

SECTION 08 – NATURAL HAZARDS AND PLANNING MAPS

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INTRODUCTION

The Western Bay of Plenty District is susceptible to a number of natural hazards that have the potential to adversely affect people, property, infrastructure and the environment. The District Plan Maps identify flooding, coastal inundation, coastal erosion and land instability. Section 8 – Natural Hazards contains the rules for subdivision and development within these areas to manage risk.

The matters in Section 8 of the District Plan are considered qualifying matters, including existing qualifying matters under s77K of the RMA, and the new layers as proposed qualifying matters under section 77J of the RMA. The rules for these matters are set out in Section 8 and propose to modify the relevant building height or density requirements to the extent necessary to accommodate the qualifying matter(s).

Within floodable and coastal inundation areas, buildings are required to meet minimum floor levels and a wider range of activities including earthworks are controlled to manage effects on overland flowpaths and ponding areas. One residential per site is allowed within coastal erosion areas and must be relocatable. Further residential units on a site and subdivision of new titles are not provided for. Within land stability areas, specific foundation design is required.

The District Plan Maps were last updated in 2016 and much of the information is now incomplete or does not take into account the effects of climate change. Since then, Council have been in the process of completing detailed susceptibility mapping and risk assessments for all of the natural hazards across the District including liquefaction to meet the requirements of the RPS. This is a substantial piece of work and is taking into account at least a 100-year timeframe including the effects of climate change such as sea level rise and more extreme rainfall. Most of these new maps have been completed and are publicly available on Council's website.

Plan Change 92 is proposing to update the District Plan Maps for Ōmokoroa and Te Puke to reflect the latest information which is now available in these locations. For Ōmokoroa, this includes replacing the existing flood maps (which do not include the effects of climate change) and introducing new maps for coastal erosion, coastal inundation and liquefaction. For Te Puke, it also involves replacing its existing operative flood maps and introducing new maps for liquefaction. The existing rules of Section 8 will apply with respect to flooding, coastal inundation and erosion and new rules are proposed for liquefaction in the notified Plan Change.

There are two key matters to highlight that follow in this section of the report. First, following notification the Council sought to delete the new proposed liquefaction maps and associated provisions (see Topics 3 and 4 below). Secondly, the flood modelling for Te Puke has been updated and there is a detailed discussion on the implications of the new modelling and the Reporting Team's recommended option in Topic 6 below.

The following maps identify the proposed natural hazard maps for Ōmokoroa and Te Puke as publicly notified:

Figure 1 – Proposed Ōmokoroa Natural Hazards

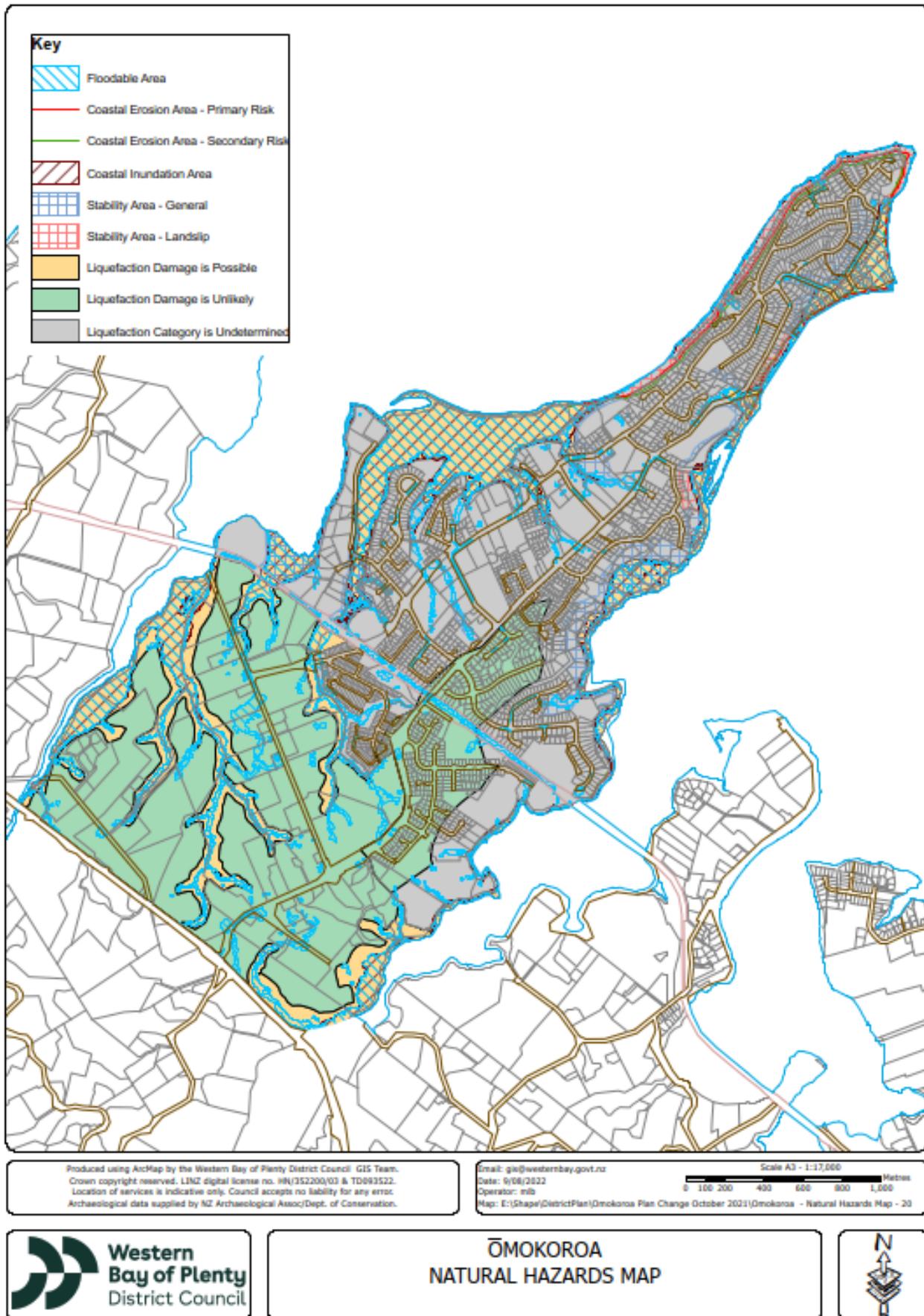
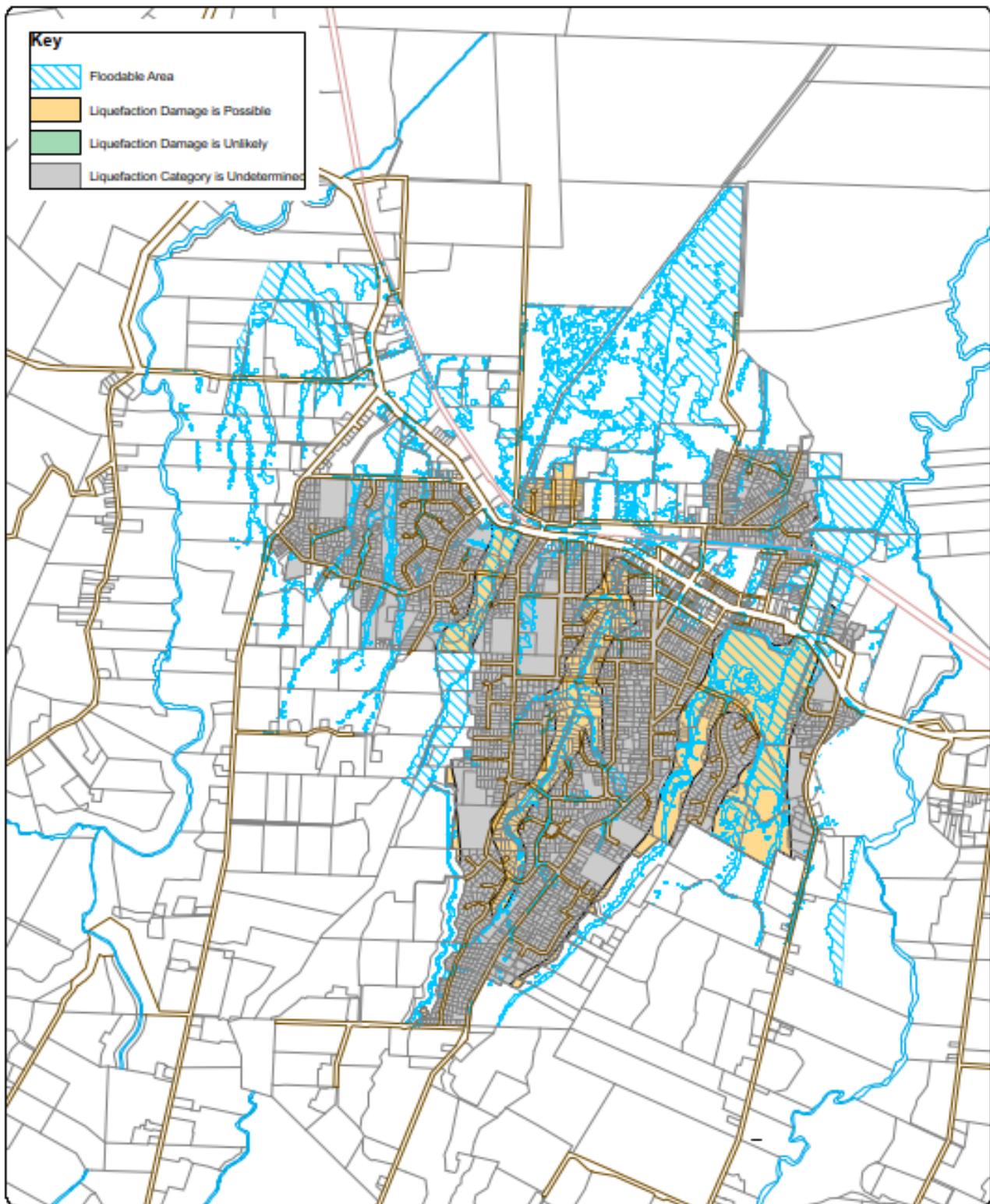


Figure 2 – Proposed Ōmokoroa Natural Hazards



Produced using ArcMap by the Western Bay of Plenty District Council GIS Team.
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Archaeological data supplied by NZ Archaeological Assoc/Dept. of Conservation.

