



DIRECTOR'S STATEMENT

Title	New national approach for tsunami evacuation zones
Date	28/03/2024

Purpose

1. This Director's Statement has been issued by the Director of Civil Defence Emergency Management to outline the changes to national guidance for tsunami evacuation zones while the current [Tsunami Evacuation Zones Director's Guideline \[DGL 08/16\]](#) and [National Tsunami Signage Technical Standard \[TS 01/08\]](#) are under review. The content of this Statement will be incorporated into the updated Tsunami Evacuation Zones Director's Guideline.
2. This statement outlines NEMA's intention to move to one blue tsunami evacuation zone, as the new nationally recommended approach.
3. This document does not provide all the details of the new approach, rather, it is a confirmation of intent that enables CDEM Groups to progress tsunami evacuation zones updates, using an approach that follows best international practice and aligns with the new nationally consistent guidance. Further considerations will be provided for development and implementation over the course of the 2024 calendar year.

Audience

4. This statement is intended for Civil Defence Emergency Management (CDEM) Groups and territorial authorities, who are responsible for developing and implementing tsunami readiness and response measures in their region.

Background

5. There is a mutual desire from NEMA, CDEM Groups and scientists to have a consistent approach to tsunami evacuation zones across Aotearoa New Zealand. As of February 2024, there are various tsunami evacuation zone approaches implemented by CDEM Groups in their regions. The difference in approaches has resulted in a lack of consistency, which has implications for public education and tsunami warnings, communication, and subsequently, evacuation behaviour during events.
6. The National Tsunami Working Group and National Emergency Management Development Group¹ have agreed to support work towards a nationally consistent approach for tsunami evacuation zones. These groups acknowledge the significant benefits of national consistency

¹ Renamed the Emergency Management Leadership Group (EMLG) as of February 2024.

for the emergency management system. Specifically, reducing life safety risk through substantial improvements to public education, tsunami warnings and communications.

Summary of approach

7. The new national approach for public facing tsunami evacuation zones is one blue tsunami evacuation zone.
8. The intent of this approach is to link the public use of tsunami evacuation zones to local source tsunami events (i.e., linking to the long or strong, get gone messaging), as these events have the highest life safety risk due to the inability to issue official warnings.
9. The new one tsunami evacuation zone should encompass all existing tsunami evacuation zones (i.e., red, orange and yellow evacuation zones for most regions). The extent of the blue tsunami evacuation zone should be based on the maximum credible event from a local, regional or distant source tsunami event, depending on which produces the largest land inundation. The maximum credible event is an event equal to, or greater than, the 2500 year return period tsunami at the 84% confidence level (the same definition as in the Tsunami Evacuation Zones Directors Guideline [DGL 08/16]).
10. It is recommended that this approach is used by CDEM Groups and territorial authorities for all tsunami evacuation zone updates from the date the Tsunami Evacuation Zones Director's Guideline is published (indicatively December 2024). Tsunami evacuation zones in their region should conform to this approach six years after the publication of the Director's Guidelines (indicatively December 2030).
11. The new one zone approach does not prevent CDEM Groups from developing tsunami evacuation maps with a different number of zones for planning purposes. These maps can be used to plan evacuations and/or be issued to the public when there is more time to issue official warnings (i.e., for regional or distant events).
12. The use of additional public facing zones (e.g., beach and marine² areas or areas where vulnerable communities are located) should be based on community needs. Strong consideration needs to be given to the implications of using additional zones, including reducing public understanding, communication, and effective evacuation for local source tsunami, misaligning with the national approach and reducing national consistency.

Rationale

13. To provide an evidence base for decision making, GNS Science undertook a [social science review](#) into tsunami evacuation mapping for Aotearoa New Zealand. Reducing the number of tsunami evacuation zones on maps to one zone aligns with Consideration 1 in GNS Science's report:

“There is a preference towards maps with fewer evacuation zones. The ease of understanding, interpreting and remembering fewer zones as well as human behaviour in a crisis were the main reasons why fewer are preferred. However, there was no consensus on which zones should be removed or combined.”

² “Beach and marine” refers to the area that is affected by “strong and unusual currents and dangerous surges at the shore”, as per the national messaging for a Beach and Marine Tsunami Activity Emergency Mobile Alert (EMA).

14. Maps are typically most effective when there is the least possible information presented for people to interpret and remember. The reduced number of zones means it is easier to visualise the threat on a map, easier for people to interpret, particularly those with learning difficulties, and is less overwhelming for all users.
15. NEMA's most recent preparedness survey highlighted decreased public awareness of the long or strong, get gone campaign, which aims to bring greater attention to the life safety risk caused by local source tsunami. Strongly linking a single tsunami evacuation zone to long or strong, get gone messaging (e.g., local source tsunami) provides an opportunity for stronger public education on what to do during tsunami events where there will be no official warning.
16. This approach aligns with the tsunami blue line initiative³, in which blue lines are painted on roads to indicate where people need to evacuate beyond, during a long or strong earthquake. The presence of tsunami blue lines in Aotearoa New Zealand is increasing and can be used to enhance public awareness of the single, blue tsunami evacuation zone.
17. Little research exists that indicates the most effective colour choice for public facing tsunami evacuation zones. In the absence of evidence to underpin a colour selection, NEMA has chosen blue as the colour for the new single tsunami evacuation zone approach. This decision is based on alignment with recent approaches adopted by CDEM Groups, the ability to make these new maps distinct from previous three zone maps and the evidence-base that exists for the way that the public associate the colour blue with an inundation threat. It is critical that the shade of blue used is distinctive on maps and clearly contrasts with any water bodies present in the map extent.

Potential risks

18. This new approach will be a significant change for some communities. It will also require significant time and resource investment from some CDEM Groups and from NEMA, particularly in the public education space. However, based on the findings from GNS Science's research, particularly the preference of fewer tsunami evacuation zones, it is advantageous to move to this new approach of a single evacuation zone for public facing maps.
19. As moving to the one zone approach removes other evacuation zones from the public domain, there is a risk of losing some public awareness of other types of tsunami events and evacuation areas, e.g., beach and marine threats. This risk can be mitigated by strong public education and engagement with communities in the current red and orange zones. In addition, changes could be made to local level warning messaging as needed to communicate beach and marine threats more clearly.
20. Moving to one tsunami evacuation zone could lead to over evacuation and possible loss of public trust in future events. According to GNS Science, the risk of reducing trust through over-evacuation from tsunami in New Zealand appears low, however, this is not a well-researched topic. The risk of over evacuation is reduced to some degree by linking the single evacuation zone to local source events (i.e., long or strong earthquakes) where the intention is for everyone to evacuate immediately as there is no time to fully assess the size of the tsunami.

³ NEMA is currently drafting national guidance for tsunami blue lines.