

From: [Sharon Hornblow](#)
To: [Claire Brown](#)
Subject: Re: Tsunami
Date: Wednesday, 26 February 2025 14:15:11
Attachments: [image137541.png](#)
[image886565.png](#)
[image475804.png](#)
[image661470.png](#)
[image496214.png](#)
[image614881.png](#)
[image700662.png](#)
[image786093.png](#)
[image653179.png](#)
[image270148.png](#)
[image577910.png](#)
[image059789.png](#)
[image138032.png](#)
[image244902.png](#)
[image502033.png](#)
[image320700.png](#)
[TsunamiHistoryWCRC.pdf](#)

[REDACTED]. I am happy to attempt to give some more context for why this info seems a bit buried (it's not! like most NH info, we just lack the necessary resourcing to go around giving out summary material and public talks on tsunami modelling, [REDACTED]).

A few thoughts which may answer Rosie's questions, and PDF copy of my quick talk attached which may help as it has some relevant references:

- The modelling which our evac zones (those massive, scary 10+ m above sea level run-ups) are based on the tsunami modeling commissioned over the past decade, which includes the big, infrequent events to give us an idea of *all* the areas which need to be aware of tsunami threat even if it's very rare. This has been available on our website, though admittedly not very well signposted, way at the bottom of this page [Natural Hazard Reports - The West Coast Regional Council](#)
- The reports are a bit dense and there has not been any resource budgeted to a specific natural hazards work programme on tsunami threat on the west coast, to translate into plain language. This is very much needed, as noted in the meeting. It's tricky to get your head around the risk levels e.g., size of an event you're likely to see in the next 100 years, such as those which impacted the Westport area over the past century, versus the kind of event the evac zones are based on, which is 1:2500 year return period.
- On the plus side, the CDEM web-map of the evac zones is google-able and does have a handy side bar with the standard messaging. [West Coast Tsunami Evacuation Zones](#) This is linked to from the national getready website as well, so hopefully the public can find these resources!
- The 2014 and 2020 GNS Science modelling and tsunami evac zone mapping reports do use a recent version of the national seismic hazard model (NSHM) and standard approach to modelling risk from offshore sources, so it's all fairly up-to-date. Often the idea that there are local, offshore tsunami sources seems a bit new or uncertain, perhaps again, because it gets a lot less coverage than the likes of AF8.
- Regarding updating the tsunami evac zones, as I said at the talk, when we go to a single blue public-facing zone in coming years, I would recommend the 1:2500 return period runup modelling is re-done using the LiDAR of the whole coast so that we're getting the most accurate area per given wave- and run-up height. The coastline outside of Hokitika, Greymouth and Westport didn't have LiDAR when the evacuation zones were finalised in 2021.

From my own, anecdotal, discussion with people on this topic over the past week, the idea that tsunami can threaten areas well inland from the beach and 10-15 m above sea level is a bit surprising for many local, long-term residents. This is possibly driven by the false security from the most frequent tsunami advisory alerts being beach and marine only - effectively working counter to CDEM's efforts to advise on the really scary (long strong get gone) tsunami. This is an issue everywhere, and many regions (e.g., Hawkes Bay) have far more terrifying max run-up heights compared to us.

Finally, if there's an appetite for a 'tsunami talk' or info sessions in the general public as an action resulting

from this Jc meeting, or if there's a particular area/community wanting more attention on this, then I'm always happy to make time out of my week to do this kind of thing. Let me know if there's anything your team are working on I could assist with.

Sharon Hornblow

Natural Hazards Analyst | West Coast Regional Council

sharon.hornblow@wrc.govt.nz | +64 3 769 9321 | +6421677803

From: Claire Brown <Claire.Brown@wrc.govt.nz>
Sent: 26 February 2025 1:18 PM
To: Sharon Hornblow <sharon.hornblow@wrc.govt.nz>
Subject: Fw: Tsunami

Hi Sharon
Quite a headline in the Grey Star after the Joint committee.
Any thoughts on our approach to responding to Rosie's query below??

Claire Brown

Manager West Coast Emergency Management | West Coast Emergency Management

Claire.Brown@wrc.govt.nz | +64 3 744 7311 | +64278363975

From: Rosie McGrath <rosie.mcgrath@TeWhatuOra.govt.nz>
Sent: Wednesday, February 26, 2025 11:44 AM
To: Claire Brown <claire.brown@wrc.govt.nz>
Subject: Tsunami

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Kia ora Claire
Do you have any information on the up-dated Tsunami Report that has been discussed in the media this week?

I've had a look on the websites but I can't find anything. The article says that more of the Coast is at risk from tsunami than previously thought.

Cheers

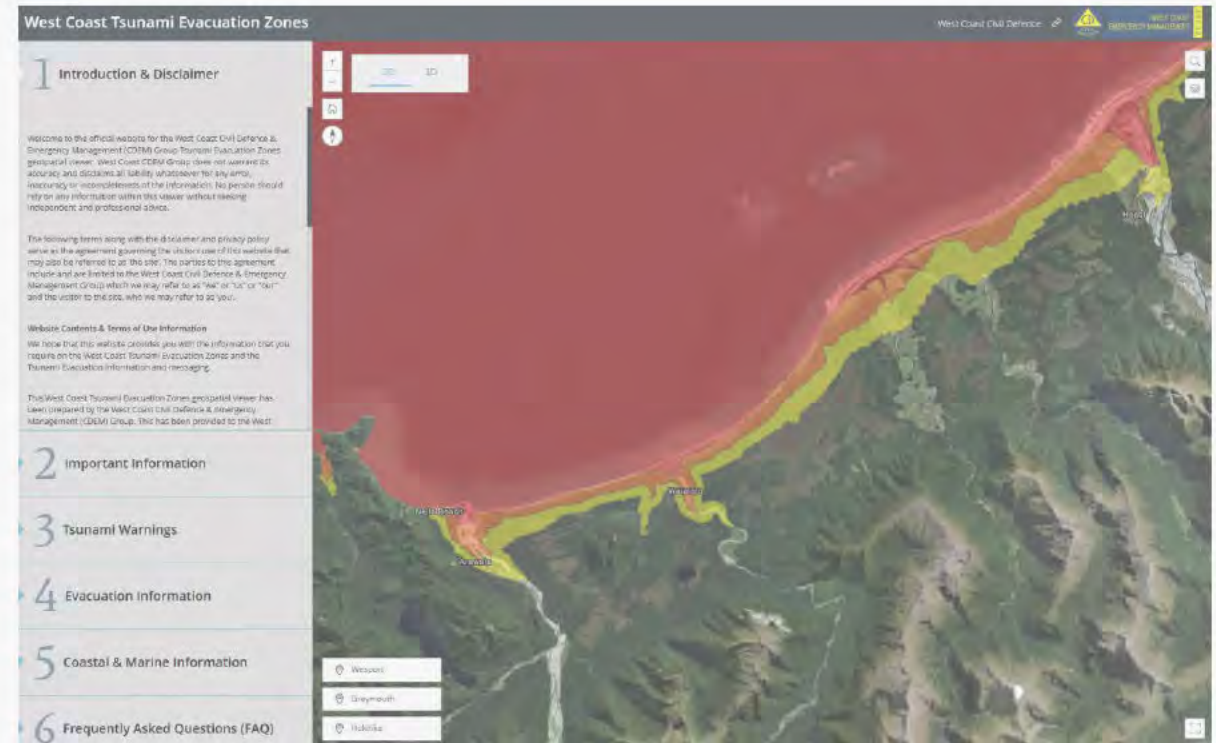
R

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West Coast tsunami hazard

Dr Sharon Hornblow,
Natural Hazards Analyst, WCRC



Evidence in the geological and oral history records of significant shoreline changes, sand deposits and subsidence events likely resulting from earthquake and tsunami

