| | |
|---|---|
| Are you submitting as an individual, or on behalf of an organisation?: | Individual |
| First Name: | Desna |
| Last Name: | Bruce Walker |
| Trade Competition (please choose whichever applies): | I/we could not gain an advantage in trade competition through this submission |
| Postal address: | 33 Elley Drive<br>Carters Beach<br>Westport 7825 |
| Email address: | desnabruce@gmail.com |
| Phone number: | 022 462 4928 |
| Variation being submitted on: | Variation 2 – Coastal Natural Hazards Mapping |
| My submission: | I object strongly to the variation hazard mapping being proposed for the entire West Coast. Firstly, the prohibitive cost: a budget of $5,000,000, of which around $3,214,866 has already been spent. (Source: TTPP Plan Committee Meeting 29 April, 2024)<br>Darryl Lew, CEO of the WCRC, is "comfortable" with this budget, but recognises that there are still quite a few hearings to get through, and there are likely to be costs for environment court, or high court appeals.<br>Also, that these costs are "enough of a rates burden as it is". That is certainly an understatement! This type of spending is unnecessary and bordering on reckless.<br>The communication for this variation mapping has been very poor. A letter sent out to affected properties did not contain sufficient information for the property owner to understand the implications for their property.<br>Feedback from the community included:<br>*Almost all people opposed the Variation Mapping plan<br>*People felt that coastal protection works are needed and should be supported<br>*Concern about transition and managed relocation options<br>*Concern about effects on property values and insurance costs<br>*Opposition to a regulatory approach<br><br>I would agree with this general community feedback, and my own concerns are the following:<br>The effects of this planning, if it passes into legislation are far reaching.<br>If a future law envisages the managed retreat from private property, |

then the science of projecting the likelihood of future events becomes acutely critical.
In the NZCPS Policy 24 report, it states regulators are to assess the LIKELY effects of climate change over the next 100 years, not the UNLIKELY events. The IPCC has recently made the assessment that an RCP/ SSP of 8.5 is implausible. So why is this RCP 8.5 worst case scenario being used in the planning?
An SSP of 5 - 8.5 is factoring in " intensive fossil fuel development". Why not go middle the road with an SSP of 2 - 4.5?
In fact, the NZ Sea Rise program recommends councils to use "low confidence" scenarios to further stress test infrastructure, subdivision or managed retreat. Unbelievably, they are going against the guidelines of the IPCC!
For the purposes of planning - especially when the RMA requires that the District Plans are reviewed every 10 years - it makes no sense to restrict land use now, force higher costs on construction, or give insurance companies - who write one year policies - a reason to increase premiums relating to a 100 year out projection based on worst case scenarios. That is just madness.
A much more cautious and realistic approach would be to limit the projections to a more manageable 25 years. The sea level could be measured with accurate satellite data, and tide gauges, every 2 or 5 years, and let's see where it's going.
Sea level rise is not a catastrophic event, it is something that happens slowly, over time. So, again, I object strongly to my property at Carters Beach being classified as in a "hazard coastal alert" zone. Why should the use and enjoyment of my property be regulated and curtailed with all these rules? But worse than that is my property being devalued, the insurance costs going ever higher, and the risk of being forced off my property in a "managed retreat" scenario.
While Lois Easton, and Jamie Cleine assure us that everything is fine, and this will not affect our day to day use of our property, I - and many others - are not convinced.
I note that there are several reports written on managed retreat, the most notable being the 284 page 'Expert Working Group on Managed Retreat". Why go to all the expense and trouble of having these reports done, if they are not planning to use them?
I also note that on most Government Agencies reports, they have a disclaimer. For example, on the MofE's "Coastal Hazard and Climate Change Guidance", it is stated " Disclaimer: The Ministry does not accept any responsibility or liability whatsoever whether in contract, tort, equity,
as a result of any action taken as a result of reliance placed on this publication"
So, who does take responsibility? Not the TTPP, not the WCRC, and not the councils. So this leaves all the property and business owners in a very vulnerable situation. WE will be the losers in this, if these planning maps are proven to be erroneous, or misleading.
There needs to be room for uncertainty. NZ's own NIWA states:

