

**Submission to KCDC regarding intensification of housing at Paraparaumu Beach as outlined in Plan Change No2.**

1. My name is Ian Gunn.
2. I'm making this submission on behalf of my wife Jean and I.
3. We reside at 4B McKay Street purchasing it in 2013 although I have had an association with the beach since 1959 when my parents moved to 48 Seaview Road.
4. I have the following qualifications:
  - Bachelor of Science Honours degree in geology from Victoria University
  - Post graduate diploma in Hydrogeology from The Hebrew University of Jerusalem, Israel.
  - Post graduate diploma in Conflict Resolution from Massey University.
5. I have over 50 years experience in resource management and although I'm "re tired" I'm still involved in a variety of resource management issues eg. Waipoua Catchment Community Group-assessing and designing options to reduce flood risk to Masterton. I am a long term, and continue to be a member of the NZ Hydrological Society and the NZ Association Of Resource Management.
6. Initially I worked in mineral investigations in NZ and Australia before travelling to Israel. On graduating I worked in UK in hydrogeology followed by overseas assignments for 10 years varying from Iran, Ethiopia, Saudi Arabia, Denmark, Borneo, Papua New Guinea.
7. I returned to NZ in 1982 joining the Wairarapa Catchment Board(WCB) as a hydrogeologist. I worked for the WCB and Greater Wellington Regional Council(GWRC) following local government reform until I retired in 2015 based in Masterton.
8. Roles I fulfilled over this period relevant to this submission include:
  - regulatory**-Managed the Planning and Policy section-lead the team which designed and established one of the first coastal hazard zones in NZ at Riversdale Beach in the late 1980's. Managed the floodwarning operation. Actively contributed to Civil Defence fulfilling the role of Alternate Wellington Regional Controller for a number of years.
  - operational**-Managed flood and land management operations all involving assessment of risks to people and infrastructural assets.
  - in an **independent capacity** I appealed on behalf of my parents at 48 Seaview Road the proposal to construct a 4 storey apartment block called Ocean Apartments on Marine Parade. The appeal was successful in the Environment Court.
9. I note that there have been detailed legal submissions on Coastal Matters.

10.I wish to make some observations on the impact of Tsunamis and Evacuation, the Town Zone, Transport links and Stormwater.

## **2.0 Tsunamis and Evacuations**

2.i The documents disclose that the evacuation zones developed by GWRC were reviewed but not considered appropriate for land use planning.

2.2 In my opinion, based on my hazard risk/civil defence experience, the evacuation zones highlight zones of significant risk-low occurrence and high impact. The recent events in Auckland and the East Coast demonstrate the folly of development in at risk zones.

2.3 Furthermore I have read a report prepared for KCDC By GeoEnvironmental Consultants titled Tsunami Hazard and Risk which has not been reviewed as part of Plan Change No 2.

2.4 I have inserted the executive summary;

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## EXECUTIVE SUMMARY

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This project provides a summary of tsunamis, and tsunami hazards and risk for the Kapiti Coast.

Contrary to general thinking, the Kapiti Coast is a relatively high tsunami risk area with six 0-5.0 m tsunamis recorded since 1855AD yielding a return period of about one every 24 years; and five >5.0 m tsunamis in 2000 years, giving a return period of about one every 400 years. These calculations have implications for coastal development. In short, all urban areas immediately adjacent to the coast are at a relatively high risk from inundation, and coastal development within a few hundred metres should be undertaken with caution. Similar care should be given to development along waterways up to about 1km inland.

A short reconnaissance study of the Kapiti Coast has identified several sites where further work is recommended to improve our understanding of past tsunami inundations of the District. At present, there are insufficient data available to be able to assess the effects of runup along waterways, although we suggest that a general 'rule of thumb' covering the majority of events would be in the order of 1km. In order to better understand the District-specific problems that might be faced by tsunami inundation a detailed coastal and nearshore topography at 1.0 m intervals (preferably less) up to 30 masl and to 30 mbsl (below sea level) needs to be produced. An interim measure would be for a tsunami expert to walk the coastline and estimate inundation along the coast based upon their geomorphological experience. There is a need for an inundation map to provide the template for; an evacuation route map, emergency management purposes, coastal development planning, and to serve as one way of developing greater tsunami awareness throughout the community.

If one assumes an average tsunami speed of about 500 km per hour, most tsunamis generated by local fault ruptures would arrive within a matter of minutes. *There would not be any effective warning time for the public.* The requirement from the Council's perspective would be to ensure that the public were suitably "tsunami-aware" in order to be able to take care of themselves, it is the immediate saving of life as opposed to property that is essential. The public should be urged to move inland and/or uphill immediately after a large earthquake, and to stay there until advised that it is safe to return.