Lagoon subsidence and tsunami on the West Coast of New Zealand

S.L. Nichol^{a,*}, J.R. Goff^{b,1}, R.J.N. Devoy^{c,2}, C. Chagué-Goff^{b,1},
B. Hayward^d, I. James^e

^a School of Geography and Environmental Science, The University of Auckland, Private Bag 92019, Auckland, New Zealand
^b National Institute of Water and Atmospheric Research Ltd., PO Box 8602, Christchurch, New Zealand
^c Department of Geography, University College Cork, Cork, Ireland
^d Geomarine Research, 49 Swainston Road, St. John's, Auckland, New Zealand
^e Private Bag 177, Hokitika, New Zealand

Abstract

Sediment core and trench data from a coastal lagoon on the West Coast of the South Island, New Zealand, are presented.



Fig. 5. (A) Core 6 showing soil surface buried 77 cm below modern tidal flat and articulated bivalve (*Austrovenus stutchburyi*) dated to 900 ± 60 years. (B) Trench 1 showing buried soil overlain by rounded pebbles, gravel and shell, grading upward to very fine sand. Scale card is 10 cm long. (C) Trench 2 showing buried soil overlain by very fine sand. (D) Trench 3 showing buried soil overlain by very fine sand.

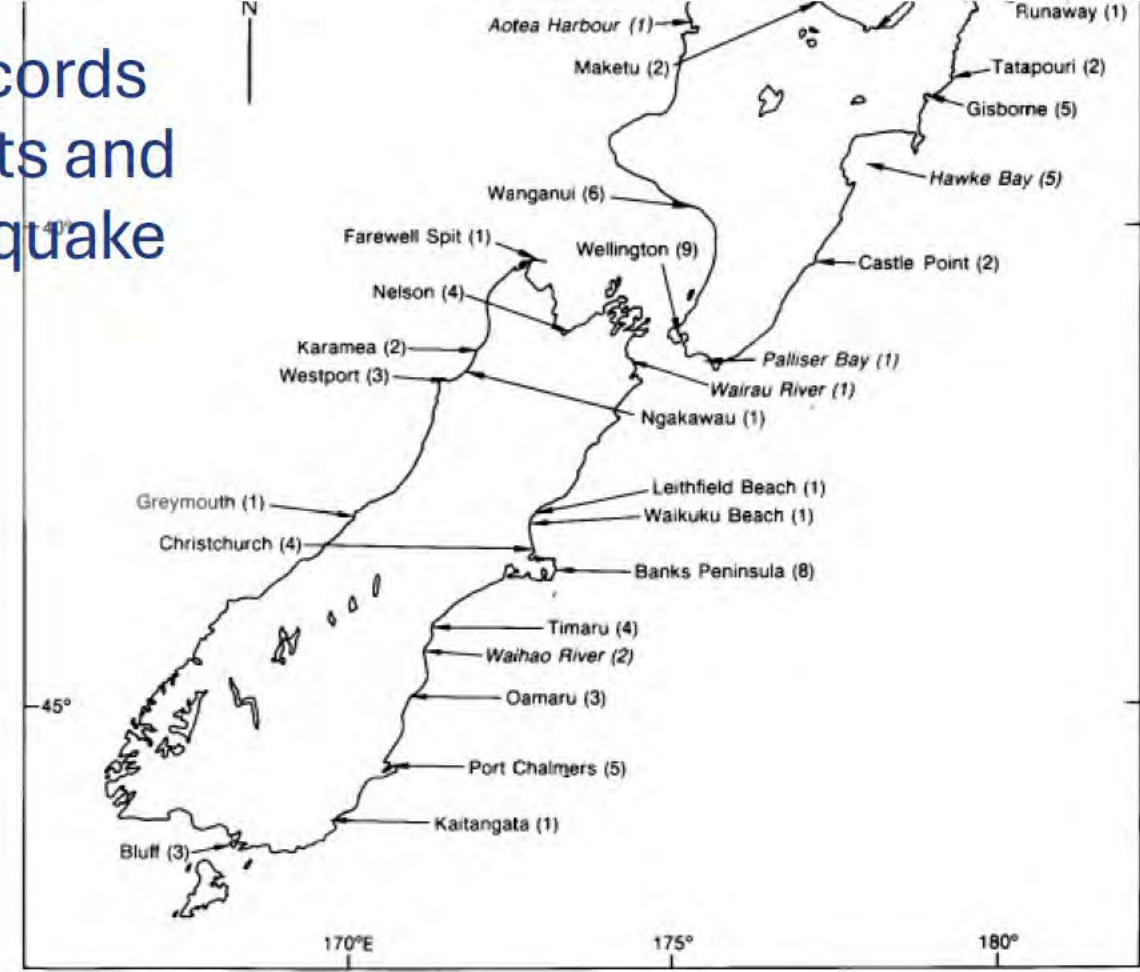
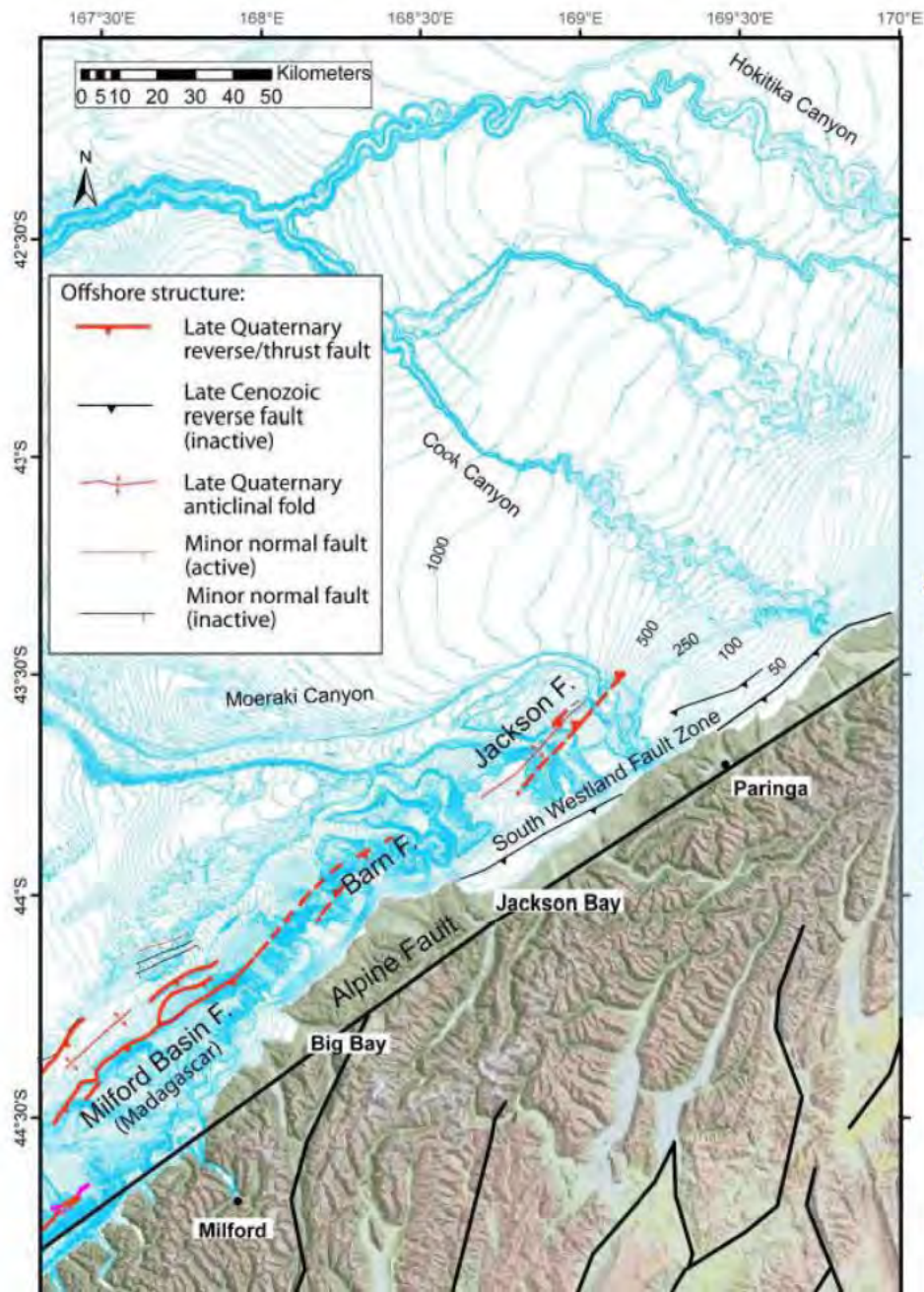


