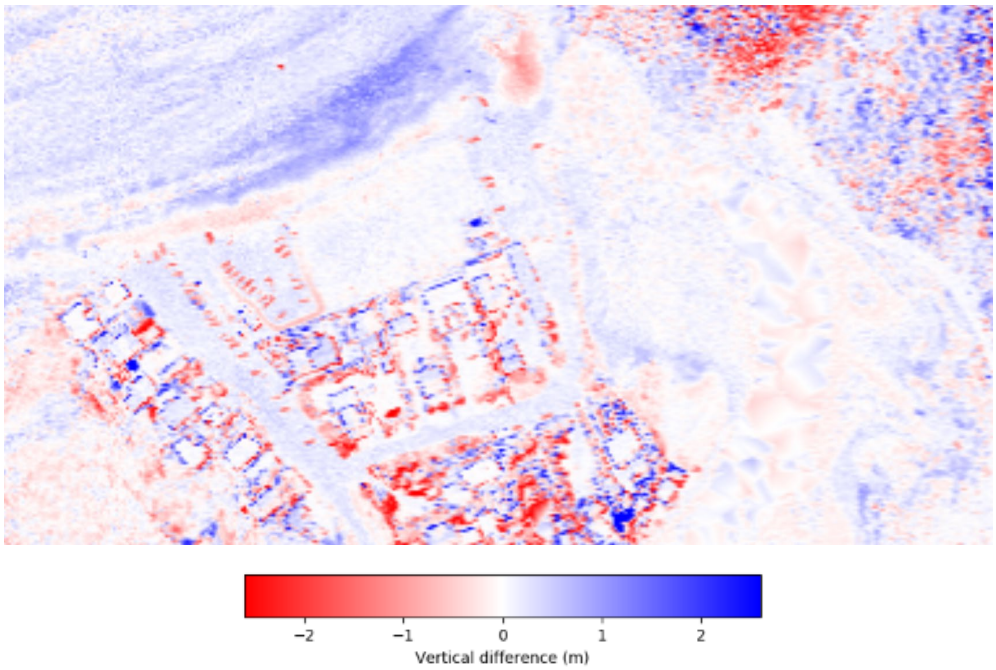

Figure 3-5. This image was calculated by comparing the 2019 LiDAR to the 2013 one. They are both positive up (land values positive) and so red colours on the difference colour scale (negative values) are where the 2019 LiDAR is higher than the 2013 LiDAR and vice versa.

Another aspect to consider when assessing over-topping hazards with increasing water level (SLR) resulting in reduced freeboard, is vertical land movement trends, which have recently been assessed for New Zealand (the SeaRise Programme). With SLR projects at around 10 mm/yr, rapid upward VLM can 'slow' the impacts of SLR, while rapidly downward VLM can 'accelerate' and exacerbate the impacts of SLR.

In the outputs from the SeaRise program, the Mākara Beach VLM is -1.93 mm/yr; i.e., the effects of SLR are being exacerbated by VLM (e.g. by a little over 0.2 m by 2120). The Sea Level Rise projections in the NZ SeaRise program use Shared Socio-economic Pathways (SSP). The SSP's were not available during the development of the Ministry for Environment's Coastal Hazard and Climate Change: Guidance for Local Government (Ministry for the Environment, 2017; the guidance), which provides best practice for activities within coastal zone and is in line with the NZCPS. The guidance uses the Representative Concentration Pathway (RCP) approach, which was completed before the Intergovernmental Panel on Climate Change's (IPCC) Assessment Report on which the climate change scenario in the guidance is based. Figure 4.1 is from the Ministry for the Environment (2022), it provides a comparison between projections of SLR using SSP and RCP scenarios. SSP based projects are generally higher, although not in all cases, and the difference generally increase with time, but not in all cases.