2.5 Given these findings its surprising that this information has not been disclosed and used to define intensification zones within the Kapiti Coast.

2.6 An excerpt from the report follows;

“Typically, a tsunami consists of several waves, with locally generated tsunami having fewer larger waves (approx. 3-6 waves) than their distantly generated counterparts (10-12). Under certain conditions they can persist for several days, supplemented by certain seiching and resonance such as between Kapiti Island and the mainland (Walters 2001).”

2.7 Fig 6 from the report delineates a 10m inundation contour for the Paraparaumu area.

2.8 Furthermore another report has been prepared, Evacuation Time Estimates for Local Source Tsunamis for Porirua and Kapiti Suburbs B Lukovic, X Wang W Power GNS 2019/79 Dec 2019. Maps within the report indicate evacuation travel times.

2.9 The Conclusion is as follows;

“Evacuation travel times for populations of at risk suburbs of Porirua and Kapiti Coast have been modelled and compared for travel times from nine local sourced tsunamis modelled by Wang et al.

The results indicate that evacuation travel times for several suburbs exceed the travel time of the 1.0 m local threat threshold in some scenarios. **Tsunami travel times on the Kapiti Coast are very short and one of these scenarios (an earthquake on the Manaota Fault) inundate much of the tsunami evacuation area. In this scenario a significant number of people on the Kapiti Coast have travel times that exceed the travel time of the modelled tsunami.**

**The evacuation travel time does not include the time for an evacuee to decide whether to evacuate, or any preparation time. This time which may be up to 10 minutes following a large earthquake exceeds the tsunami travel times at the 1.0 land threat threshold in the most at risk suburbs.**

“The modelling has identified a number of suburbs where timely and efficient evacuation is necessary to avoid loss of life in local tsunamis. This information can be used to prioritise risk-reduction and preparedness discussion and the development of an appropriate evacuation plans. The threat posed by the Manaota Fault also motivates further geophysical study of this fault to better understand its movement history and recurrence interval.”

2.10 The issue of achieving effective evacuation with the current roading network is serious. This was highlighted by the gridlock which occurred on Kapiti road following the Kaikoura earthquake when the general public responded to the civil defence mantra “if its long or strong be gone”.

2.11 The cause of tsunamis as presented in the reports above is local earthquakes. Recent research is presented in a video “The Coming Megaquake in New Zealand”  
[https://www.youtube.com/watch?v=m\\_1dD2IbV70&ab\\_channel=OutThereLearning](https://www.youtube.com/watch?v=m_1dD2IbV70&ab_channel=OutThereLearning)

A megaquake or megathrust earthquake on the Hikurangi Subduction Zone in New Zealand has a 25% probability of occurring in the next fifty years. This is the first time scientists have been able to give a probability for such an earthquake in New Zealand. This

short documentary tells the full story of the science research that has led to this new understanding.

Dr Dan Bassett in the video states it is highly likely there will be a big earthquake in 50 years. Another scientist states there is a one in four (25%) chance of an earthquake in the next 50 years.

### **3.0 Coastal Hazard Line as Mapped**

3.1 The coast hazard line is mapped as basically a straight line along the coast with major deviations inland at the streams. My experience is that where ever there is a breach in the foredune complex there is a zone of weakness from both erosion and inundation. This can be seen at most stormwater outlets onto the coast either the beach is scoured down following rainfall events or the fore dune is attacked following a high sea. To maintain the integrity of the sand dune stormwater pipes they are often extended and considerable maintenance is required. These outlets need to be identified and mapped.

### **4.0 Stormwater**

4.1 I strongly reject the planners statement to my submission that because 30% of each property will be required to be left vacant stormwater is not an issue. I wonder if he has the experience to make such a statement.

4.2 The recent rainfall event this week with a maximum rainfall total of 33mm per hour or 45 mm over 3 hours caused flooding issues, see attachment no 1 newspaper clipping.

4.3 I know without visiting the area where this is 60 years ago I woke in our garage sleepout with 150mm of water underneath my bed!!

4.4 Papers highlight there is updating occurring on flooding and stormwater. Its is obvious if there is an increase in intensification there will be more stormwater ponding without extensive remodelling of the existing stormwater network. An impost on the current ratepayers. I attach a recently developed map, Attachment no2, based on Climate Change Regional Factors for the western end of Kapiti road. This analysis doesn't include the proposed intensification impact yet highlights up to 2 metres of stormwater will extend west to the entrance to the Golf Course.

4.5 The recent heavy rainfall events in Auckland and the East Coast with intensities up to 70mm an hour and or extended periods of heavy rain have overwhelmed the current stormwater systems.