Email: gis@westernbay.govt.nz
Date: 17/09/2022
Operator: nfb
Map: E:\Shape\DistrictPlan\Te Puke Structure Plan and Plan Change\Te Puke - Natural Hazards Map - 20

Scale A3 - 1:17,500
0 100 200 400 600 800 1,000 Meters



TE PUKE NATURAL HAZARDS MAP



TOPIC 1 – LOCATING NATURAL HAZARDS MAPS OUTSIDE OF THE DISTRICT PLAN

BACKGROUND

As explained in the “Introduction” above, Plan Change 92 has proposed to formally include a number of new natural hazard maps into the District Plan for Ōmokoroa and Te Puke.

SUBMISSION POINTS

One submission point was received. No further submissions were received. This submission is summarised as follows:

Kāinga Ora (29.3) oppose the inclusion of new natural hazard overlays within the District Plan saying such overlays are often subject to change once additional investigations and new information come to light. They note that having the overlays located outside the District Plan enables greater flexibility to update and amend the overlays when new information arises without needing a formal ‘Schedule 1’ Plan change process to occur. Their request is to instead hold these maps within the ‘non District Plan layers’ of the ePlan.

OPTIONS

Option 1 – Locate the proposed natural hazard maps within the District Plan.

Option 2 – Shift the proposed natural hazard maps outside of the District Plan (into the ‘non District Plan layers’ of the ePlan) and amend the provisions of the District Plan to reflect this.

DISCUSSION

It is understood that Kainga Ora’s request seeks to follow the Tauranga City Council decision on Plan Change 33 – Flooding from Intense Rainfall. That decision was to not include new flood maps in the Tauranga City Plan but to instead incorporate the maps by way of a definition of a particular flood event mapped and held in a separate GIS viewer. This is intended to allow the City Plan rules to apply within the non-statutory mapped floodable areas. It would also allow the maps to be corrected in response to new information provided by a landowner without the need for a further plan change.

At the time of this report, the decision has been appealed to the Environment Court by three parties, in particular due to concerns relating to the lawfulness of the proposal. In light of the uncertainty as to whether the use of non-statutory flood maps is lawful, it is considered prudent to wait for a decision on these appeals before considering a similar approach.

Western Bay of Plenty District Council has instead proposed to include new natural hazard maps in the District Plan. This is also because the formal process of “incorporation by reference” through a Plan Change may not be well suited to images such as natural hazards maps and may be ultra vires. It would also require that any amendments to the maps would require further Plan Changes to allow the updated information to be contested. Further, a specific requirement exists in Policy NH 7A of the RPS which requires councils to include “hazard susceptibility areas” in their city and district plans for extreme rainfall, including “flooding” which is relevant to Plan Change 92.

The submitter is correct, however, that natural hazards information can be subject to change and that this would be a disadvantage associated with including maps in the District Plan. There are also disadvantages with other options too.

RECOMMENDATION

That Option 1 be accepted

Locate the proposed natural hazard maps within the District Plan (except in response to specific recommendations in the topics to follow).

The following submissions are therefore

ACCEPTED IN PART

Submission	Point Number	Name
29	3	Kainga Ora

SECTION 32AA ANALYSIS

As no changes are proposed, no s32AA evaluation is necessary.

TOPIC 2 – SECTION 8 – NATURAL HAZARDS EXPLANATORY STATEMENT

BACKGROUND

The explanatory statement for Section 8 – Natural Hazards was most recently amended in 2016 when Council last updated the natural hazards maps. This statement is now out-of-date because it does not reflect the significant amount of new information that Council holds about natural hazards (including the effects of climate change) that sits outside the District Plan. It is important to highlight the availability of this information as it is more up-to-date and now covers more locations within the District. It can also be considered in building consents as well as some resource consents e.g., for discretionary or non-complying activities.

SUBMISSION POINTS

Four submission points were received. Two further submission points were received. The submission points on this topic are summarised as follows:

New Zealand Housing Foundation (32.5) support the explanatory statement.

Classic Group (26.5) and Urban Taskforce for Tauranga (39.4) believe that the current wording is unclear with respect to whether natural hazard maps within the Non District plan layers of the ePlan form part of the District Plan or not, and request an amendment as follows:

“In the meantime, all completed maps are publicly available on the non-district plan layers of this ePlan but do not form part of the District Plan.”

Western Bay of Plenty District Council (15.2) seek the removal of references to the District Plan Maps showing liquefaction in Ōmokoroa and Te Puke as these liquefaction maps should be removed. Instead, they recommended that the explanatory statement is reworded to explain that “The District Plan Maps do not currently show liquefaction. However, using the maps that are available to Council, liquefaction risk will be addressed using Section 106 of the RMA (for subdivision) and the Building Act 2004.”

This is supported by Bay of Plenty Regional Council (FS 67.39) and Kāinga Ora (FS 70.1).

OPTIONS

Option 1 – Retain the proposed explanatory statement as notified.

Option 2 – Amend the explanatory statement to clarify that the natural hazards maps shown in the Non District plan layers of the ePlan do not form part of the District Plan.

Option 3 – Amend the explanatory statement in response to recommendations in other topics to delete the proposed liquefaction maps and provisions and proposed Te Puke flood maps.

DISCUSSION

The “Non District Plan” layers of the ePlan provide plan users with access to additional information which is often relevant to consider for subdivision and land use. This includes contours and the location of archaeological features, multiple-owned Māori land, three waters infrastructure and natural hazards. While the use of the “Non District Plan” layer is intended to show plan users that the information (including any additional natural hazard maps) does not form part of the District Plan, it is accepted the further clarification sought by the submitter would make it more obvious.

In Topics 3 and 4 below, the proposed liquefaction maps and provisions are recommended to be removed from the proposed Plan Change, with the maps to instead be held outside of the District Plan and used by Council to address liquefaction risk through the RMA and Building Act 2004. As such, it is also recommended to amend the explanatory statement to reflect this.

RECOMMENDATION

That Options 2 and 3 be accepted.

Amend the explanatory statement to clarify that the natural hazards maps shown in the Non District plan layers of the ePlan do not form part of the District Plan.

Amend the explanatory statement in response to recommendations in other topics to delete the proposed liquefaction maps and provisions and proposed Te Puke flood maps.

This would require changes to the explanatory statement as follows:

Introduction

The Western Bay of Plenty District is subject to a range of actual or potential natural hazards which will or may adversely affect human life, property, infrastructure or other aspects of the environment. These natural hazards include coastal erosion, coastal inundation, flooding from extreme rainfall, land instability, earthquake, liquefaction, tsunami and volcanic eruption.

This section imposes controls on subdivision and land use to manage natural hazard risk in accordance with Council’s statutory responsibilities. In many cases, proposed activities can proceed in locations which are susceptible to natural hazards subject to appropriate mitigation measures. For example, relocatable buildings in coastal erosion areas, minimum floor levels in coastal inundation and floodable areas and specific foundation design in land instability and liquefaction areas. However, where mitigation is not feasible, avoidance will be required.

This section also recognises that in situations where the District Plan Maps may not be accurate it would be unreasonable to impose restrictions on subdivision and land use. Rules within this section allow evidence to be provided to Council to demonstrate that land is not susceptible to natural hazards. Such evidence is generally used to avoid unnecessary conditions on resource consents but in some instances can be used to show that an activity is permitted.

Natural Hazard Maps

It is important to note that the District Plan Maps do not identify all of the natural hazards that may affect land in the District. The District Plan Maps currently only identify coastal erosion, coastal inundation, flooding, and land instability ~~and liquefaction~~ because these are the natural hazards managed through this section's rules.

Council is in the process of completing susceptibility mapping and risk assessment for all natural hazards across the whole of the District to meet the requirements of the RPS. This work is taking into account at least a 100-year timeframe including the effects of climate change such as sea level rise and more extreme rainfall and will be used to update the District Plan in due course. In the meantime, all completed maps ~~(including coastal erosion, coastal inundation, flooding, liquefaction and tsunami maps that do not form part of the District Plan)~~ are publicly available on the Non District Plan Layers of this ePlan. This information should be used to fully understand what natural hazards are identified within an area.

All technical reports associated with the natural hazard maps held by Council are available on Council's website.

Coastal Erosion

Coastal erosion is the loss of land suddenly or over time due to coastal processes such as waves and tidal currents. The District Plan Maps identify coastal erosion areas at Waihi Beach, Pukehina and Ōmokoroa. These areas are divided into primary risk and secondary risk showing the possible extent of coastal erosion in the years 2065 and 2115 (for Waihi Beach and Pukehina) and in the years 2080 and 2130 (for Ōmokoroa). These maps take into account the future effects of sea level rise. There is also a Coastal Erosion Area – Rural shown on the District Plan Maps in rural zoned areas adjoining the open coastline e.g. Matakana Island, Maketu and east of Pukehina.