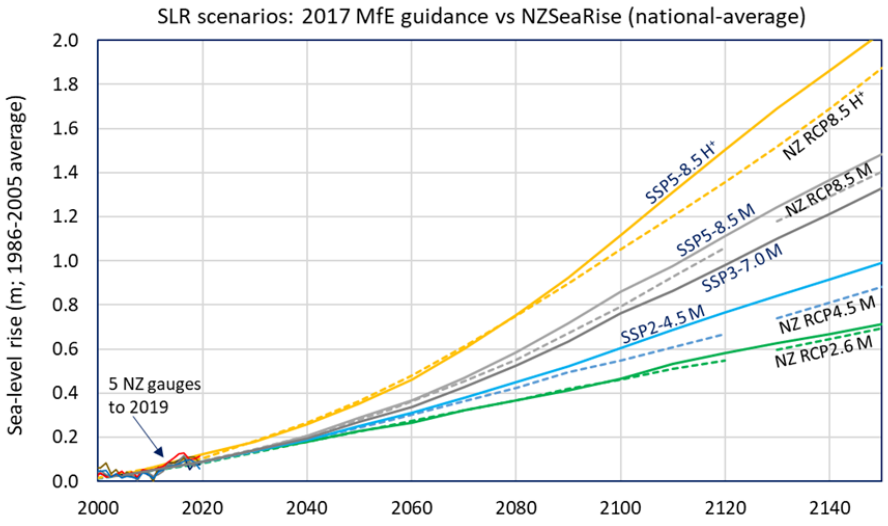

Figure 3-6. Comparison between SSP and RCP SLR projections (Ministry for the Environment, 2022)

In April 2022, Bodeker et al. (2022) released the latest guidance on interpreting IPCC findings, including the SSP scenarios. Bodeker et al. (2022) states that until the regional downscaling is completed, regional climate model projections reported in Ministry for the Environment (2017) can continue to be used with reasonable confidence as new knowledge from AR6 will most likely not fundamentally change the existing projections. In August 2022, the Ministry for the Environment (Ministry for the Environment, 2022) also provided Interim guidance on the use of new SLR projections (i.e., SeaRise) which also states that the *projections detailed in* Ministry for the Environment *(2017) can therefore likely be used with reasonable confidence that the improved knowledge represented in the AR6 report do not fundamentally change key findings*.

However, Ministry for the Environment (2022) also recommends new transitional values for land use. Categories C and D are considered in the Mākara Beach project, which have increased from 1.0 m and 0.65 m to 1.2 m and 0.7 m, respectively, and both leveraging the SSP5-8.5 M scenario. In addition, the guidance for projects in the later stages of a project approval or resource management plan developments is to stress test the elements related to the SeaRise projects and to make a comparison between SeaRise projection with and without VLM.

Table 4.1 compares the linearly interpolated SeaRise program SSP + VLM values for SLR for the equivalent radiative forcing scenarios with upper and lower bounds (at the 17th and 83rd percentiles) (Figure 3-7 is a graphic example comparing RCP8.5). The Table shows that SSP scenarios including VLM projections for SLR are larger on all time frames and both radiative forcing scenarios when compared to the RCP scenarios. These differences are marginal in the present-day case but become more significant with a longer planning horizon. Projections without VLM are distinctly less and in some cases lower than the projections based on Ministry for the Environment (2017).

Table 4.2. Comparison between interpolated SLR projections from RCP and SSP scenario modelling, with and without VLM. All values in metres.

Year	RCP4.5 M	SSP2-4.5	SSP2-4.5+VLM	RCP8.5 M	SSP5-8.5	SSP5-8.5+VLM
2030	0.12	0.11 (0.08 – 0.14)	0.16 (0.11 – 0.2)	0.13	0.11 (0.08 – 0.15)	0.16 (0.12 – 0.21)
2080	0.42	0.42 (0.32 – 0.56)	0.57 (0.43 – 0.75)	0.55	0.56 (0.44 – 0.72)	0.70 (0.55 – 0.90)
2130	0.75	0.81 (0.58 – 1.13)	1.06 (0.76 – 1.43)	1.18	1.23 (0.91 – 1.67)	1.47 (1.1 – 1.96)

Ministry for the Environment (2022) includes that VLM rates used for the local projections have caveats, as they are derived and extrapolated from a relatively short period (2003–11) of

satellite-based measurements and global navigation satellite system (GNSS)/global positioning system (GPS) data. In summary, it should be recognised that long term planning for SLR will be shortened for particular projections for a long-term coastal adaptation plan for Mākara Beach.