4.6 Groundwater issues experienced in recent years will also be exacerbated, see Attachment no3 regarding groundwater

### **5.0 The Designation Of Paraparaumu Beach as a Town Centre.**

- 5.1 I do not support this designation the Paraparaumu Beach shopping area has a village feel to it.
- 5.2 I suggest, if one is required, a possible designation as a local centre bounded by the three arterial routes-Kapiti Road, Ocean Road and the section of Marine Parade. It's a well defined area.
- 5.3 An additional planning aspect in the creation of effective sustainable communities is the roading network. A key factor is to have free movement. This does not occur with today's population and roading network. Have you counted the number of traffic lights and roundabouts for someone to traverse to reach the Paraparaumu Railway Station from the Beach ??At peak times it can take 20-30 minutes to effect this journey.
- 5.4 What and how will the proposed increase in population impact on traffic flows? I have seen no analysis of this factor.

#### **6.0 The Junctions of Kapiti Road/Golf Road/Roundabout linking Kapiti/Marine Parade/Manly Street.**

- 6.1 I have stated in my submission that Kapiti Road is a barrier to extending any town centre designation north.
- 6.2 The planner has indicated because in my terms a "pseudo crossing " has been installed in this area this alleviates any road crossing issues. In my experience few people use it. Visual viewing is very limited in multiple directions making crossing anywhere at this site hazardous.
- 6.3 The current speed restrictions are ineffective to allow safe negotiation of this road barrier.
- 6.4 Reinforcing my view that this area is a barrier is the identified flooding and storm-water ponding occurring at the western end of Kapiti Road.

#### **7.0 Conclusion**

**7.1A precautionary approach to any further intensification of development on the Kapiti Coast falling within the currently defined evacuation zones is appropriate ie continuation of the status quo.**

**7.2 Further intensification may only be permitted after all of the risks to development have been identified and quantified.**

**7.3 Research shows that with the current coastal population density there is likely to be loss of life due to the inability to evacuate before a tsunami reaches the shoreline.**

**7.4** My submission raises questions about relying on flood hazard to determine tsunami inundation, the identified tsunami evacuation zones are de facto risk zones.

**7.5** Further studies are required on the occurrence of tsunamis with recent research indicating the potential for large earthquakes is bigger than we have previously believed.

**7.6** The recent cyclonic events have highlighted the importance of effective risk planning from flooding (including tsunamis) and stormwater to ensure safe resilient communities.

**7.6** The current roading network throttles free movement within the district with the current population compounding the risks from tsunamis and hindering the possibility of creating a vibrant resilient community.

**7.7 To proceed with the Plan Change No2 as suggested for the area defined in tsunami evacuation zones will result in increasing the risks to the population in terms of loss of life and to its services/infrastructure.**

Attachment no 1

From Stuff newspaper March 17<sup>th</sup> 2023

# **Flooding fears subside after torrential rain leaves Kāpiti homes at risk**

Several Paraparaumu properties were at risk of being flooded due to torrential rain on the Kāpiti Coast.

A Fire and Emergency spokesperson said there were multiple properties in Hinemoa St at risk of being flooded after torrential rain about 11am on Friday morning.

Residents were not required to be evacuated from their homes.

Police were assisting in closing nearby roads due to surface flooding, a spokesperson said.

Fire and Emergency also responded to a Seaview Rd property in Paraparaumu Beach, which was at risk of severe flooding. Seaview Rd was closed at MacLean St as a result, police said.

Crews left the Seaview Rd incident at 12.45pm after the flooding began receding. A Fire and Emergency spokesperson said it was unclear whether the surface flooding would rise again as rain continued to fall in the area.

Fire and Emergency have now handed both incidents over to the Kāpiti Coast District Council.

A Kāpiti Coast District Council spokesperson said it had been a wet morning and council crews were working to assess the situation.