"there is considerable complexity and inherent uncertainty" in making projections into the future. So, on that note, why is NZ Sea Rise releasing maps with location specific sea level rise projections out to the year 2300 for every 2 kms of the coast of NZ! Unbelievable! Nearly 300 years ahead! This is absolute madness!
In summary, for my own property at Carters Beach, the sea is actually retreating due to the build up of sand since the addition of the tip heads or groins at the mouth of the Buller River. So I consider the zoning of Carters Beach as a "coastal hazard alert" is an overreach, based on modelling which does not take into account ALL of the variables - coastal sand drift, coastal uplift, history of coastal events, and lack of clear scientific based evidence of a 1 metre sea level rise. There have been many wild predictions made in the past, e.g. Al Gore in 2008 saying that there would be no ice in the Arctic by 2013. (source: AP June 24, 2008). Well, here we are in 2024, and there's still plenty of ice in the Arctic! And there are plenty more such fear mongering predictions that have been made, and never happened.
So when we are dealing with people, their properties and their livelihoods, we need to be very, very careful. This is supposedly being done for our " safety and well being", but I would feel a lot safer, and my well being would be in a much better place, if these coastal hazard mapping plans were not put in place. I have no worry at all about the possibility of the sea level rising and encroaching and swallowing up my property (which is, by the way, 900mm above the ground ), that is just a fear mongering fantasy, in my view. There is no evidence to support the 1 mt sea level rise in the next 100 years.
I also note that affected properties at Carters Beach already have "proposed coastal hazard alert" on our LIM reports. This is preposterous and flies in the face of democratic procedures. We haven't even done our written and oral submissions yet - this plan has not been accepted - only proposed.
Community engagement has been very badly done. originally, the submissions were due on the 15th August, and the public meeting from the TTPP planners was scheduled for the beginning of September. Only under intense community pushback, the submission date was deferred until the 30 August, and a proper public meeting was held at the NBS theatre on the 30th July. (Note that 'drop in' consultations meetings were not, and are not acceptable for the community.)
I consider that this has been rushed through, without any attention to detail, or clear information. The links to the maps on the TTPP website do not work, and this is just unacceptable. I feel that the TTPP are just going through a box ticking exercise, and do not want community input or engagement at all. In fact, the CEO stated that NO staff members were to attend a community led meeting at Carters Beach Hall on the 28th July. This type of attitude is extraordinary, and very arrogant.
Not the right approach at all.

| | |
|---|---|
| I would like the following decision(s) to be made with respect to this Variation: | 1). The sea level rise to be based on more moderate RCP/SSP scenarios, as advised by the IPCC, not implausible worst case scenarios ( e.g. 4.5 rather than 8.5) And regular monitoring of the sea level e.g. every 2 or 5 years, for the next 25 years.<br>2) For the projected 100 year coastal planning to be reduced to 25 years ahead for a more manageable and realistic approach.<br>3) That each district along the West Coast manages their own risk assessments and mitigation plans based on local knowledge and input.<br>4) For each property owner, or business owner, to be properly and individually informed as to what the Variation mapping plan means for their specific property.<br>5) Stop wasting taxpayers and ratepayers money on reports such as the hazard mapping, and spend it instead on infrastructure - upgrading sewerage and stormwater for faster and efficient outlet of flood water, as an example.<br>6) Slow down, and stop panicking people. Managed retreat needs to be taken off the table completely, unless a property is under clear and present danger.<br>7) Individual property owners need to have a much bigger say in their own destinies and well being. The approach taken by the TTPP is that<br>'the state knows best', and flies in the face of democracy.<br>8) I would like the 'proposed coastal hazard alert' to be removed immediately from my property. This plan is still in the planning stages and has not yet come into effect, if ever.<br>9) Engagement with the community, and especially with the owners of the affected properties has to be much more thorough, transparent and very clear - fully informing EACH property owner what the implications of his variation hazard mapping means fro THEIR property. |
| Please indicate if you wish to speak to your submission: | I wish to speak to my submission |
| If any others making similar submissions wish to be heard: | Yes, I would consider presenting a joint case with them |