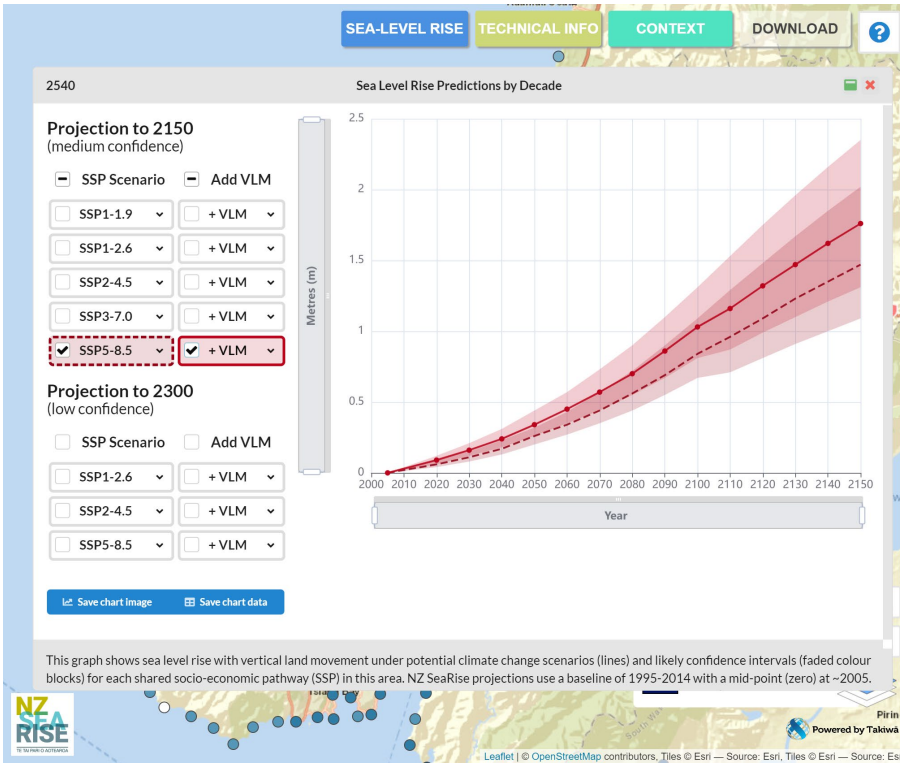

Figure 3-7. Projected SLR with the RCP8.5 “business as usual” projection (dashed red line) and with VLM added (solid red line).

4 Consideration of Shingle Bund Efficacy

One of the suggested over-topping adaptation methods that came out of the Community-led collaborative climate change adaptation project was raising the beach crest with a shingle bund (either using material removed from the entrance channel with the added benefit to improve flow and reduce flooding or importing). This makes good sense, as it increases the freeboard between SWL and the beach crest, which effectively reduces the over-topping volume.

However, it must be recognized that simply elevating the beach crest with placed shingle would provide only a short period at the beginning of an extreme over-topping event before the bund was eroded and transported shoreward and into the carpark area. Waves of the magnitude that caused the severe over-topping during extra-TC Gita have the capacity to transport relatively large boulders landward, with the small size of the shingle easily being eroded and transported landward.

For a crest heightening to be effective, the material needs to be able to withstand the wave forces. This could be in the form of a seawall with the shingle bund placed in front of it/against it so that it remains stable (such as backs Lyall Bay and 'hold' the planted dunes in place (Mead and Phillips, 2016), or the construction of a suitably sized rock revetment with an increased crest height, or some other method to provide a suitably solid protection with an increase crest height/freeboard.

As noting by Tonkin and Taylor in workshop 3, there is a relatively large area of beach and reserve fronting the properties/assets at Mākara Beach, which would also lend itself to other methods of increasing the height of the beach crest. For example, increasing the height of this whole back beach area so that it is not subject to wave attack and failure (as bund would be) could be applied over time.