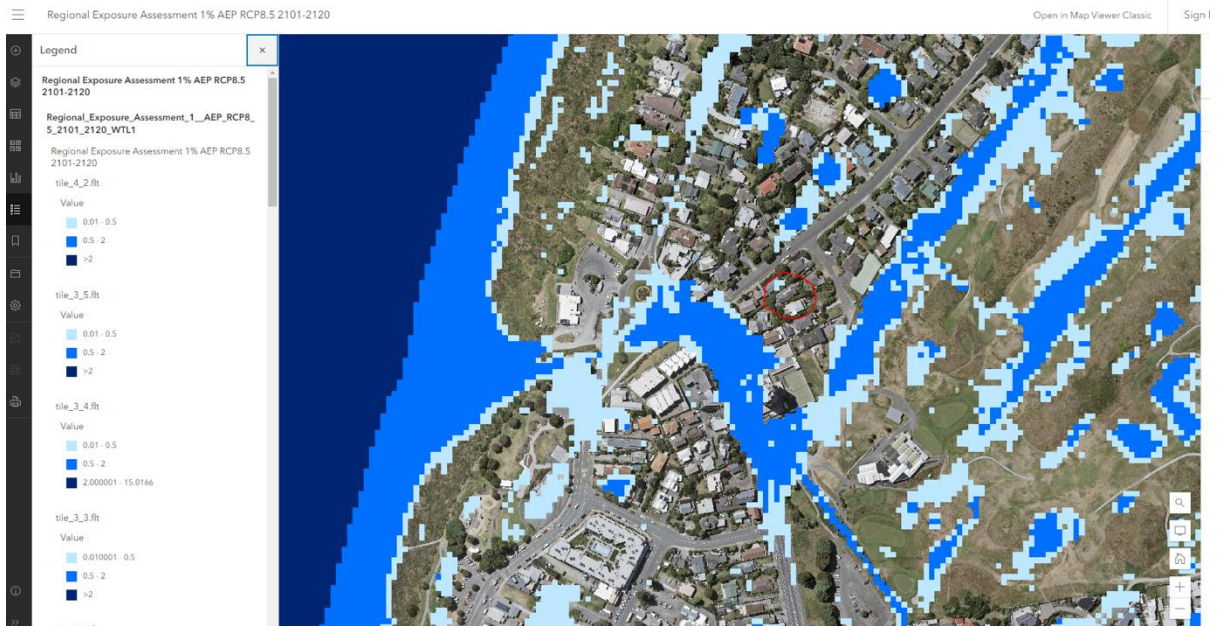
“Various crews are out responding to flooding incidents ... the best place for info is our [Facebook page](#) – we’ll be keeping that updated as we confirm information,” he said.

Sandbags have been made available for anyone living in flood-prone areas to collect from the council depot in Fytfield Place, Paraparaumu.

Strong winds and rain hit the lower North Island and the South Island, with multiple [weather warnings across Aotearoa and disruption to travel](#).



# Attachment no 2



# Attachment no3

## Record rainfall for Kāpiti contributing to elevated groundwater levels

**Published 11 Nov 2022**

Record rainfall over the last year is causing significantly elevated groundwater levels across the Kāpiti Coast district.

Average annual rainfall at the Paraparaumu Aerodrome is 1030mm but 1432mm was recorded between August 2021 and August 2022 - the third highest annual total on record in over 80 years. Similarly, gauges at Te Hapua Wetlands and the Wai-kanae Water Treatment Plant captured the highest annual rainfall totals of their respective records.

When groundwater levels are high, stormwater can become trapped in low lying areas and sit as ponding for a period of time.

“Groundwater levels rise and fall as the seasons change, and in response to heavy rain,” says Sean Mallon, Infrastructure Services Manager.

“Here in Kāpiti, our water table will typically rise quickly before draining back out to sea through local waterways but when we have frequent rain events, groundwater levels can remain elevated.

“The last time groundwater levels were significantly elevated for an extended period was in 2005 and current levels are higher than that event.”

Low-lying areas across the district are experiencing standing water and drainage issues.

“Groundwater inundation is different from stormwater flooding in that it can persist over long periods of time, and can be much more difficult to mitigate,” says Mr Mallon.

“Current groundwater levels are having impacts on Council’s land, infrastructure, and work programmes, as well as on private property.

“Roads and footpaths are degrading at an accelerated rate, pipes are being corroded, stormwater networks have diminished capacity and functionality, septic tanks are being infiltrated, and trees that can’t tolerate extended saturation are dying.

“High groundwater levels are also preventing or delaying access for maintenance, repairs, renewal works and capital works projects.”

Unfortunately, there are no easy fixes but levels will drop given time.

“You can’t pump groundwater in the same way you can pump stormwater - there’s nowhere to pump it to as it will only return to the lowest lying areas,” says Mr Mallon.

“If you experience standing water on your property, please be patient while it recedes. You can call a plumber or drainlayer for more advice. We have a number of actions underway to improve our stormwater network which will help the situation. This includes maintenance on our open channel network, investigations of pipes, renewal and repairs, and our continuing to progress [our stormwater capital works programme](#).”

Mr Mallon warns that surface flooding from groundwater is predicted to become more significant due to both increased rainfall volumes, and sea level rise associated with climate change.

“Kāpiti will continue to be susceptible to fluctuating groundwater levels given our position between mountains and the ocean, the types of natural environments across our district and the natural places where groundwater discharges. We’re going to have to learn to live with more water.”

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