Te Tai o Poutini PLAN
A combined district plan for the West Coast

# Variation 2 to Proposed Te Tai o Poutini Plan (TTPP) – Coastal Hazards

## Submission form

Clause 6 of Schedule 1, Resource Management Act 1991 (RMA)

**Please note:**

Following public concern expressed over the initial notification of this Variation in June 2024, the TTPP Committee has agreed to the Variation being renotified. Importantly, it is now possible for submitters to submit on BOTH the mapping changes AND provisions of relevance in the TTPP's Natural Hazards Chapter.

- The Variation is a publicly notified one – so anyone is welcome to lodge a submission.
- All submissions received following the initial notification in June 2024 will still be considered.
- Submissions initially lodged can be added to, should the submitter desire to do so.
- Submissions close at **5.00pm** on **Thursday 19 December 2024**.

**Your details:**

Are you submitting as an individual, or on behalf of an organisation?

☒ Individual ☐ Organisation

Did you previously submit on Variation 2 when it was notified in June 2024?

☒ Yes ☐ No

If yes, do you wish to have this particular submission:

☒ Added to your initial submission ☐ Considered an entirely new submission

First Name: DESNA Surname: BRUCE WALKER

Organisation (if applicable):

Would you gain an advantage in trade competition through this submission ☐Yes ☒ No

If you could gain an advantage in trade competition through this submission please complete the following:

I am/am not directly affected by an effect of the subject matter of the submission that (a) adversely affects the environment; and (b) does not relate to trade competition or the effects of trade competition.

Postal Address: 33 ELLEY DRIVE, CARTERS BEACH, 7825 WESTPORT

Email Address: desnabruce@gmail.com

Phone Number: 022 462 4928

Signature: [signature] Date: 18.12.2024

**My submission:**

*(Include whether you support or oppose the specific provisions or wish to have them amended, and the reasons for your views.)*

I oppose the TTPP plan in it's entirety.

Please see my attached submission and reasons for my opposition.

Please also find enclosed:

1) Photo of satellite image & 1930's overlay.

2) Summary of the report prepared by Michael Allis for the WCRC in 2017, on coastal erosion at Carters Beach.

3) Tonkin & Taylor review of the 2022 coastal hazards assessment by NIWA for the West Coast region, prepared for the WCRC.

*(Please feel free to use additional sheets)*

I would like the following decision(s) to be made with respect to this Variation:

I would like the proposed "Coastal Hazard Alert" status to be removed from the LIM report on my property at 33 Elley Drive, Cortes Beach.

I would like the TTPP planning process to be stopped, or paused, while the new R.M.A. reforms are in ~~prg~~ progress.

*(Please feel free to use additional sheets)*

All submitters have the opportunity to present their submission to Commissioners during the hearing process. Please indicate if you wish to speak to your submission

☒ I wish to speak to my submission

☐ I do not wish to speak to my submission

(please note that with this option you will receive less correspondence in relation to the hearings but you can keep up to date on the TTPP website)

If any others making similar submissions wish to be heard:

☐ Yes, I would consider presenting a joint case with them

☒ No, I would prefer to present my own individual case

**Enquiries**

All enquiries regarding this Variation or the TTPP in general can be addressed to Doug Bray, Senior Policy Planner, TTPP Team, West Coast Regional Council, Ph (03) 768-0466 Ext 9109 or 0508 800 118 or info@ttpp.nz.

**Public information**

All information contained in a submission under the Resource Management Act 1991, including names and addresses for service, becomes public information. The content provided in your submission form will be published on the Te Tai o Poutini Plan website and available to the public.