Fig. 1 New Zealand localities reporting tsunami events between 1840 and 1982, and the number of reports at each location.

Historic records from 1840 onwards indicate at least two damaging events on the West Coast

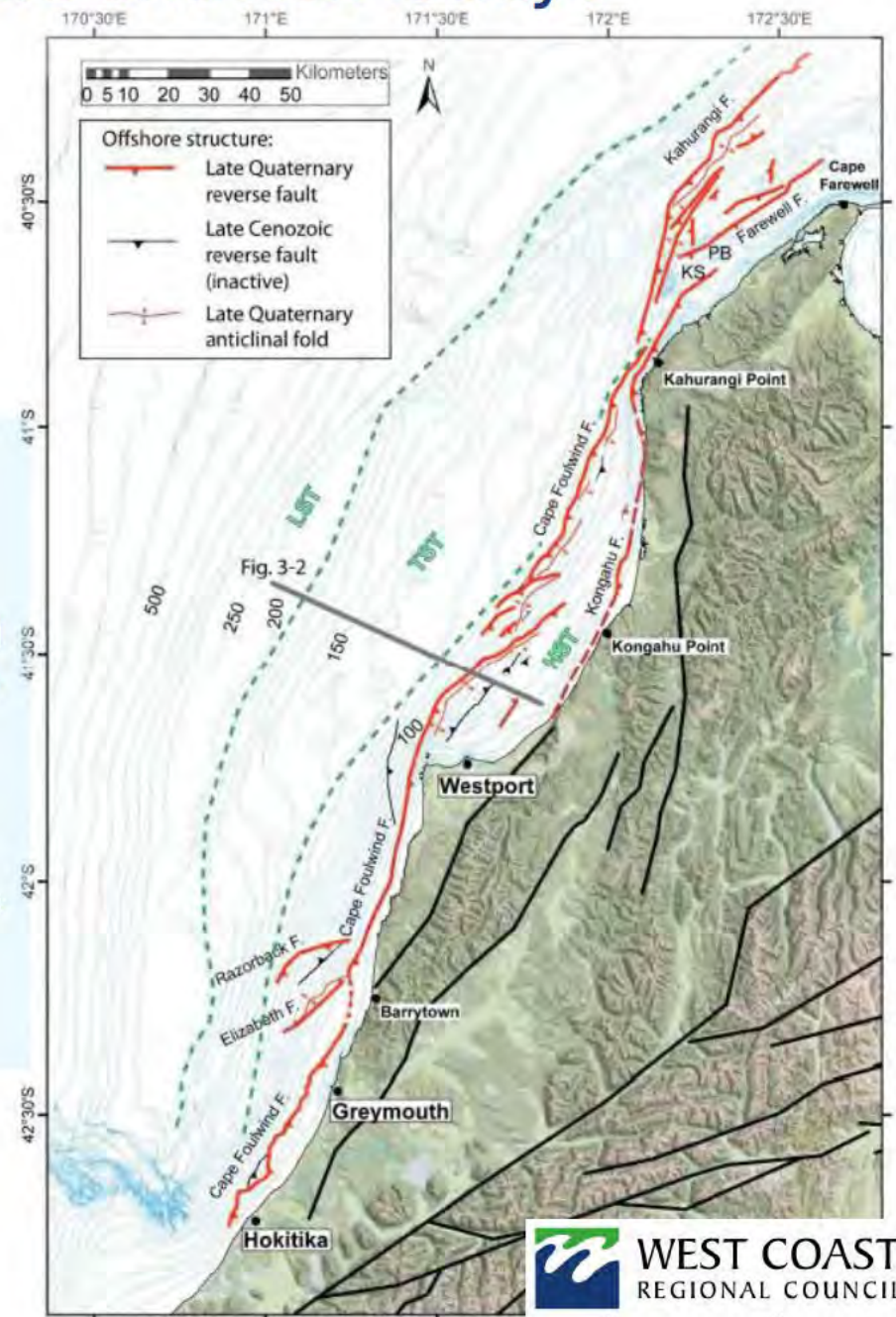
What do we know about local tsunami exposure and risk today?