Of note and in addition, there may be some conflict with removing shingle from the estuary entrance to increase flow and reduce flooding (and the consequent use of the gravel on the beach), since the open/partially closed/closed status of the estuary entrance impacts on whitebait spawning.

From the review of the material produced for the Workshops as part of the community-led collaborative climate change adaptation project, as well as prior experience with the Mākara Estuary, it is clear that the natural hazard exacerbated by climate change (CC) and SLR that will have the greatest impacts on the area is flooding. This hazard has increased in risk over the past 60 years or more due to poor land-management, the Mākara River/Estuary main channel has filled-in significant with terrestrial sediment and is still infilling at very high rates

(Mead and Haggitt, 2015); this reduces the capacity for flood waters to be discharged to sea and exacerbates the impacts of floods. Measures such as riparian planting to reduce the continued sedimentation (as well as slowing flood waters running off the land) of the Mākara River and Estuary should be further continued, especially in the upper reaches, as a component of addressing the flood hazard.

5 Summary and Conclusions

1. This report has considered the efficacy of a shingle bund placed at the backshore of Mākara Beach to reduce over-topping impacts.
2. Increasing the beach crest height/freeboard would result in reduced over-topping during events, although ensuring that a bund remains intact during an event would require additional works. A bund itself will likely be ineffective, as well as unrequired at this point in time.
3. The most recent LiDAR survey at the site effectively reduces the current vulnerability to over-topping events.
4. The downward trend of vertical land movement (recently determined as -1.93 mm/yr) increases in the rate of climate-induced SLR (e.g. by slightly more than 0.2 m for a 100-year planning horizon), which means that long term planning for SLR will be shortened for particular projections for a long-term coastal adaptation plan for Mākara Beach.
5. When the extreme over-topping event caused by extra-TC Gita is consider with respect to its likely return period, it is found that it was extremely rare and far in excess of a 1 in 100 year return period event (i.e., beyond a 100-year planning horizon). This suggests that it is unlikely that works to increase the beach crest are urgent/required at present.
6. With respect to natural hazards for the site, the flood hazard is considered to be the most relevant. Due to poor land-management over the past 60 years or more, the Mākara River/Estuary channel has filled-in significant with terrestrial sediment, and is still infilling at very high rates; this reduces the capacity for flood waters to be discharged to sea and exacerbates the impacts of floods.

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ORAL UPDATES

Kōrero taunaki | Summary of considerations
Purpose

1. This report to the Mākara/Ōhāriu Community Board provides an opportunity to Council officers, external organisations and Mākara/Ōhariu Community Board members to share progress on relevant issues.

Strategic alignment with community wellbeing outcomes and priority areas

	Aligns with the following strategies and priority areas: ☐ Sustainable, natural eco city ☐ People friendly, compact, safe and accessible capital city ☐ Innovative, inclusive and creative city ☐ Dynamic and sustainable economy
Strategic alignment with priority objective areas from Long-term Plan 2021–2031	☐ Functioning, resilient and reliable three waters infrastructure ☐ Affordable, resilient and safe place to live ☐ Safe, resilient and reliable core transport infrastructure network ☐ Fit-for-purpose community, creative and cultural spaces ☐Accelerating zero-carbon and waste-free transition ☐ Strong partnerships with mana whenua
Relevant Previous decisions	

Financial considerations

☒ Nil	☐ Budgetary provision in Annual Plan / Long-term Plan	☐ Unbudgeted $X

2. There are no financial considerations associated with this report.

Risk

☒ Low	☐ Medium	☐ High	☐ Extreme

Author	Emily Deans, Democracy Advisor
Authoriser	Sean Johnson, Democracy Team Leader

Taunakitanga | Officers' Recommendations

Officers recommend the following motion

That the Mākara/Ōhāriu Community Board:

1. Receive the information.

Kōrerorero | Discussion

3. The following oral updates are scheduled to be delivered at this meeting:
   a) Transport Update – Steve Wright
   b) Chairperson's Update – Mark Reed
   c) Members' Updates – all Mākara/Ōhāriu Community Board members

Attachments

Nil

RESOURCE CONSENT APPLICATIONS AND APPROVALS FOR 16 NOVEMBER 2022 TO 16 JANUARY 2023

Kōrero taunaki | Summary of considerations

Purpose

1. This report to Mākara/Ōhāriu Community Board is to advise the Board of resource consents lodged and decisions on Land Use and Subdivision resource consent applications in Mākara and Ōhāriu.