# Submission

Desna Bruce Walker

33 Elley Drive, Carters Beach, Westport

In addition to my previous submission on the Coastal Hazard Variation Mapping Overlay, I wish to make the following points:

1) The IPCC uses varying RCP/SSP's to measure greenhouse gases in the atmosphere. They range from 2.6 to 8.5, (worst case scenario.) Although the IPCC advises not to use the RCP/SSP of 8.5, this is the pathway that the TTPP have used. The modelling should be based on likely outcomes, not unlikely or implausible.
2) The MfE says that global climate models used to make future climate change projections require information about RCP's, and land change uses e.g. volcanic eruptions, earthquakes etc. Any vertical land movement is an essential component of relative sea rise. The TTPP have not included VLM in their coastal hazard report.
3) According to Dr Ian Wright, ( Geologist, PhD, MSc, BSc (Hons), FGS), the NZ Sea Rise tool should not be used for planning purposes. Disclaimers on the SeaRise information and SeaRise tool suggest that this guidance will not stand up to robust scientific scrutiny.
4) Dr William de Lange ( BSc, MSc (Hons), DPhil) wrote a risk assessment report on the Kapiti coast in 2024. He comes to the conclusion that it is not feasible to use models to assess the affects of climate change on coastal hazards 100 years into the future, as required under policy 24. Dr de Lange notes that anything further than 20 year projections are the same as tossing a coin. He states that this is critical not just for Kapiti coast, but for ALL coastal work.
5) The rule of law for NZ, is to look at the likely effects of climate change, which is in line with the NZ Coastal Policy statement 24. The TTPP have looked at the unlikely effects of climate change. In fact, in the report on mapping for priority coastal hazard areas in the west coast region, it states "this study uses EXTREME sea levels, produced by NIWA from recent and ongoing research projects"
6) The accretion, or build up of land, has increased very notably to the north and the south of the Buller River

entrance training walls. This is demonstrated very clearly in my enclosed illustration of a present day satellite image overlaid by a drawing from the 1930's, of the area from Carters Beach to North Beach. Please see the enclosed illustration.

7) This image clearly shows that the training walls for the Buller river have caused a huge build up of land on both sides. So, far from erosion, there is a substantial build up of land, or accretion. These are local situations, and need to be factored in to any report or modelling done for this area of Westport. It is not practical to apply 'one size fits all' for the whole West Coast, as it is a huge geographical area.

I also enclose the Tonkin + Taylor review of the NIWA coastal hazards assessment for the West Coast Region.
It raises quite a few issues, and I have highlighted some of the main concerns that have been addressed.
Has this review been taken into consideration by the TTPP planners?

In conclusion, I would say that it is very inequitable, and unjust to make modelling projections into the next 100 years, with no scientific data to back it up. This modelling results in a prejudice against property owners affected by these hazard zoning maps. The affected property is tagged as being at risk, based on speculative climate models, rather than actual risk.

I am much more in favour of the 2017 NIWA report prepared by Michael Allis (Coastal Engineer), for the WCRC in 2017.
In it, he recommends that a small vegetated sand dune/bund be constructed for 800m along Carters Beach reserve, set back about 30m from the present day erosion scarp. If the erosion, or sea level claims this bund, then there is still time to act.
He also states that it is a vital requirement to have ongoing monitoring of the coastline, with annual interpretation of results by a qualified and experienced coastal engineer/ geomorphologist.

Very simple, very effective - with no disruption, or infringement of resident's enjoyment and use of their properties. With no devaluation of properties. With no exorbitant increase in property insurance.

But have the WCRC followed up with any of these sensible recommendations? No - they prefer to create a Combined District Plan, the TTPP, and spend millions of dollars of ratepayers, and taxpayers money on pointless modelling, with projections 100 years into the future, based on worst case scenarios, which, as I stated earlier, are NOT plausible, and NOT to be used.

Community frustration is very high. I would ask that the process be halted altogether, and it goes back to Central Government to be reviewed. Because maybe a very costly mistake is being made here - not only in monetary terms, but also in the mental health and well being of residents and coastal property owners.

Local input needs to be heard, community needs to be listened to, and action needs to be taken on practical and inexpensive solutions, such as in the Michael Allis report.

I object strongly to having a 'proposed coastal hazard alert' sticker slapped on my property LIM report, based on wild projections, and worst case scenarios, which are implausible.

I think that the rules and restrictions placed on my property because of this proposed zoning, are untimely, unfair, and unnecessary. I do not feel any threat from the sea - rather, a much more insidious threat from an onward bureaucratic march which is eroding our private property rights, and our democracy.