Coastal Inundation

Coastal inundation is flooding from the sea from a storm event. The District Plan Maps identify coastal inundation areas at Waihi Beach, Pukehina and Ōmokoroa. For Waihi Beach and Pukehina, these are based on a 1% AEP (1-in-100-year) event happening in the year 2115 including the future effects of sea level rise. For Ōmokoroa, these are based on a 1% AEP (1-in- 100-year) event happening in the year 2130 including the future effects of sea level rise.

Flooding

Heavy rain is a common feature of the Bay of Plenty Region. Low-lying areas, especially those in proximity to watercourses are at risk from inundation, scour and sedimentation. The District Plan Maps identify floodable areas within a number of urban areas including parts of Waihi Beach, Katikati, Ōmokoroa, other settlements along the Tauranga Harbour, Te Puke, Paengaroa, Maketu, Little Waihi and Pukehina. These urban flood maps are generally based on a 2% AEP (1-in-50-year) event happening in the current day i.e. no climate change. Except, for Ōmokoroa ~~and Te Puke~~, these are based on a 1% AEP (1-in-100-year) event happening in the year 2130 including the future effects of climate change (sea level rise and heavier rainfall). The District Plan Maps also identify floodable areas in many rural locations.

Land Instability

Land instability is the potential for land to slip when saturated from rainfall. The main area of known land instability is in the Minden. This area and other potentially unstable areas (including within Tanners Point, Ōmokoroa and Maketu) have been identified on the District Plan Maps.

Liquefaction

Liquefaction can occur when some saturated soils (typically silts and sands) lose strength and stiffness (temporarily behaving as a liquid rather than a solid) in response to earthquake shaking. The District Plan Maps do not currently show liquefaction. However, using the maps that are available to Council and the public, liquefaction risk will be addressed using Section 106 of the RMA (for subdivision) and the Building Act 2004.

~~The District Plan Maps currently only identify liquefaction within Ōmokoroa and Te Puke. These maps generally show that "Liquefaction Damage is Possible" in lower lying areas, that "Liquefaction Damage is Unlikely" in Ōmokoroa's elevated areas and that the "Liquefaction Category is Undetermined" in Te Puke's elevated areas. "Liquefaction Damage is Possible" means a probability of more than 15 percent that liquefaction-induced ground damage will be minor to moderate in a 0.2% AEP (1-in-500-year) earthquake shaking event. "Liquefaction Damage is Unlikely" means a probability of more than 85 percent that liquefaction-induced ground damage will be none to minor in a 0.2% AEP (1-in-500-year) earthquake shaking event. The study took into account the effects of sea level rise in the lower lying areas. "Liquefaction Category is Undetermined" means there is not enough information to determine the appropriate category with the required level of confidence."~~

Earthquake, Tsunami and Volcanic Eruption

The District adjoins the Taupo Volcanic Zone and is therefore considered to be susceptible to earthquakes and volcanic eruptions originating from outside the District. The District is also susceptible to tsunami. These natural hazards are not shown on the District Plan Maps because there are limitations in terms of addressing these through the District Plan rules. Notwithstanding these limitations, much is achievable in terms of public education and preparedness through other methods such as emergency management plans.

The following submissions are therefore

ACCEPTED

Submission	Point Number	Name
15	2	Western Bay of Plenty District Council
26	5	Classic Group
32	5	New Zealand Housing Foundation
39	4	Urban Task Force
FS 67	39	Bay of Plenty Regional Council
FS 70	1	Kāinga Ora

ACCEPTED IN PART

Submission	Point Number	Name
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32	5	New Zealand Housing Foundation
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SECTION 32AA ANALYSIS

The changes proposed are either minor or reflect other recommendations which have already been subject to section 32AA analysis elsewhere in this Section 42A Report. Accordingly, no section 32AA analysis is required.

TOPIC 3 – LIQUEFACTION MAPS – ŌMOKOROA AND TE PUKE

BACKGROUND

As part of Plan Change 92, new maps were proposed for both Ōmokoroa and Te Puke, with a new rule framework requiring consent for activities within certain areas depending on the liquefaction classification. The liquefaction provisions are discussed in Topic 4 below. This Topic relates to the proposed maps.

Ōmokoroa Stage 3

Liquefaction was investigated specifically for the Ōmokoroa Stage 3 Structure Plan Area for the natural hazards risk assessment in the report “Ōmokoroa Stage 3 Structure Plan – Supplementary Level B Liquefaction Assessment” (Tonkin + Taylor – May 2020).

This was completed in accordance with the Ministry for the Environment and Ministry of Business, Innovation and Employment “Planning and Engineering Guidance for Potentially Liquefaction Prone Land” (2017). This was done to a Level B (calibrated desktop) level of detail. This included consideration of data collected from geotechnical investigations and groundwater monitoring undertaken within the study area boundary.

The results generally show that “liquefaction damage is unlikely” on the elevated terraces and that “liquefaction damage is possible” within the lower-lying areas where development is not provided for. The study took into account the effects of sea level rise in the lower-lying areas.

Remainder of Ōmokoroa and for Te Puke

Liquefaction was investigated for the remainder of Ōmokoroa and for Te Puke as part of a “Bay of Plenty Liquefaction Vulnerability Assessment” (Tonkin + Taylor – April 2021).

This was completed in accordance with the Ministry for the Environment and Ministry of Business, Innovation and Employment “Planning and Engineering Guidance for Potentially Liquefaction Prone Land” (2017). This was done to a Level A (basic desktop assessment) level of detail. This did not include geotechnical investigations or groundwater monitoring within the study areas.

The results show that “liquefaction damage is possible” within the lower-lying areas and that the “liquefaction category is undetermined” in more elevated areas. The study took into account the effects of sea level rise in the lower-lying areas. Further investigation would be required to determine areas where “liquefaction damage is unlikely”.

SUBMISSION POINTS

Two submission points were received. Two further submission points were received. The submission points on this topic are summarised as follows:

Western Bay of Plenty District Council (15.15) requests the deletion of the proposed liquefaction maps (all classifications) from the District Plan Maps for the reasons below.

The proposed liquefaction maps are based on a Level B (calibrated desktop) level of assessment for Ōmokoroa Stage 3. However, for the remainder of Ōmokoroa and for Te Puke they are based on a Level A (basic desktop) level of assessment. As a result, there are significant areas of land shown as "Liquefaction Category is Undetermined" in the remainder of Ōmokoroa and in Te Puke. The proposed liquefaction maps (all classifications) and associated provisions should be removed from the District Plan for Ōmokoroa and Te Puke to allow Council to investigate options for improving the level of accuracy of these maps for a possible future Plan Change. In the meantime, Council will continue to hold these maps outside of the District Plan and use Section 106 of the RMA and the Building Act 2004 to manage liquefaction risk through resource consents (for subdivision) and building consents respectively.

Bay of Plenty Regional Council (25.25) also requests the deletion of the liquefaction maps because the information base is mostly at Level A (regional) scale. They do not consider liquefaction to be a significant risk for Ōmokoroa or Te Puke and consider that any risk can be appropriately managed in these areas by methods outside of the District Plan, including assessment at subdivision through s106 of the RMA.

Kainga Ora (FS 70.7 and 70.8) supports both of the above submissions.

OPTIONS

Option 1 – Retain proposed liquefaction maps for Ōmokoroa and Te Puke as notified.

Option 2 – Delete the proposed liquefaction maps for Ōmokoroa and Te Puke.

DISCUSSION

Prior to the RMA Amendment Act requiring notification of an IPI for Ōmokoroa and Te Puke, Council were already preparing a similar Plan Change for Ōmokoroa's future growth. The liquefaction maps (Level B) for Ōmokoroa Stage 3 and associated provisions were created for this purpose. This was to ensure low natural hazard risk would be achieved under the Bay of Plenty Regional Policy Statement. The provisions were also intended to provide landowners with more specific requirements and guidance than otherwise apparent in national legislation, as done for all other hazards in the District.

When Plan Change 92 was notified, the liquefaction maps (Level A) for the remainder of Ōmokoroa and Te Puke were also added and the same provisions applied. These less accurate maps show the majority of land as "Liquefaction Damage is Possible" or "Liquefaction Category is Undetermined". As a result, they would trigger resource consent for most residential units in Ōmokoroa and all residential units in Te Puke. It would also require each landowner to have a geotechnical assessment prepared. This would impose a cost on landowners that is not considered reasonable.

It is now considered that liquefaction risk in Ōmokoroa and Te Puke can be managed without necessarily needing specific maps and rules in the District Plan. Section 106 of the RMA allows councils to decline or impose conditions on subdivision consents if there is a significant risk from

natural hazards. Recent changes to the Building Code also require that ground subject to liquefaction can no longer be considered “good ground” and foundations for buildings need to be designed to be resilient to liquefaction. The liquefaction maps can be held outside of the District Plan for this purpose.

Council is now in the process of improving the accuracy of the liquefaction maps for Ōmokoroa, Te Puke and other areas in the District using a Level B level of assessment. This is intended to remove areas of “Liquefaction Category is Undetermined” and re-categorise them as “Liquefaction Damage is Possible” and “Liquefaction is Damage Unlikely”. When completed, the updated maps will be published and used by Council when processing subdivision and building consents and may be reconsidered for a future Plan Change. This mapping project is expected to be finished in 2024.

RECOMMENDATION

That Option 2 be accepted

Delete the proposed liquefaction maps for Ōmokoroa and Te Puke.