National Seismic Hazard Model:

Mapping offshore seismic sources, some of those used in our tsunami models (Stirling et al., 2012)

Local seismic sources and potential for submarine landslides in South Westland = **Long, Strong, Get Gone**



Modelling tsunami heights along coast in 2500 year return period, based on all seismic sources (GNS Science 2014, 2020 publications on WCRC website)

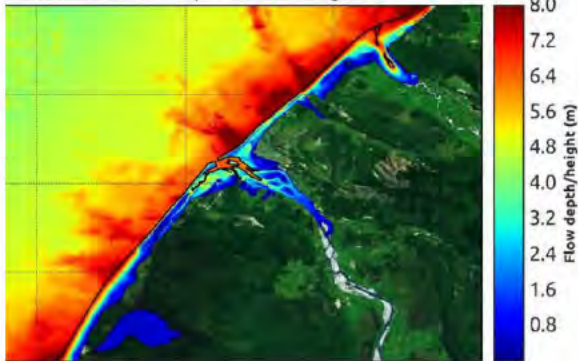
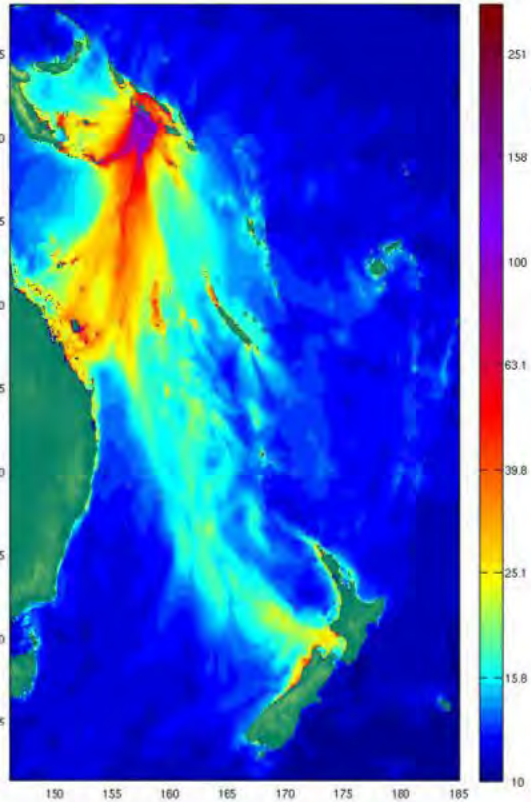
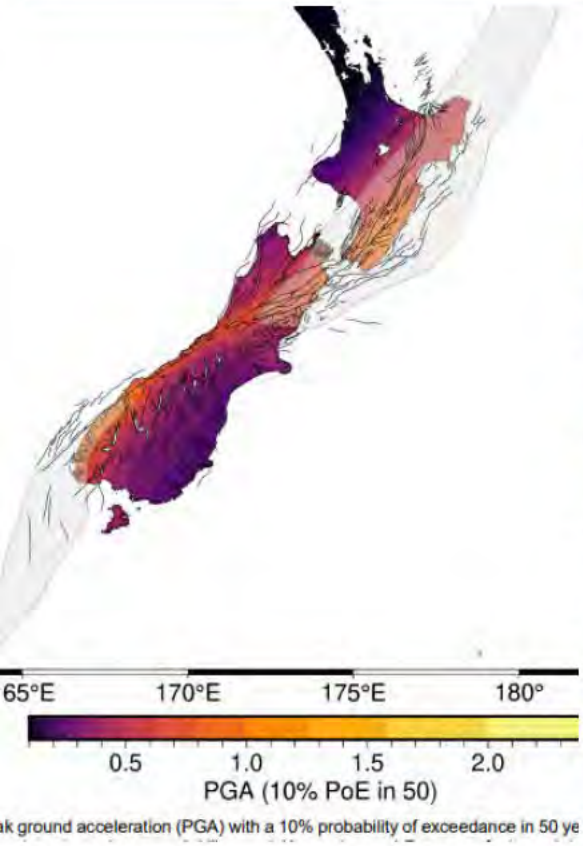
Seismic triggers