Thank you for considering my submission.

Desna BruceWalker
17.12.2024

Desna Bruce Walker

Summary of report prepared by Michael Allis for the WCRC in 2017. on coastal erosion at Carters Beach.

## Executive summary

This report has been prepared for West Coast Regional Council (WCRC) to aid the decision-making processes associated with ongoing erosion problems at the village of Carters Beach. The investigations undertaken include a site visit, digitisation and analysis of historical shoreline positions off aerial photographs and review of recent relevant literature.

There is nothing to suggest the erosion rate at Carters Beach has increased since the 2006 assessment, rather, it is the awareness of the erosion problem that is increasing as the coastline advances towards community assets and the township.

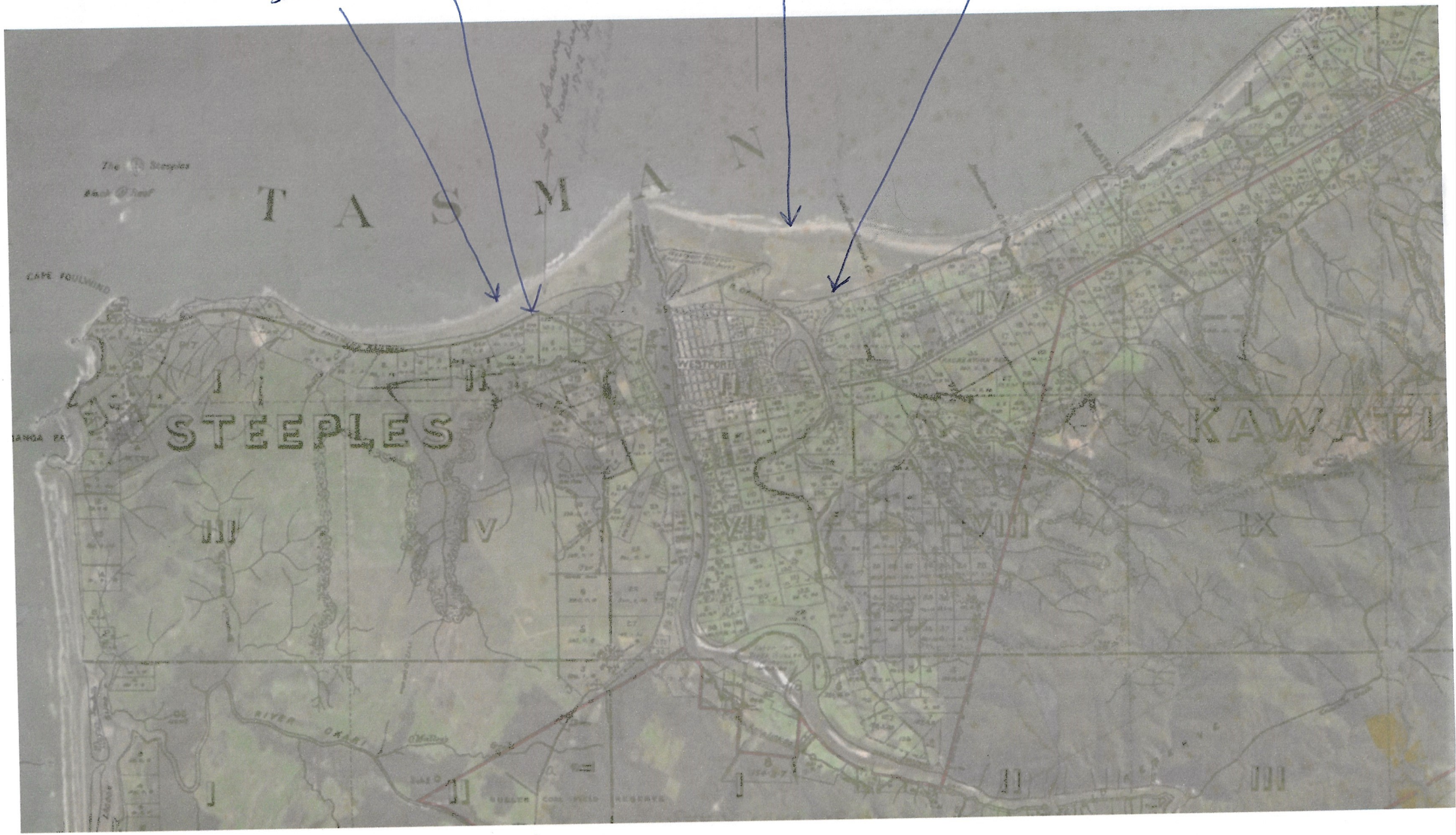
The greatest driver of coastal change at Carters Beach over the past ~ century has been the construction of the Buller River training walls with the effect of massive shoreline advance to the west of the river mouth (e.g., 400 m advance at Carters Beach village). The shoreline advance reached its maximum extent in 1981, stabilised for approximately 20 years (1981-2003), but since 2003 a pattern of east-west delineation between erosion (east)-accretion (west) has appeared. This recent erosion has claimed up to 80 m of shoreline retreat at Carters Beach village, alarming the local community.