This requires that the Ōmokoroa and Te Puke Natural Hazards Maps be changed as shown in Attachment 1.

The following submissions are therefore

ACCEPTED

Submission	Point Number	Name
15	15	Western Bay of Plenty District Council
25	35	Bay of Plenty Regional Council
70	7	Kainga Ora
70	8	Kainga Ora

SECTION 32AA ANALYSIS

The following provides a further evaluation of the changes made to the Plan Change / Proposal since the original evaluation under Section 32 of the RMA. The level of detail corresponds to the scale and significance of the changes.

Efficiency & Effectiveness in Achieving the Objectives	Delete the proposed liquefaction maps for Ōmokoroa and Te Puke
Costs Environmental effects Economic effects Social effects Cultural effects	Environmental No environmental costs. Economic No economic costs. The maps will still be available on the “Non District Plan” layer of the ePlan and on Council’s MAPI and Natural Hazards MAPI services. Having this information can help avoid or significantly reduce economic losses that could otherwise be anticipated from a natural disaster. For example,

<p>Including opportunities for:</p> <p>(i) economic growth that are anticipated to be provided or reduced; and</p> <p>(ii) employment that are anticipated to be provided or reduced</p>	<p>costs associated with emergency response and damage to buildings and infrastructure.</p> <p>Social</p> <p>No social costs. The maps will still be available on the “Non District Plan” layer of the ePlan and on Council’s MAPI and Natural Hazards MAPI services. Having this information can help avoid or significantly reduce social costs that could otherwise be anticipated from a natural disaster. For example, loss of life, injury or impacts on social infrastructure.</p> <p>Cultural</p> <p>No cultural costs. The maps will still be available on the “Non District Plan” layer of the ePlan and on Council’s MAPI and Natural Hazards MAPI services. Having this information can help avoid or significantly reduce cultural costs that could otherwise be anticipated from a natural disaster. For example, loss of cultural buildings.</p>
<p>Benefits</p> <p>Environmental</p> <p>Economic</p> <p>Social</p> <p>Cultural</p> <p>Including opportunities for:</p> <p>(i) economic growth that are anticipated to be provided or reduced; and</p> <p>(ii) employment that are anticipated to be provided or reduced</p>	<p>Environmental</p> <p>No environmental benefits.</p> <p>Economic</p> <p>Beneficial as it removes costs to landowners associated with needing to apply for resource consent for residential units in areas where “Liquefaction Damage is Possible” or the “Liquefaction Category is undetermined”. Also removes the need to pay for a geotechnical assessment for residential units through a land use consent process. However, it is noted that such an assessment still may be required through the subdivision and building consent processes.</p> <p>Social</p> <p>No social benefits.</p> <p>Cultural</p> <p>No cultural benefits.</p>
<p>Quantification</p>	<p>Not practicable to quantify.</p>
<p>Risks of Acting/ Not Acting if there is uncertain or insufficient information about the subject matter</p>	<p>Sufficient and certain information is available.</p>

TOPIC 4 – LIQUEFACTION PROVISIONS – ŌMOKOROA AND TE PUKE

BACKGROUND

In conjunction with proposed liquefaction maps, a new set of planning provisions were proposed to manage liquefaction risk, summarised as follows:

“Liquefaction damage is unlikely”

- Rule 8.3.1 (e) – permitted activity status for all buildings/structures.

“Liquefaction damage is possible” or the “liquefaction category is undetermined”

- Rule 8.3.3 (e) – restricted discretionary activity status for buildings (not including minor structures) subdivision, and lifeline infrastructure.
- Rule 8.5.1.5 – matters of discretion relating to suitable building foundations and sites, setbacks from waterbodies and sloping ground, ground improvement techniques, avoiding lifeline infrastructure in areas susceptible to liquefaction, design of infrastructure to be readily repairable, and managing earthworks.
- Rule 8.6.2 – information requirements requiring a liquefaction assessment to be prepared by suitably qualified geo-professionals using the MfE and MBIE “Planning and Engineering Guidance for Potentially Liquefaction Prone Land” (2017) and in accordance with best practice for earthworks design for construction of buildings roads and other infrastructure.

SUBMISSION POINTS

14 submission points were received. 13 further submission points were received. The submission points on this topic are summarised as follows:

General

Western Bay of Plenty District Council (15.3-15.7) requests the deletion of the proposed liquefaction provisions for the reasons below, and as discussed in Topic 3 above,

The proposed liquefaction maps are based on a Level B (calibrated desktop) level of assessment for Ōmokoroa Stage 3. However, for the remainder of Ōmokoroa and for Te Puke they are based on a Level A (basic desktop) level of assessment at a region-wide scale. As a result, there are significant areas of land shown as “Liquefaction Category is Undetermined” in the remainder of Ōmokoroa and in Te Puke. The proposed liquefaction maps (all classifications) and associated provisions should be removed from the District Plan for Ōmokoroa and Te Puke to allow Council to investigate options for improving the level of accuracy of these maps for a possible future Plan Change. In the meantime, Council will continue to hold these maps outside of the District Plan and use Section 106 of the RMA and the Building Act 2004 to manage liquefaction risk through resource consents (for subdivision) and building consents respectively.

Bay of Plenty Regional Council (FS 67.40-67.44) and Kāinga Ora (FS 70.2-70.4) support this.

In their own submission, Bay of Plenty Regional Council (25.36-39) do not consider liquefaction to be a significant risk for Ōmokoroa or Te Puke and consider that any risk can be appropriately managed in these areas by methods outside of the District Plan, including assessment at subdivision through Section 106 of the RMA.

Kāinga Ora (FS 70.9-70.11) supports this.

In their own submission, Kāinga Ora (29.8) highlight that the proposed approach places the onus of identifying areas subject to liquefaction risk onto the applicants, increasing both the costs and time for residential development within both Te Puke and Ōmokoroa. They request the deletion of the liquefaction rules and for a new framework to be considered once the liquefaction maps and risk assessment are finalised. Alternatively, should Council retain the rules, they request that a Level B assessment for the maps be completed to remove the “Liquefaction Category is Undetermined” overlay.

Liquefaction damage is “unlikely”

Peter Musk (14.2) says that buildings and structures should not be permitted where liquefaction damage is unlikely.

Liquefaction damage is possible” or the “liquefaction category is undetermined.”

Fire and Emergency New Zealand (18.4) support the restricted discretionary activities in Rule 8.3.3(e) to the extent that it seeks to manage liquefaction and note this will support in guiding new development to appropriate locations and safeguard well-functioning and resilient communities.

The North Twelve Limited Partnership (47.1-47.3) oppose restricted discretionary status for activities where the liquefaction category is undetermined and request permitted status subject to provision of a geotechnical report addressing risk. They support the information requirements for this purpose but for the matters of discretion to be deleted.

Jace Investments and Kiwi Green New Zealand (58.8) request deletion of restricted discretionary status for activities where liquefaction damage is possible or the liquefaction category is undetermined as the main risk has already been considered by Council and further engineering of any identified hazards would be dealt with at time of subdivision and or building consent.

OPTIONS

Option 1 – Retain proposed liquefaction provisions as notified.

Option 2 – Delete the proposed liquefaction provisions.

Option 3 – Amend the proposed liquefaction provisions as requested by submitters.

DISCUSSION

As a consequence of removing the liquefaction maps, and for the reasons given for this in Topic 3 above, there is no need for specific provisions in the District Plan.

The specific submission points on the provisions are noted but not discussed any further due to the recommendation to delete all liquefaction maps and provisions.

RECOMMENDATION

That Option 2 be accepted.

Delete the proposed liquefaction provisions.

The following submissions are therefore:

ACCEPTED

Submission	Point Number	Name
14	2	Peter Musk
15	3, 4, 5, 6, 7	Western Bay of Plenty District Council
25	36, 37, 38, 39	Bay of Plenty Regional Council
29	8	Kāinga Ora
58	18	Jace Investments and Kiwi Green New Zealand
FS 67	40, 41, 42, 43, 44	Bay of Plenty Regional Council
FS 70	1, 2, 3, 4, 9, 10, 11	Kāinga Ora

ACCEPTED IN PART

Submission	Point Number	Name
47	1, 2, 3	The North Twelve Limited Partnership
18	4	Fire and Emergency New Zealand

SECTION 32AA ANALYSIS

The following provides a further evaluation of the changes made to the Plan Change / Proposal since the original evaluation under Section 32 of the RMA. The level of detail corresponds to the scale and significance of the changes.

Efficiency & Effectiveness in Achieving the Objectives	Delete the proposed liquefaction provisions
Costs Environmental effects Economic effects Social effects Cultural effects Including opportunities for: (i) economic growth that are anticipated to be provided or reduced; and (ii) employment that are anticipated to be provided or reduced	Environmental No environmental costs. Economic No economic costs. While the provisions were intended to minimise natural hazard risk for buildings, lifeline infrastructure and health and safety, this risk can still be managed using the RMA and Building Act. Social No social costs. While the provisions were intended to minimise natural hazard risk for buildings, lifeline infrastructure and health and safety, this risk can still be managed using the RMA and Building Act. Cultural No cultural costs. While the provisions were intended to minimise natural hazard risk for buildings, lifeline

	infrastructure and health and safety, this risk can still be managed using the RMA and Building Act.
Benefits Environmental Economic Social Cultural Including opportunities for: (i) economic growth that are anticipated to be provided or reduced; and (ii) employment that are anticipated to be provided or reduced	Environmental No environmental benefits. Economic Beneficial as it removes costs to landowners associated with needing to apply for resource consent for residential units in areas where “Liquefaction Damage is Possible” or the “Liquefaction Category is undetermined”. Also removes the need to pay for a geotechnical assessment for residential units through a land use consent process. However, it is noted that such an assessment still may be required through the subdivision and building consent processes. Social No social benefits. Cultural No cultural benefits.
Quantification	Not practicable to quantify.
Risks of Acting/ Not Acting if there is uncertain or insufficient information about the subject matter	Sufficient and certain information is available.