Strategic alignment with community wellbeing outcomes and priority areas

	Aligns with the following strategies and priority areas: ☐ Sustainable, natural eco city ☐ People friendly, compact, safe and accessible capital city ☐ Innovative, inclusive and creative city ☐ Dynamic and sustainable economy
Strategic alignment with priority objective areas from Long-term Plan 2021–2031	☐ Functioning, resilient and reliable three waters infrastructure ☐ Affordable, resilient and safe place to live ☐ Safe, resilient and reliable core transport infrastructure network ☐ Fit-for-purpose community, creative and cultural spaces ☐ Accelerating zero-carbon and waste-free transition ☐ Strong partnerships with mana whenua

Financial considerations

☒ Nil	☐ Budgetary provision in Annual Plan / Long-term Plan	☐ Unbudgeted $X

Risk

☒ Low	☐ Medium	☐ High	☐ Extreme

Author	Nicole Tydda, Manager Customer Service and Business Support
Authoriser	Bill Stevens, Resource Consents Team Leader Liam Hodgetts, Chief Planning Officer

Taunakitanga | Officers' Recommendations

Officers recommend the following motion
That the Mākara/Ōhāriu Community Board:

1. Receive the information.

Takenga mai | Background

2. In accordance with an agreement reached with the Mākara/Ōhāriu Community Board, the purpose of this report is to advise the Board of all resource consents lodged, along with decisions made by Officers acting under Delegated Authority, on Land Use and Subdivision resource consent applications.
3. This report advises the Community Board of resource consent applications received and approved during the period 16 November 2022 to 16 January 2023.

Kōrerorero | Discussion

4. For the period from 16 November 2022 to 16 January 2023, there were three applications received by Council under delegated authority.

Service Request	***Address***	***Applicant***
527244	**238 South Karori Road, Karori**	**Wellington Water Ltd**
Land use consent for the upgrading the wastewater infrastructure.		
525163	**734 Makara Road, Makara**	**Bennett Lean Trustee Ltd**
Subdivision consent for a four-lot fee simple subdivision of three existing properties.		
525272	**415 MAKARA ROAD, Makara**	**Shellie Hamilton**
Land use consent for an existing farm drive to be widened.		

5. For the period from 16 November 2022 to 16 January 2023, there was one application approved under delegated authority.

Service Request	***Address***	***Applicant***
524743	**509 South Makara Road, Makara**	**Rorie Kooiman**
Application to cancel an amalgamation condition to obtain separate records of title for Lots 2 and 3 DP 422854.		

Attachments

Nil

CURRENT AND UPCOMING CONSULTATIONS AND ENGAGEMENTS

Kōrero taunaki | Summary of considerations

Purpose

1. This report to Mākara/Ōhāriu Community Board provides an update on the current items Council is seeking public feedback on and to advise the Board on upcoming consultations or surveys the Council is undertaking.

Strategic alignment with community wellbeing outcomes and priority areas

Strategic alignment with priority objective areas from Long-term Plan 2021–2031	Aligns with the following strategies and priority areas: ☐ Sustainable, natural eco city ☐ People friendly, compact, safe and accessible capital city ☐ Innovative, inclusive and creative city ☐ Dynamic and sustainable economy ☐ Functioning, resilient and reliable three waters infrastructure ☐ Affordable, resilient and safe place to live ☐ Safe, resilient and reliable core transport infrastructure network ☐ Fit-for-purpose community, creative and cultural spaces ☐ Accelerating zero-carbon and waste-free transition ☐ Strong partnerships with mana whenua
Relevant Previous decisions	Decisions to undertake the referenced consultation.