GNS tsunami modelling



Evacuation zones



Height vs tsunami run-up

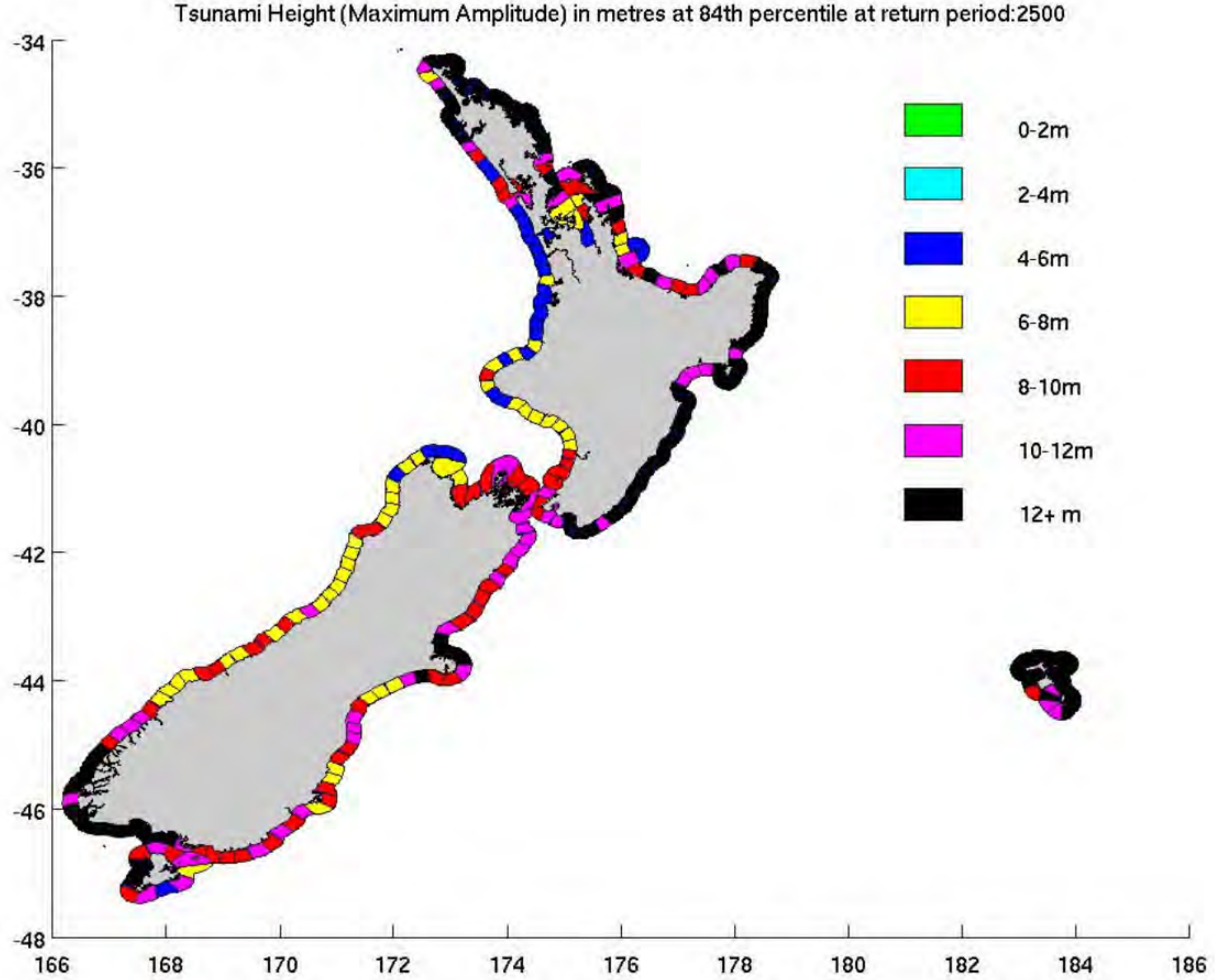
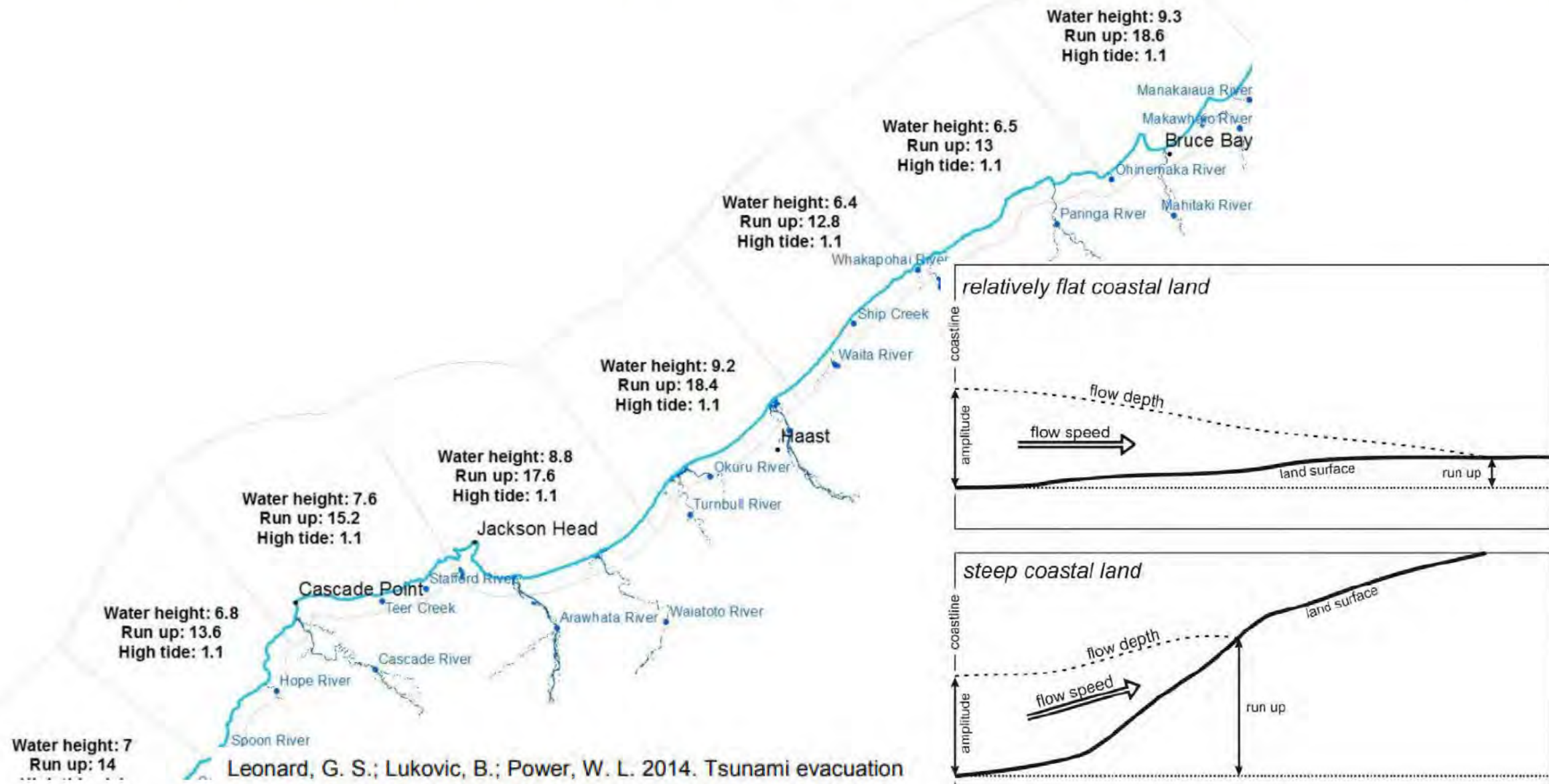


Figure 5: (IP: 2019-11-14; File: 2-22) Estimated tsunami run-up heights at 84th percentile at return period:2500