TOPIC 5 – FLOODING MAPS – ŌMOKOROA

BACKGROUND

The flood modelling for Ōmokoroa identifies the possible extent of flooding in a number of scenarios. The proposed District Plan maps only show the scenario considered most relevant for managing subdivision and land use. This scenario is entitled “100 Year ARI + 2130 CC” within the “Ōmokoroa Stormwater Model – Model Build Update and System Performance Report” (Beca Limited – May 2020).

This scenario identifies the possible extent of flooding that may occur if a 1% Annual Exceedance Probability (AEP) event was to happen in the year 2130. A 1% AEP event is something that only has a 1% chance of occurring in any year. This means it is expected to occur on average once every 100 years, however it could happen at any time. A 1% AEP event has been chosen as it is considered best practice and is also used by the Regional Council. The year 2130 has been selected to meet the requirements of the NZ Coastal Policy Statement (NZCPS) and Regional Policy Statement. The climate change scenario used for the year 2130 is the Intergovernmental Panel on Climate Change’s (IPCC’s) Representative Concentration Pathway (RCP) 8.5. This is a conservative

scenario which assumes that greenhouse gas emissions continue to grow without effective climate change mitigation policies. It equates to 1.25m of sea level rise in the year 2130.

Flooding is identified within the lower-lying areas of Ōmokoroa adjoining the Tauranga Harbour including within the area of Ōmokoroa Stage 3 proposed as a natural open space zone in which residential development is to be avoided. There are also a number of areas where overland flowpaths or localised ponding areas have been identified.

SUBMISSION POINTS

Three submission points were received. No further submissions were received. The submission points on this topic are summarised as follows:

Bay of Plenty Regional Council (25.32) supports the flood planning maps for Ōmokoroa based on the 1% AEP and climate change and seek that the maps be retained as notified.

Pete Linde (19.5) requests the removal of isolated ponding and flood hazard areas shown on the elevated portion of the site at 60 Prole Road as they are not accurate or necessary and rainwater will drain to eastern gully that travels along east of the site.

Mike and Sandra Smith (50.8) request the deletion of small areas of flooding 467B and E from Ōmokoroa Road as these are half-way up a hill and may be a programming or mapping error.

Both submitters have provided maps identifying these areas in their submissions.

OPTIONS

Option 1 – Retain proposed flooding maps for Ōmokoroa as notified.

Option 2 – Delete the proposed flooding maps from 60 Prole Road and 467B & E Ōmokoroa Road.

DISCUSSION

Council's stormwater engineers have reviewed the requests and have recommended that the floodable areas on these properties be removed.

RECOMMENDATION

That Option 2 be accepted

Delete the proposed flooding maps from 60 Prole Road and 467B & E Ōmokoroa Road.

This requires that the Ōmokoroa Natural Hazards Map be changed as shown in Attachment 1.

The following submissions are therefore

ACCEPTED

Submission	Point Number	Name
50	8	Mike and Sandra Smith
19	5	Pete Linde

ACCEPTED IN PART

Submission	Point Number	Name
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25	32	Bay of Plenty Regional Council
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SECTION 32AA ANALYSIS

The changes proposed are minor to remove small areas of flooding which are not accurate. Accordingly, no s32AA analysis is required.

TOPIC 6 – FLOODING MAPS – TE PUKE

BACKGROUND

Proposed maps (August 2022)

The current Operative District Plan flood maps for Te Puke were introduced into the District Plan nearly 10 years ago. They are based on a 2% AEP (1-in-50 year) and do not take into account at least 100 years of climate change. Replacing these is necessary to ensure the maps for Te Puke are up-to-date.

Western Bay of Plenty District Council and the Bay of Plenty Regional Council share a joint flood model for Te Puke which was developed by DHI. This model was developed for various reasons including to allow the Regional Council to model effects on its downstream flood protection scheme. It was also used to prepare the proposed Plan Change 92 District Plan map for Te Puke.

No changes were proposed to the operative rules in Section 8 relating to the impact of being in a floodable area as shown in the District Plan maps. Notably, Rule 8.3.1.c. provides that a building or structure can be located in a floodable area as a permitted activity where evidence establishes that the building or structure will be located clear of the floodable area (irrespective of the extent of the floodable area shown by the Planning Maps), or where the building and structure will not be affected by the floodable area. Resource consent may be required for other activities (see Rule 8.3.3.c.). These rules apply across the district and there are a number of different flood maps for areas in the district.

The specific flood modelling for this Plan Change identifies the possible extent of flooding in a number of scenarios. The proposed District Plan maps only show the scenario considered most relevant for managing subdivision and land use. This is shown as scenario 10 in the "Te Puke Stormwater Model Report (DHI, 2022).

This scenario identifies the possible extent of flooding that may occur if a 1% Annual Exceedance Probability (AEP) event was to happen in the year 2130. A 1% AEP event is something that only has a 1% chance of occurring in any year. This means it is expected to occur on average once every 100 years, however it could happen at any time. A 1% AEP event has been chosen as it is considered best practice and is also used by the Regional Council. The climate change scenario used for the year 2130 is the Intergovernmental Panel on Climate Change's (IPCC's) Representative Concentration Pathway (RCP) 8.5. This is a conservative scenario which assumes that greenhouse gas emissions continue to growth without effective climate change mitigation policies.

The results identified flooding within Te Puke most commonly in the form of overland flowpaths in the lower-lying areas such as gullies. There were also some areas where localised ponding areas have been identified.

In response to submissions, Council stormwater engineers undertook site visits from November 2022.

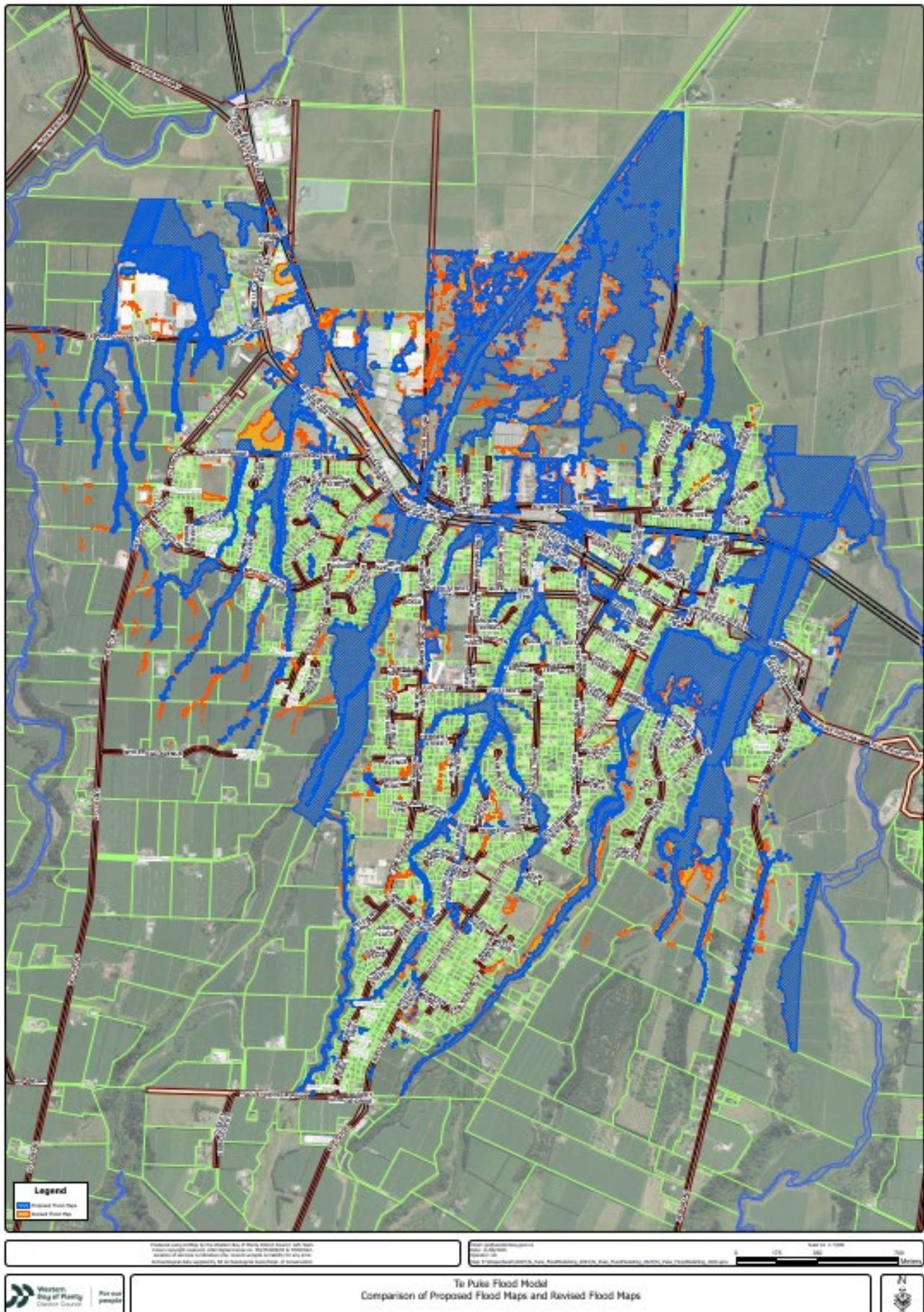
Revised maps (July 2023)

The Regional Council expressed concerns (in December 2022) with the accuracy of the model. Their view was therefore that the proposed maps were not suitable and needed to be reviewed. The Councils have since worked together with DHI and a peer reviewer (Awa Environmental) to improve the flood model and have re-run Scenario 10 described above.