The present-day coastal erosion risk to private land in the Carters Beach community is not high because the erosion rate appears to have been slowing consistently since 2003, and it appears it will stop before reaching council/community assets (close monitoring is needed to confirm this). However, if the erosion continues and we extrapolate a high recent rate of erosion (6 m/year), and assume no change to this rate (unlikely, it appears to be slowing), it would be at least 5 years (2021) before the erosion 'scarp advances to within 10 m of the community hall (which is 60-70 m back from the current erosion 'scarp) and the risk to the council/community assets becomes critical. It would be at least 10-15 years (beyond 2027) before Marine Parade and property inland from Marine Parade would be at critical risk assuming the same erosion rate.

It is recommended that the council and community use this time to start considering their options, identify triggers and develop a management pathway should the erosion continue. To intervene too soon could be an unnecessary expense for the community, but to wait too long would be a poor decision for all and may preclude viable management options with a hasty solution more likely to have detrimental environmental impacts. The management pathway should include discussion of council and community objectives, trigger points, identification of a possible range of adaptation options, and development of pathways that meet the agreed objectives. We have presented an example adaptation pathway sequence for Carters Beach which outlines possible scenarios, trigger points and intervention options should the erosion continue. This adaptation pathway should begin now with the consultation process starting soon, rather when the risk is critical.

Underpinning this approach is a vital requirement for ongoing monitoring of the coastline, with annual interpretation of results by a qualified and experienced coastal engineer/geomorphologist.

To address the immediate public safety hazard from wave overtopping and flows into the domain reserve, we recommend that a small (1 m high, 1:3 slopes) vegetated sand dune/bund be constructed for 800 m along the reserve, set back about 30 m from the present-day erosion 'scarp on the beach face. This will not halt the erosion (if it reaches this point) but will mitigate the overtopping hazard. We recommend setting a decision point such that if erosion claims this dune/bund then it would be time to implement the next stage of the shoreline management strategy (as decided by the community and council).




Present day satellite map, with 1930's map overlay, showing the substantial accretion of coastline, since the Buller River training walls were built & extended.

Desna Bruce Walker.

Desna Bruce Walker

Tonkin+Taylor

Job No: 1017993.2000
21 March 2022

West Coast Regional Council
PO Box 66
Greymouth 7840

Attention: Edith Bretherton

Dear Edith

**Review of NIWA coastal hazards assessment for West Coast Region**

## 1 Introduction

West Coastal Regional Council (WCRC) engaged the National Institute of Water and Atmosphere (NIWA) to undertake coastal inundation and erosion hazard mapping for select 'priority' sites along the West Coast as part of Te Tai o Poutini.

WCRC have subsequently engaged Tonkin & Taylor Ltd (T+T) to undertake a review of the assessment methodology outlined within the NIWA (2022) report, "Mapping for priority coastal hazard areas in the West Coast Region".