Height vs tsunami run-up – calculating the inland extent of tsunami zones

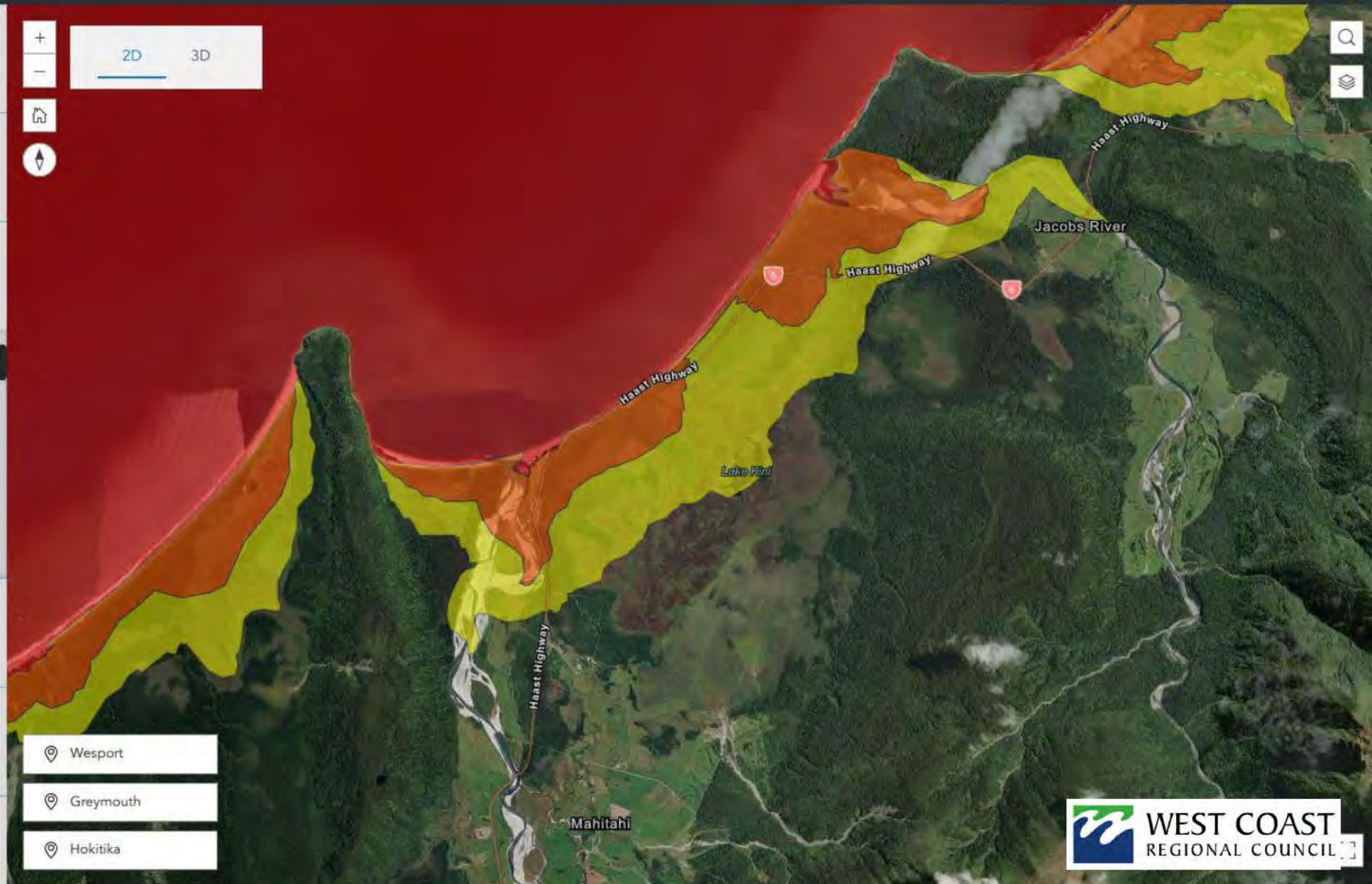


Leonard, G. S.; Lukovic, B.; Power, W. L. 2014. Tsunami evacuation zone boundary mapping: West Coast Region, *GNS Science Consultancy Report 2014/307*. 24 p.

The difference in run-up height and inundation distance on relatively flat coast land versus steep

Tsunami evacuation zones – see [West Coast Tsunami Evacuation Zones](#)

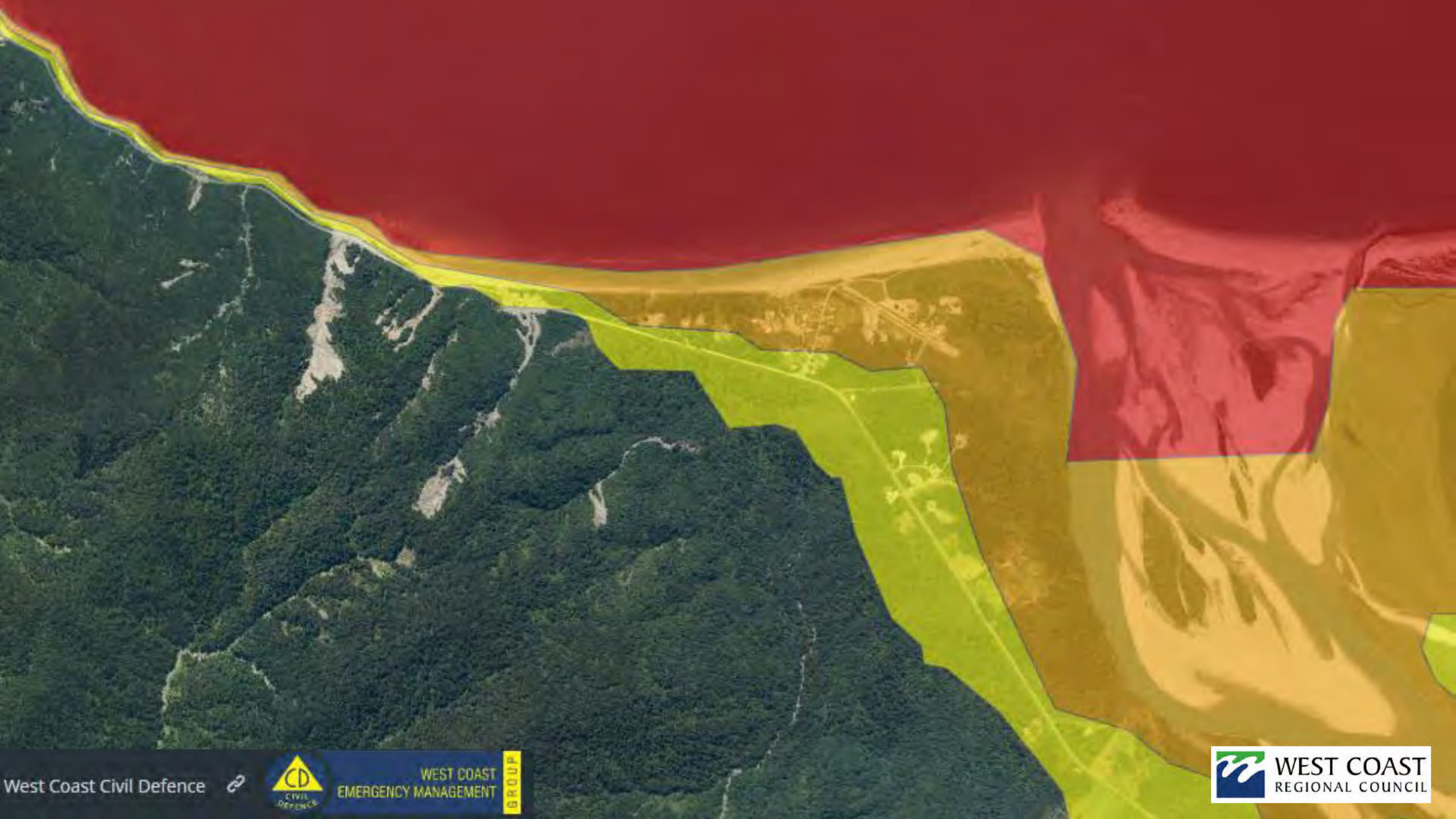
- 1 Introduction & Disclaimer
- 2 Important Information
- 3 Tsunami Warnings
 - people should evacuate from or stay out of the protection during an official tsunami warning, or after natural warning signs such as a long or strong earthquake.
 - Warning messages and signals about a possible tsunami can come from several sources:
 - Natural
 - Official
 - Unofficial or informal
 - In a long OR strong earthquake = Evacuate ALL zones
- 4 Evacuation Information
- 5 Coastal & Marine Information
- 6 Frequently Asked Questions (FAQ)





We currently use satellite-based ground elevation measurements to determine elevations and plot tsunami run-up and inland extent.

Light Detection and Ranging (LiDAR) technology has allowed aerial capture of topographic details to mm accuracy for Tai Poutini



Summary of formal tsunami investigation and hazard mapping by WCRC:

100, 500, 2500-year return period wave heights were all calculated for the West Coast (GNS Science, 2014) and zones mapped (GNS Science, 2020) using all known earthquake sources around NZ and the Pacific.

This has been used to define evacuation zones to date, last updated 5 years ago.

Future move to single public-facing evacuation zone

A single 'blue' zone will encompass all area expected (84% confidence level) to be inundated by a 2500-year tsunami event. Approximately inland extent of the present 'yellow' evacuation zone.