This was important to ensure that the results were accurate and did not identify land which should not be affected. However, it is important to note that it has also resulted in new areas of land being identified as floodable that previously were not (in the operative or proposed Plan Change 92 maps). These maps were completed in July 2023 and have not been seen by submitters or other affected landowners.

To illustrate the extent of the floodable area in Te Puke the following figure shows the comparison between the map in the notified Plan Change 92 (blue hatch lines), and the latest modelling (orange).

Figure 3: Te Puke Flood Model – Comparison of Proposed and Revised Maps



As a result of the new model, the amended floodable area extends in many places to affect landowners who would not have known or anticipated that they could be affected by the natural hazard provisions in Plan Change 92 as notified. These issues are discussed further under the heading "Discussion".

SUBMISSION POINTS

20 submission points were received on the proposed maps (August 2022). Three further submission points were received. The submission points on this topic are summarised as follows:

Proposed flooding maps - general

Bay of Plenty Regional Council (25.32) supports the flood planning maps for Ōmokoroa based on the 1% AEP and climate change and seek that the maps be retained as notified.

Western Bay of Plenty District Council (15.14) request that the proposed flood maps for Te Puke be subject to a further desktop review to ensure their accuracy (for example connecting flowpaths that may currently show as a series of puddles or to remove any flooding which is shown in error). The maps also require site-specific reviews in response to queries from landowners about the accuracy of the maps for their properties.

Bay of Plenty Regional Council (FS 67.46) supports this relief sought accepting there was insufficient time to fully review mapping and considers this a reasonable approach.

Proposed flooding maps - property specific requests

The following submitters request a review and/or the removal of the proposed flood maps for their property with a brief summary of their reasons provided:

David Marshall (7.1) (Washer Road Business Park) requests that the flood maps are aligned with the maps provided to them by the Bay of Plenty Regional Council as these maps show more minor flooding. The submitter suggests that the Regional Council's maps were based on the DHI flood model (the same model also used by Council).

Blaire Reeve (10.1) (139A Boucher Ave) seeks the amendment of the floodable area to reflect the actual topography around their dwelling.

Vortac (12.1) (29 Hookey Drive) believe the property is not floodable because of an easement that exists on the neighbouring property for the conveyance of stormwater.

Bay of Plenty Regional Council (FS 67.47) oppose this point stating that overland flow and flooding occur in the lowest points of the landform such as the gully and that the existence of an easement is irrelevant when considering flood risk to this property.

Frank and Sandra Hodgson (23.1) (15 Lomay Place) highlight that the mapping has not taken into account the development of the section with retaining walls in 2018.

Jacqueline Field (43.1) (12 Queens Palm Road) requests that the flooding situation be reconsidered in light of the flood mitigation and stormwater re-direction that have occurred as part of the development.

Prem Gill (FS 72.1) supports this point above.

Ken and Bronwyn Keyte (44.1) (8A Cannell Farm Drive) ask that the flood boundary be altered to follow the retaining wall along their property and that other small flood areas be removed as the right-of-way slopes to Cannell Farm Drive and is well drained.

Warren Dohnt (48.1, 48.2 and 48.3) (198, 200–208 and 576 Jellicoe Street) identifies a number of reasons for opposing the flood maps for these properties including in relation to topography, being elevated well above the adjoining Ohineangaanga Stream and the existence of on-site stormwater infrastructure.

Paul and Julie Prior (49.10) (10 Lenihan Drive) have recently subdivided this site and have a report from a hydrologist showing minimal flooding compared to what is proposed.

Torrey Hilton (51.1) (17A George Street) queries whether the flood maps are correct as some areas which are not floodable are higher than other areas which are shown to flood and suggests that other areas shown as floodable have no potential to flood.

Maxine Morris (52.1) (12 and 14B Lenihan Drive) notes that the property has not flooded since they started to reside on the property in 2006.

Zealandia Trust (55.1) (59 Moehau Street) oppose the flooding on the basis that there is an overland flowpath from a 600mm concrete stormwater pipe which goes into a 2–3m open drain which varies in depth from 600mm to 800m. They also note a previous letter from Council in 2015 explaining that the dwelling is not at risk to the modelled flood event.

Kirsty Mortensen (57.10) (8 Beatty Ave) explains that stormwater upgrades have occurred outside their property recently and the property no longer has flooding issues.

David Crawford (60.1) (1 Hookey Drive) does not accept climate change and highlights the importance of maintaining drains to avoid flooding.

Dawn Mends (63.1) (34 Oxford Street) explains that stormwater infrastructure upgrades have occurred since a flood event that occurred in 2014.

Ross List (64.1) (83 Jellicoe Street) strongly objects to the maps.

Steve Chalmers (66.1) (10 Tui Street) does not agree with the flood maps as the house sits up above the gully below.

OPTIONS

Option 1 – Adopt the flooding maps for Te Puke as notified.

Option 2 – Adopt the flooding maps for Te Puke with limited changes in response to submissions such as requests for site specific changes and connection of overland flowpaths.

Option 3 – Adopt the revised flood maps for Te Puke (July 2023).

Option 4 – Delete the proposed flooding maps for Te Puke.

DISCUSSION

Because of the concerns that have been identified with the model that was used to prepare the notified Plan Change 92 maps, the submissions received, and the number of new properties affected by the new floodable area in the revised maps (July 2023), the Reporting Team does not support the notified or updated maps for Te Puke being included through Plan Change 92 (Options 1 and 3 above).

The latest flood maps for Te Puke identify that the floodable area affects a number of additional landowners who are unlikely to have anticipated the need to make a submission on the Plan Change. The amended floodable area extends in many places to affect landowners who are unlikely to have known or anticipated that they could be affected by the natural hazard provisions

in Plan Change 92 as notified. The option of seeking to implement the updated map through the plan change process is therefore considered outside the scope of the Plan Change.

The Reporting Team has identified that many property owners in Te Puke could be affected by the updated floodable area map.

Council's own submission (September 2022) had anticipated that there would be a need to improve the appearance of the proposed flood maps as they did not clearly depict some overland flowpaths and there were some other minor errors to be corrected (to remove flooding). However, this submission point did not intend to cover the possibility of the model being improved and new maps replacing the proposed maps.

The Reporting Team does not therefore support the inclusion of new flood maps for Te Puke through this Plan Change process. The Council will undertake further work and consultation on the proposed maps through the Te Puke Spatial Plan process that is already underway.

If the operative flood maps for Te Puke continue to apply, this position will be no different to what is occurring currently. While property owners could potentially proceed to build in areas with known hazards (outside the operative flood maps but identified in Council GIS maps and non-statutory flood maps) without the requirement for a resource consent triggered by the flood risk, there are other tools available to manage hazard risk. Where a discretionary or non-complying resource consent is required under another rule in the plan (or where a matter of control or discretion allows such effects to be considered for a controlled or restricted discretionary activity), flood hazard risk on the property could still be considered at the resource consent stage.

Identification and management of the natural hazard is also a matter that can be addressed through any building consent process (where section 71 of the Building Act applies), and as part of subdivision consents where section 106 of the RMA applies.

There is considered to be scope for the option of deletion of the proposed Te Puke flood maps within the submissions of Ross List (64.1) and Kainga Ora (29.3), or within the power the Panel has under clause 99(2) of Schedule 1 to the RMA to make a recommendation outside the scope of submissions but on the IPI.

RECOMMENDATION

Because of the issues of scope discussed above and the further work and engagement to be undertaken by Council, the Reporting Team recommends that Option 4 – Delete the proposed flooding maps for Te Puke is the only suitable option at this time.

This requires that the Te Puke Natural Hazards Map be changed as shown in Attachment 1.

The following submissions are therefore

ACCEPTED

Submission	Point Number	Name
10	1	Blair Reeve
23	1	Frank Hodgson
44	1	Ken and Raewyn Keyte

63	1	Dawn Mends
66	1	Steve Chalmers
7	1	David Marshall
12	1	Vortac New Zealand Limited
43	1	Jac Field
48	1, 2, 3	Warren Dohnt
49	1	Paul and Julie Prior
51	1	Torrey Hilton
52	1	Maxine Morris
55	1	Zealandia Trust
57	1	Kirsty Mortensen
60	1	David Crawford
64	1	Ross List
FS 72	1	Prem Gill

REJECTED

Submission	Point Number	Name
25	32	Bay of Plenty Regional Council
15	14	Western Bay of Plenty District Council
FS 67	46, 47	Bay of Plenty Regional Council

SECTION 32AA ANALYSIS

The following provides a further evaluation of the changes made to the Plan Change / Proposal since the original evaluation under Section 32 of the RMA. The level of detail corresponds to the scale and significance of the changes.

Efficiency & Effectiveness in Achieving the Objectives	Delete the proposed flooding maps for Te Puke
Costs Environmental effects Economic effects Social effects Cultural effects Including opportunities for:	Environmental The risk of environmental effects arising from flooding will continue to be addressed through the resource consent, subdivision and Building Act processes as applicable in a manner consistent with the status quo. Economic No economic costs. The planning status quo (operative flood maps and rules) will apply and the latest flood maps will still be available as non-statutory maps. Having this information can help avoid or significantly reduce economic costs that could otherwise be anticipated from natural disaster.