### 1.1 Scope of review

This technical review of the methodology has included the following scope of works:

- Undertake a review of the methodology and provide any suggestions for refinement, as well as consideration of limitations and the ability to resolve them
- Meeting (teleconference) with NIWA to discuss our review comments
- Provide WCRC with a summary of the technical review within a concise letter report
- Meeting (teleconference) with WCRC following provision of the letter report to discuss findings.

## 2 Review comments

The following section provides commentary on the methodology. A copy of the report has also been attached with PDF mark ups.

### 2.1 Coastal inundation methodology

Overall, T+T consider the inundation methodology is generally appropriate given the level of information available for each site. Specific comments include:

Desna Bruce Walker



- **Section 2.1** – The use of LiDAR DEMs (where available) and satellite DEM products (where LiDAR is not available) is appropriate until there is further LiDAR captured across the region. NIWA have appropriately noted the uncertainties associated with the data.
- **Section 2.3** – T+T agree with the methodology for calculating extreme sea levels. MSL offsets and storm tide values are sensible and are based on the best available information.
  - **Section 2.3.3** – Wave setup assessment:
    - TC Fehi was used as a benchmark event, but the components of the observed water level during Fehi are not presented, neither were the offshore wave conditions during the event. What was the max observed level of debris and what was the contribution of storm surge, tide, river flow, and wave setup?
    - What is the ARI of a 4.5 m wave? We would expect 50- and 100-year wave height is much higher – which means there could be a small under prediction when representing an extreme future event?
    - Is there is spatial variation in wave height / setup across the region, like there is with storm tide?
    - There is not much detail on the wave climate that influences coastal erosion and inundation hazards. This could be included in background, with sections on the typical and extreme conditions.
- **Section 2.4** – T+T agree with the 0.2 m SLR increment approach instead of tying SLR values to specific projections. The report clearly outlines the benefits of this approach.
- **Section 2.6** – The inundation has been assessed using the bathtub approach (except at Orowaiti Lagoon where hydrodynamic modelling has been undertaken). T+T agree that a bathtub approach is suitable for identifying areas of land susceptible to coastal inundation. The report clearly outlines the limitations associated with bathtub mapping.
- **Section 2.7** – There is not much detail on the Orowaiti hydrodynamic model:
  - It would be useful to include a figure of the model domain and boundary processes in Section 2.7.
  - XBeach is mentioned for generating the ocean boundary signal, but it does not appear XBeach was used to run the model (since setup is added separately). What model was used (assuming BG Flood?) What was the spectral Hs and Tp used to generate the surf-beat signal?
  - *'The wave setup was then added as an additional shift so that the maximum ESL matches the values in Table 2-3. With the training wall extending beyond the surf zone, the forcing for the Buller River mouth does not include wave setup.'* – This sounds sensible; however it would be useful to include a schematic of this on the model domain map.
  - Is setup included for the Orowaiti lagoon mouth?
  - Comparison of hydrodynamic model with observations is very good and provides confidence in the method.

## 2.2 Coastal erosion methodology

- **Section 3.1** – There is an inconsistency with the terms 'zones' and 'areas' used throughout the report. T+T note that 'zones' tend to be used in a planning context and areas or lines in a hazard assessment context
- **Section 3.1** – The formula provided to assess the erosion hazard is a relatively dated version. MfE (2017) and Envirolink (2013) outline more contemporary formula for defining the erosion hazard.