LiDAR would be used for future updates to public- or internal-facing evacuation zones and any refinements made to the geographic boundaries used to define zone edges.

From: [Sharon Hornblow](#)
To: [Darryl Lew](#); [Peter Blackwood](#); [Teresa Wyndham-Smith](#)
Subject: Re: False tsunami claims. Please provide those two dates.
Date: Thursday, 27 February 2025 14:05:39
Attachments: [image.png](#)
[image766142.png](#)
[image249868.png](#)
[image659378.png](#)
[image971767.png](#)
[image507508.png](#)
[image820591.png](#)
[image109984.png](#)
[image619570.png](#)
[BriefTsunamiHistoryandDataWCRC_CDEMjointCommittePres.pdf](#)
[image359906.png](#)
[image631182.png](#)
[image452584.png](#)
[image315030.png](#)
[image530136.png](#)
[image814295.png](#)
[image668838.png](#)
[image090069.png](#)

Copy of my short pres attached. I have no idea where the highlighted 'west coast regional council data show' etc. (WCRC did not exist in 1929...) In my talk, for illustrative purposes, I've put in an image from an old NZJGG tsunami records paper as it shows a nice summary of west coast events, which Kevin is enquiring about below.

My presentation and the discussion at JC last week referenced a few scientific papers on the historic tsunami record, the oral history and geological investigations (not WCRC studies). Paul Madgwick also brought up other accounts of large tsunami in the pre-historic record. I also referred to and provided images from National Seismic Hazard Model offshore faults, and GNS Science modelling commissioned by WC CDEM from 2014-2020 (linked on our NH page) to map tsunami inundation for purposes of evacuation zones.

From my own, anecdotal, discussion with people on this topic over the past week, the idea that tsunami can threaten areas well inland from the beach and over 10 m above sea level is a bit inflammatory, especially for long-term residents. This is possibly driven by the confirmation bias (example below) that large, damaging coastal events cannot occur because of numerous smaller, damaging events being 'survived' in living memory. As most of NEMA's tsunami advisory alerts will be beach and marine threat only this makes it more challenging to keep in back of mind the size of the whole (soon to be blue) evacuation zone, and that a real possibility exists that we will at some point need to respond in the long-strong-get gone fashion.

Just copying below a discussion I had with Claire Brown regarding some of her media queries last week which she was seeking clarification on, in case this helps Teresa respond to the enquiry.

- The modelling which our red, orange, yellow coloured tsunami evacuation zones (which includes the worst-case 10+ m above sea level run-ups) are based on the tsunami modelling commissioned over the past decade. This includes the big, infrequent events to give us an idea of *all* the areas which need to be aware of tsunami threat even if they are very rare (thousands of years return period). This has been available on our website, way at the bottom of this page [Natural Hazard Reports - The West Coast Regional Council](#)
- The reports are a bit dense and there has not been any resource budgeted to a specific natural hazards work programme on tsunami threat on the west coast, to translate into plain language. this is very much needed, as noted in the meeting. It's trick to get your head around the risk levels e.g., size of an event you're likely to see in the next 100 years, such as those which impacted the Westport area over the past century, versus the kind of event the evac zones are based on, which is 1:2500 year return period.
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offshore sources, so it's all fairly up-to-date. Often the idea that there are local, offshore tsunami sources seems a bit new or uncertain, perhaps again, because it gets a lot less coverage than the likes of AF8.

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[REDACTED]

Thanks,

Sharon Hornblow

Natural Hazards Analyst | West Coast Regional Council

sharon.hornblow@wrc.govt.nz | +64 3 769 9321 | +6421677803



From: Darryl Lew <darryl.lew@wrc.govt.nz>

Sent: 27 February 2025 1:28 PM

To: Sharon Hornblow <sharon.hornblow@wrc.govt.nz>; Peter Blackwood <peter.blackwood@wrc.govt.nz>;
Teresa Wyndham-Smith <teresa.wyndham-smith@wrc.govt.nz>

Subject: Fw: False tsunami claims. Please provide those two dates.

Peter and Sharon do you have any response to this
Get [Outlook for iOS](#)

Darryl Lew

Chief Executive Officer | West Coast Regional Council

darryl.lew@wrc.govt.nz | +64 3 769 9096 | +64272179306

WCRC values flexi-working and acknowledges that my working hours may vary from yours. Do not feel obliged to respond to, or action this email outside your normal working hours.



From: Kevin Smith <kevinsmith.kiwi@gmail.com>

Sent: Thursday, February 27, 2025 1:13:06 PM

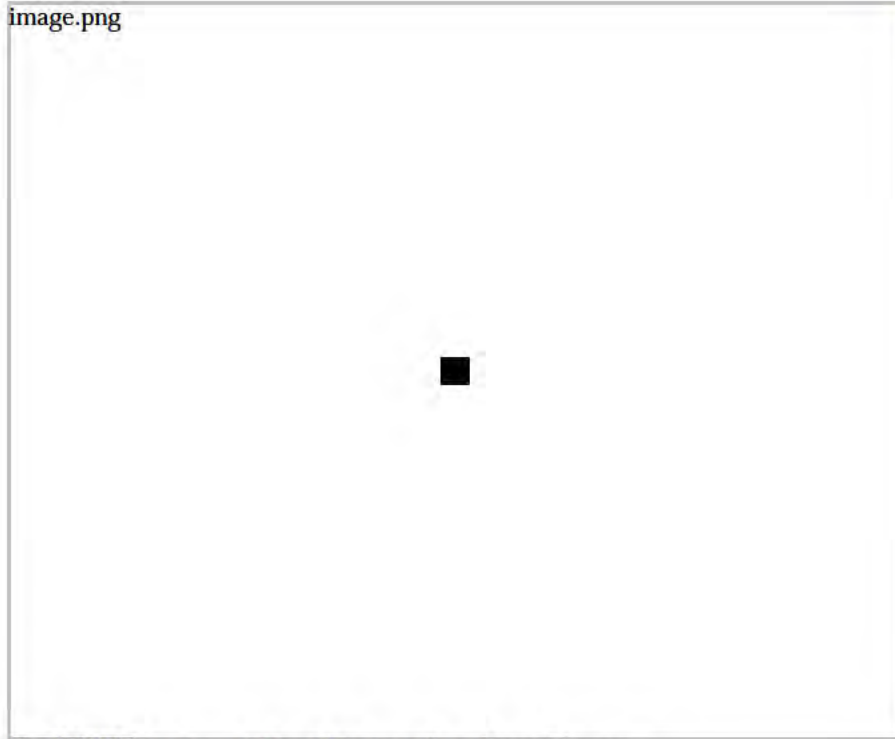
To: Darryl Lew <darryl.lew@wrc.govt.nz>; Peter Haddock <peter.haddock@wrc.govt.nz>; Brett Cummings <brett.cummings@wrc.govt.nz>; Mark McIntyre <mark.mcintyre@wrc.govt.nz>; Greystar Laura Mills <lauram@greystar.co.nz>; Westport News Lee Scanlon <lee@westportnews.co.nz>; Mayor Jamie Cleine <jamie.cleine@bdc.govt.nz>; simon.pickford@bdc.govt.nz <simon.pickford@bdc.govt.nz>; Maureen Pugh <maureen.pugh@parliament.govt.nz>; graeme.neylon@bdc.govt.nz <graeme.neylon@bdc.govt.nz>

Subject: Re: False tsunami claims. Please provide those two dates.