<p>(i) economic growth that are anticipated to be provided or reduced; and</p> <p>(ii) employment that are anticipated to be provided or reduced</p>	<p>Social</p> <p>No social costs. The planning status quo (operative flood maps and rules) will apply and the latest flood maps will still be available as non-statutory maps.</p> <p>Cultural</p> <p>No cultural costs. The planning status quo (operative flood maps and rules) will apply and the latest flood maps will still be available as non-statutory maps.</p>
<p>Benefits</p> <p>Environmental</p> <p>Economic</p> <p>Social</p> <p>Cultural</p> <p>Including opportunities for:</p> <p>(i) economic growth that are anticipated to be provided or reduced; and</p> <p>(ii) employment that are anticipated to be provided or reduced</p>	<p>Environmental</p> <p>No environmental benefits.</p> <p>Economic</p> <p>Potential economic benefits through landowners being able to develop areas identified in the non-statutory maps but subject to Building Act considerations such as floor levels.</p> <p>Social</p> <p>Potential economic benefits through landowners being able to develop areas identified in the non-statutory maps but subject to Building Act considerations such as floor levels.</p> <p>Cultural</p> <p>No cultural benefits.</p>
<p>Quantification</p>	<p>Not practicable to quantify.</p>
<p>Risks of Acting/ Not Acting if there is uncertain or insufficient information about the subject matter</p>	<p>Sufficient and certain information is available.</p>

TOPIC 7 – SECTION 8 – MATTERS OF DISCRETION FOR SAFE EVACUATION ROUTES

BACKGROUND

There are no existing provisions that require subdivision and development to be designed to provide for evacuation routes in the case of flooding.

OPTIONS

Option 1 – No changes to the matters of discretion for floodable areas in Rule 8.5.1.3.

Option 2 – Amend Rule 8.5.1.3 by adding a new matter of discretion assessing whether safe evacuation routes are provided to ensure that a low level of risk to life can be achieved in the design flood event.

SUBMISSION POINTS

One submission point was received. No further submissions were received. The submission point on this topic is summarised as follows:

Bay of Plenty Regional Council (25.40 – 25.41) highlight that evacuation can become difficult for children and the elderly when flood depths are greater than 500mm and seek that developments should provide for safe evacuation routes to ensure that a low level of risk to life can be achieved in the design flood event. They request that the following matter of discretion be added to Rule 8.5.1.3 in relation to floodable areas:

“The development shall provide a safe evacuation route to ensure a low level of risk to life in the design event. The threshold for risk to life for the purpose of providing safe evacuation is a flood depth >500mm.”

DISCUSSION

Council staff have met with Bay of Plenty Regional Council to discuss this point and it has been agreed that the requested matter of discretion is not necessary for Ōmokoroa and Te Puke. For clarification, this matter of discretion was intended to apply to areas with flood depths of greater than 500mm and moving at a velocity of more than 2 metres per second. Ōmokoroa is not identified as having any such floodable areas, and while Te Puke does, none of these are where development is expected to occur. The need to provide safe evacuation routes is nevertheless important and the introduction of matters of discretion to address this could be reinvestigated in the future if flooding information does identify areas where there is significant risk.

RECOMMENDATION

That Option 1 be accepted.

No changes to the matters of discretion for floodable areas in Rule 8.5.1.3.

The following submissions are therefore:

REJECTED

Submission	Point Number	Name
25	40, 41	Bay of Plenty Regional Council

SECTION 32AA ANALYSIS

As no changes are proposed, no section 32AA evaluation is necessary.

TOPIC 8 – COASTAL INUNDATION MAPS – ŌMOKOROA

BACKGROUND

The coastal inundation modelling for Ōmokoroa was done as part of a wider study for the Tauranga Harbour (“Tauranga Harbour Inundation Modelling” NIWA – June 2019). The modelling identifies the possible extent of coastal inundation in a number of scenarios. The proposed District Plan maps for Ōmokoroa only show the scenario that Council consider most relevant for managing subdivision and land use. This is further explained below and named scenario 14 in the NIWA report.

This scenario identifies the possible extent of coastal inundation that may occur if a 1% Annual Exceedance Probability (AEP) event was to happen in the year 2130. A 1% AEP event is something that only has a 1% chance of occurring in any year. A 1% AEP event has been chosen as it is considered best practice and is also used by the Regional Council. The year 2130 has been selected to meet the requirements of the NZ Coastal Policy Statement (NZCPS) and Regional Policy Statement. The climate change scenario used for the year 2130 is the Intergovernmental Panel on Climate Change’s (IPCC’s) Representative Concentration Pathway (RCP) 8.5. This is a conservative scenario which assumes that greenhouse gas emissions continue to grow without effective climate change mitigation policies. It equates to 1.25m of sea level rise in the year 2130.

Coastal inundation is identified within the lower-lying areas of Ōmokoroa including within the area of Ōmokoroa Stage 3 proposed as a natural open space zone within which residential development is to be avoided.

SUBMISSION POINTS

Two submission points were received. The submission points on this topic are summarised as follows:

Bay of Plenty Regional Council (25.33) supports the coastal inundation planning maps for Ōmokoroa based on the 1% AEP and climate change to 2130 at the RCP 8.5 scenario and seek that the maps be retained as notified.

New Zealand Housing Foundation (32.3) request that the coastal inundation layer identified on 75 Kayelene Place (Lot 2 DP 557551) and Pip Way (Lot 1000 DP 531604) be updated as the layer appears to have not accounted for site characteristics.

OPTIONS

Option 1 – Retain proposed coastal inundation maps for Ōmokoroa as notified.

Option 2 – Amend the proposed coastal inundation maps for 75 Kayelene Place (Lot 2 DP 557551) and Pip Way (Lot 1000 DP 531604) in response to site characteristics.

DISCUSSION

Council’s stormwater engineers have reviewed the request via desktop study and have recommended that the coastal inundation area on this property be retained.

RECOMMENDATION

That Option 1 be accepted

Retain proposed coastal inundation maps for Ōmokoroa as notified.

The following submissions are therefore

ACCEPTED

Submission	Point Number	Name
25	33	Bay of Plenty Regional Council

REJECTED

Submission	Point Number	Name
32	3	New Zealand Housing Foundation

SECTION 32AA ANALYSIS

As no changes are proposed, no s32AA evaluation is necessary.

TOPIC 9 – COASTAL EROSION MAPS – ŌMOKOROA**BACKGROUND**

Coastal erosion was investigated for Ōmokoroa as part of a wider study for the Tauranga Harbour (“Tauranga Harbour Coastal Hazards Study” Tonkin + Taylor – July 2019). Only those parts of Ōmokoroa considered to be susceptible to coastal erosion were investigated in detail and mapped. The modelling identifies the possible extent of coastal erosion in a number of scenarios. The proposed District Plan Maps for Ōmokoroa only show the scenarios that Council consider most relevant for managing subdivision and land use. These are explained further below.

The proposed maps identify the possible extent of coastal erosion by the years 2080 and 2130 (shown as red and green lines respectively). These scenarios estimate a 66% chance of the predicted coastal erosion extents (shown by the lines) being reached or exceeded by those timeframes when taking into account the possible effects of climate change. This includes 0.6m of sea level rise by 2080 (Scenario 4) and 1.25m of sea level rise by 2130 (Scenario 7). These scenarios are shown on page 36 of the Tonkin + Taylor report. The probability of 66% has been selected as this reflects “likely” erosion over these periods. The year 2130 has been selected to meet the requirements of the NZ Coastal Policy Statement (NZCPS) and Regional Policy Statement. The climate change scenario used for the year 2130 is the Intergovernmental Panel on Climate Change’s (IPCC’s) Representative Concentration Pathway (RCP) 8.5. This is a conservative scenario which assumes that greenhouse gas emissions continue to grow without effective climate change mitigation policies. It equates to 1.25m of sea level rise in the year 2130.

Most of the areas potentially susceptible to coastal erosion are identified at the northern part of the Ōmokoroa Peninsula where there are steep slopes / cliffs adjoining and exposed to the

Tauranga Harbour. Ōmokoroa Stage 3 was one of the areas not considered susceptible to coastal erosion.

SUBMISSION POINTS

One submission point was received.

Bay of Plenty Regional Council (25.34) supports the coastal erosion planning maps for Ōmokoroa and seek that the maps be retained as notified.

OPTIONS

Option 1 – Retain proposed coastal erosion maps as notified.

RECOMMENDATION

That Option 1 be accepted

Retain proposed coastal erosion maps as notified.

The following submissions are therefore

ACCEPTED

Submission	Point Number	Name
25	34	Bay of Plenty Regional Council

SECTION 32AA ANALYSIS

As no changes are proposed, no s32AA evaluation is necessary.

TOPIC 10 – REQUEST TO EXCLUDE LAND FROM THE MEDIUM DENSITY RESIDENTIAL ZONE WHICH IS SUBJECT TO NATURAL HAZARDS

BACKGROUND

The Ōmokoroa Medium Density Residential Zone contains land subject to coastal erosion, coastal inundation, flooding, land instability and liquefaction. The Te Puke Medium Density Residential Zone contains land subject to flooding and liquefaction.

SUBMISSION POINTS

One submission point was received.

Peter Musk (14.4) requests that areas subject to hazards, such as liquefaction, coastal erosion, and land stability be excluded from the Medium Density Residential Zone.

OPTIONS

Option 1 – Retain proposed Medium Density Residential Zone as notified.