Desna Bruce Walker



- **Section 3.1** – Hybrid-probabilistic approach has been adopted to manage the uncertainty associated with the data. A normal distribution is assumed for all terms and where there is lack of data the distributions are based on expert knowledge and approximation. T+T agree with this approach, however, it would be useful to see the distributions/values adopted for each site. It is unclear if a single distribution has been used for long-term and SLR components ('r') or a distribution for each.
- **Section 3.1** – It is unclear where the reference line is for mapping and what values are (or aren't) included for each site. It would also be useful to see the resultant distances for each site.
- **Section 3.1.1** – T+T consider the manual review/correction of hazard lines to account for geomorphical features and underlying geology is important, given the varied morphologies along this coastline. T+T suggest adding a statement that only unconsolidated shorelines have been assessed (i.e. beaches) and consolidated shorelines (i.e. banks and cliffs) have not been considered.
- **Section 3.2** – T+T agree digitized shorelines from historic aerials is suitable to assessing trends in shoreline movement. However, it is unclear how the shoreline is defined on the gravel beaches. Is the back of the barrier the same as the vegetation line (i.e. Rapahoe example)? Also, section 4.1.3 notes that 1878 cadastral charts were used. There is high uncertainty around this shoreline data and what features the mapped shoreline represent.
- **Section 3.2.2** – There appears to be an inconsistent approach for protection structures. Some structures are excluded, some are included and some are partially included. In some locations with private structures, the impact of SLR has been excluded (i.e. Granity school, Hector). This may not be an appropriate approach as there is uncertainty around if the structures will be maintained and upgraded in the future. There is also mention of the rock revetment near Rapahoe being destroyed during Ex TC Fehi which highlights why structures might need to be excluded from the assessment. It may be useful to provide a map at each site which shows the location of known structures. If feasible, then an estimate of erosion hazard in absence of structures (i.e. based on values from adjacent unprotected sites), would be appropriate and useful for adaptation and planning purposes.
- **Section 3.2.2** – T+T agree with the Bruun rule for assessing shoreline response to SLR. However, it is unclear what values have been used for the closure depths and do these differ between the MSG beach and a sandy beach? It could be useful to provide values for the adopted closure slopes/depths.
- **Section 3.3** – Roll-over (short-term retreat) has been assessed based on judgement and field observations. We consider this is reasonable given the lack of profile data available. However, a berm 'roll-over' response may not be applicable for the sandy beaches (ie. Beach Road, CHA 3). Storm cut/erosion of the dune toe is likely to be more appropriate for sandy beaches.
- **Section 3.3** – 30 m sounds reasonable for an upper bound storm cut distance on the sandy open coast. However, it is unclear what the 30 m is set back from on the gravel beaches? Is it the berm crest? Or back of the gravel barrier?
- **Section 4.3.3** – Report states *"For the coastal erosion hazard zone, the structure only prevents acceleration in the rate of erosion from acceleration of sea level rise. The recent historical erosion rate is maintained in the calculation to account for failure of the structure."* This needs further explanation.
- **Section 4.7.3** – The probabilistic erosion assessment has not been completed for the Haast-Jackson Bay Road due to the nature of the site. A 'low-lying near-coast' hazard zone has been adopted instead. It is unclear what defines this zone? What elevation and shoreline proximity?
- **Section 4.7.4** – As above, for the Jackson Bay village.

- **Section 6** – The summary states that 50-year and 100-year outlooks have been mapped. What probabilities and SLR scenarios have been used to define these lines?

### 2.3 Other comments

- Equation numbers and referencing need to be checked throughout the document.
- There are several typos that have been noted within the attached marked-up PDF document.

## 3 Conclusion

Overall T+T consider the inundation methodology is appropriate for the scale of assessment and availability of data. Suggested improvements include:

- Some further comment on extreme wave conditions and the resultant wave setup to improve confidence that this component is adequately incorporated.
- Further detail on the application of boundary conditions in the Orowaiti Lagoon hydrodynamic model and adjacent coastline.

The general approach used for the erosion assessment is appropriate for the scale of assessment and data availability, however, some modifications are suggested to improve clarity:

- Further clarification around the adopted values and resultant hazard distances for each site.
- A consistent approach, or further clarification around the methodology, for erosion protection structures would also be beneficial.
- Clarification on the reference line from which erosion hazard distances are mapped.
- Clarification on what probability and SLR scenarios have been mapped within the report.

Desna Bruce Walker



## 4 Applicability

This report has been prepared for the exclusive use of our client West Coast Regional Council, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

Tonkin & Taylor Ltd

Environmental and Engineering Consultants

| Report prepared by: | Authorised for Tonkin & Taylor Ltd by: |
|---|---|
| ..... | ..... |
| Rebekah Haughey<br>Coastal Scientist | Peter Cochrane<br>Project Director |

Review by:
Dr Tom Shand
Technical Director – Coastal Engineering

RHAU
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