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image.png



The WCRC has been telling this story for at least 14 years.

Let's say not a soul in Buller has ever spoken about this wave.

No-one saw it, there was no damage.

I phoned the originator of the scientific report, he now sees that he got it wrong.

I actually believe he has been retracting his claim, based on what I told him.

The earthquake was on the Wednesday, 17th June.

The storm, and waves, were over the weekend.

The damage reportedly claimed at Farewell Spit was on 25th June.

I don't know what event Sharon was referring to.

It should only be either 1913 or 1929.

I never saw Karamea featured anywhere else in my searches of the various listings.

Neither event ever happened.

Then we have the BDC claim of 14 tsunamis.

I can't find any that have any foundation. I only unearthed seven that I can recall off-hand.

I would be surprised if Buller had any factual recorded tsunami history.

Why would we ?

Have the councils been guilty of deceit and spreading misinformation far and wide ?

That very same history is being used in the TTPP Coastal Hazard claims.

How much damage has been done ? How much money has been wasted ?

If the Councils were working for the community they would use their experts to sort the flawed database out.

Sharon has access to the database that would show locations and dates.

I could quickly provide historical input to those events that I am aware of.

Any other could be done in hours.

We should not be seeing spurious claims of tsunami activity purely based on a flawed NIWA database.

If Buller is any guide, then I would expect about 80% of the events to be false or fiction.

That list has been compiled by taking accounts out of context and by Chinese whispers.

Our councils have an obligation to the community, to the ratepayer.

I feel deceived and cheated.

It is about time the councils did the right thing.

On Tue, 25 Feb 2025 at 17:13, Kevin Smith <kevinsmith.kiwi@gmail.com> wrote:

Hi all,

Sharon Hornblow has again repeated false claims about the West Coast tsunami history.

I have researched this topic and have found no evidence exists of any damaging tsunami in Buller in the past 200 years.

I would put \$5,000 of my own money against each of her two claims, if her dates are post-1868.

She said there have been damaging tsunamis at Karamea and Westport, since 1840.
There has never been any tsunami damage, not since 1868 anyway.

I have no idea of the dates she is referring to.
I have some in mind but I would put my money against any of them.

This misinformation has to stop.

The community has had enough of being deceived.
Councillors need to be questioning, are they being told the truth ?

Is the agenda more important than the facts ?

She needs to resign if she is making stuff up and scaremongering.
She knows the NIWA database contains errors.

What events is she referring to ?

I know there were none in 1870, 1913, 1929.
I believe they are the commonly circulated claims, all of which are obviously false.

There was a claim in 1868. We even had a witness, Samuel Leech, the Westport Harbour Master.
He never reported a wave however and he mentioned some coal may have been washed from a wharf.
Surely she will not use that event as an excuse ? That was an example of a tsunami event that was extremely damaging on the East Coast, yet barely detectable here.

Tracy Hatton also used the 1913 event in one of her papers.

We are seeing completely false data being used in making Council decisions, this misinformation has only existed in recent decades and is just snowballing.

I implore you to please have Sharon explain her statements.

I am suggesting she is either being deceptive, or incompetent.
Most certainly the case, if her dates are in the period, October 1868 to present.

Either way the councils need to act.

I would suggest the CEO, WCRC would be the appropriate person to investigate and respond.

Provide the dates, or reprimand her.

This is a very serious issue.
An apology would not be appropriate.

Cheers
Kevin Smith

From: [Sharon Hornblow](#)
To: [Logan](#); [Shanti Morgan](#)
Cc: [Paul Gurney](#); [Claire Brown](#); [Alex Ching](#)
Subject: Re: WCRC flooding/hazard team contacts
Date: Monday, 3 March 2025 12:32:22
Attachments: [image001.png](#)
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[image318845.png](#)

Hi Logan,

I can't make a meeting this Thursday but can respond here with a quick summary of spatial natural hazard modelling datasets WCRC can share with you. You will need to put in a request direct to our GIS team (Cc Alex our Senior GIS Analyst) to request a share link to download these:

- tsunami flooding

GNS modelled wave height and runup with the outputs provided to us as red/orange/yellow tsunami evacuation zones. Yellow extent is equivalent to approx 1:2500 year event. Extent shapefiles only as per this map: [West Coast Tsunami Evacuation Zones](#)

Sharon Hornblow

Natural Hazards Analyst | West Coast Regional Council

sharon.hornblow@wrc.govt.nz | +64 3 769 9321 | +6421677803



From: Logan [REDACTED]

Sent: 28 February 2025 6:02 PM

To: Shanti Morgan <shanti.morgan@wrc.govt.nz>

Cc: Paul Gurney <paul.gurney@wrc.govt.nz>; Claire Brown <Claire.Brown@wrc.govt.nz>; Sharon Hornblow <sharon.hornblow@wrc.govt.nz>

Subject: Re: WCRC flooding/hazard team contacts

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Hi all,

Yes, thanks Paul! Great to chat with you earlier today.

I will pick up from here with the others about what we are looking for. In general, we are looking for hazard layers across the South Island

Some hazards that we are interested in are

- tsunami flooding

Cheers,
Logan



On Fri, Feb 28, 2025 at 4:27 PM Shanti Morgan <shanti.morgan@wrc.govt.nz> wrote:

Thanks Paul,

Happy to help where we can. Just let us know when suits Logan.

Shanti

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Shanti Morgan

Group Manager - Environmental Science | West Coast Regional Council

shanti.morgan@wrc.govt.nz | +64 3 744 7310 | +6421952524



WCRC values flexi-working and acknowledges that my working hours may vary from yours. Do not feel obliged to respond to, or action this email outside your normal working hours.



From: Paul Gurney <paul.gurney@wrc.govt.nz>

Sent: Friday, February 28, 2025 4:10:25 PM

To: [logan](#)

Cc: Claire Brown <Claire.Brown@wrc.govt.nz>; Shanti Morgan <shanti.morgan@wrc.govt.nz>; Sharon Hornblow <sharon.hornblow@wrc.govt.nz>

Subject: WCRC flooding/hazard team contacts

Good afternoon

This is an introduction email

Logan, great to talk to you today

As discussed, cc'd in are Shanti (Group manager-environmental science) and Sharon (Natural hazards analyst) at WCRC . I think they will be able to help you further your research

Shanti and Sharon, just introducing Logan.

He would like to talk to you about it if possible.

Thankyou in advance. Have a great weekend.

Regards

Paul



Paul Gurney

Emergency Management Officer - Partnerships | West Coast Regional Council

■ paul.gurney@wrc.govt.nz | ■ +64 3 768 0466 ext. 9135 | ■ +64 27 263 9221