Financial considerations

☒ Nil	☐ Budgetary provision in Annual Plan / Long-term Plan	☐ Unbudgeted $X

Risk

☒ Low	☐ Medium	☐ High	☐ Extreme

Author	Emily Deans, Democracy Advisor
Authoriser	Sean Johnson, Democracy Team Leader

Taunakitanga | Officers' Recommendations

Officers recommend the following motion

That the Mākara/Ōhāriu Community Board:

1. Receive the information.

Whakarāpopoto | Executive Summary

2. The upcoming consultations and engagements are as follows:

- **Zero Waste Strategy**

  A Zero Waste Future for Wellington – our draft Zero Waste Strategy – is a first for Wellington. It sets the blueprint for intergenerational sustainability in our city, outlining how a circular economy can design out waste and pollution, keep resources in use for as long as possible, and safely manage the waste that can't be reused or recycled.

  A waste-free Wellington will see:

  - Products and services provided in Wellington being waste free
  - Waste reduction will be made attractive and accessible for everyone
  - The infrastructure and systems to increase resource circulatory will be in place, and
  - Only waste that cannot be reused or recycled will enter the landfill.

  Consultation on the Zero Waste Strategy will open on 1 February and close on 28 February 2023.

  Further information on the consultation will be found at this link from 1 February 2023: https://www.letstalk.wellington.govt.nz/zero-waste-strategy-consultation

- **Dog Policy Review**

  Early engagement on the Dog Policy has concluded. Once we have collated your feedback, we will start drafting the policy changes.

  The Dog Policy will be open for consultation in early 2023.

  Further information on the consultation can be found at this link:
  Dog Policy Review | Kōrero Mai | Wellington City Council

- **Wellington's Community Facilities**

  The city is growing and changing which means our needs and aspirations for community facilities will change. The Community Facilities Network Plan (the Plan) will essentially consider whether Wellington has the right type of facility, in the right places and at the right time.

The Community Facilities Plan will be open for consultation in May 2023.

Further information on the consultation can be found at this link:
https://www.letstalk.wellington.govt.nz/wellingtons-community-facilities

Attachments

Nil

FORWARD PROGRAMME

Kōrero taunaki | Summary of considerations

Purpose

1. The purpose of this report is to provide the Mākara/Ōhāriu Community Board with an update on proposed discussion items for upcoming board meetings.

Strategic alignment with community wellbeing outcomes and priority areas

Strategic alignment with priority objective areas from Long-term Plan 2021–2031	Aligns with the following strategies and priority areas: ☐ Sustainable, natural eco city ☐ People friendly, compact, safe and accessible capital city ☐ Innovative, inclusive and creative city ☐ Dynamic and sustainable economy ☐ Functioning, resilient and reliable three waters infrastructure ☐ Affordable, resilient and safe place to live ☐ Safe, resilient and reliable core transport infrastructure network ☐ Fit-for-purpose community, creative and cultural spaces ☐ Accelerating zero-carbon and waste-free transition ☐ Strong partnerships with mana whenua
Relevant Previous decisions	

Financial considerations

☒ Nil	☐ Budgetary provision in Annual Plan / Long-term Plan	☐ Unbudgeted $X

Risk

☒ Low	☐ Medium	☐ High	☐ Extreme

Author	Emily Deans, Democracy Advisor
Authoriser	Sean Johnson, Democracy Team Leader

Taunakitanga | Officers' Recommendations

Officers recommend the following motion

That the Mākara/Ōhāriu Community Board:

1. Receive the information.
2. Approve the current work programme, subject to any required changes.

Whakarāpopoto | Executive Summary

16 March 2023
1. Open Space and Recreation Strategy 2. Oral Updates • Transport Update • Chairperson's report • Board Members' reports 3. Resource Consents 4. Current and Upcoming Consultations and Engagements 5. Forward Programme

Attachments

Nil