Option 2 – Remove areas subject to natural hazards from the Medium Density Residential Zone.

DISCUSSION

Section 8 – Natural Hazards recognises that subdivision and development can occur within any zone subject to appropriate mitigation measures. For example, relocatable buildings in coastal erosion areas, minimum floor levels in coastal inundation and floodable areas and specific foundation design in land stability and liquefaction areas. Avoidance will be required where mitigation is not possible. Within Ōmokoroa, many areas subject to natural hazards have already been zoned as natural open space or rural-residential where medium density housing was not deemed appropriate. For any remaining areas of Ōmokoroa, and in Te Puke, the resource consent process will determine whether land should be developed for housing or not, or ensure appropriate mitigation as required.

RECOMMENDATION

That Option 1 be accepted

Retain proposed Medium Density Residential Zones as notified.

The following submissions are therefore

REJECTED

Submission	Point Number	Name
14	4	Peter Musk

SECTION 32AA ANALYSIS

As no changes are proposed, no s32AA evaluation is necessary.

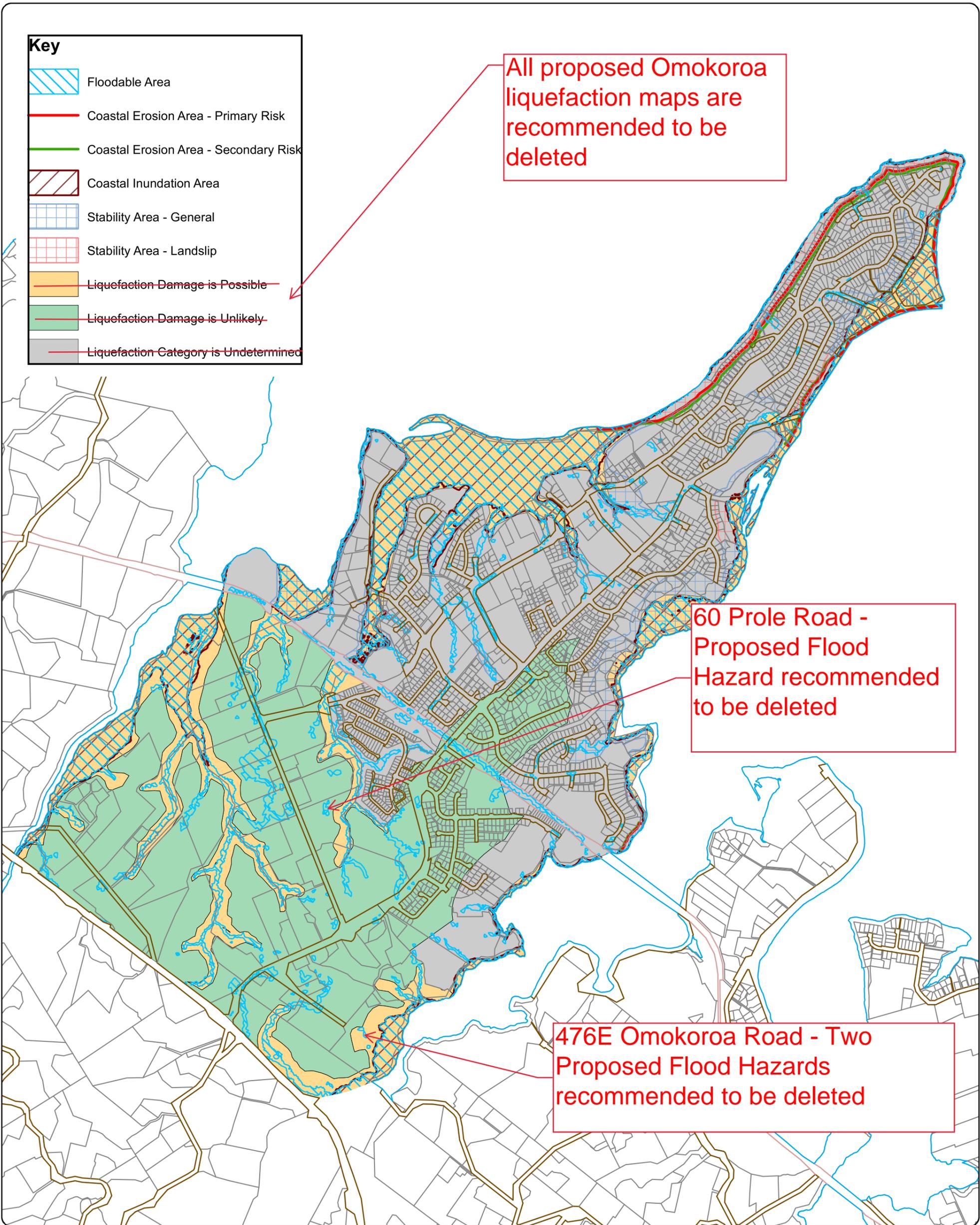
Key

-  Floodable Area
-  Coastal Erosion Area - Primary Risk
-  Coastal Erosion Area - Secondary Risk
-  Coastal Inundation Area
-  Stability Area - General
-  Stability Area - Landslip
-  Liquefaction Damage is Possible
-  Liquefaction Damage is Unlikely
-  Liquefaction Category is Undetermined

All proposed Omokoroa liquefaction maps are recommended to be deleted

60 Prole Road - Proposed Flood Hazard recommended to be deleted

476E Omokoroa Road - Two Proposed Flood Hazards recommended to be deleted



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Email: gis@westernbay.govt.nz
 Date: 9/08/2022
 Operator: mlb
 Map: E:\Shape\DistrictPlan\Omokoroa Plan Change October 2021\Omokoroa - Natural Hazards Map - 20



ŌMOKOROA
NATURAL HAZARDS MAP

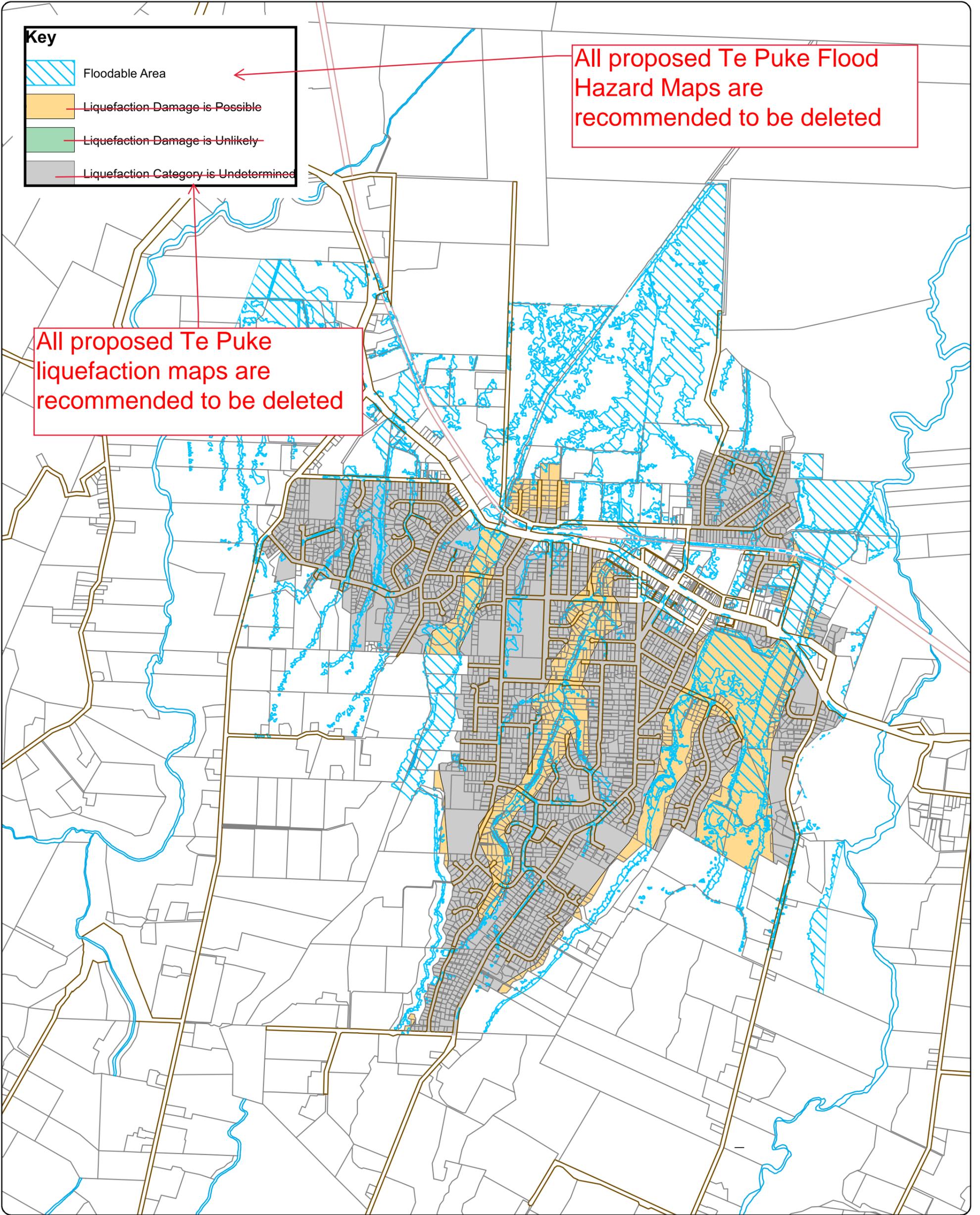


Key

-  Floodable Area
-  Liquefaction Damage is Possible
-  Liquefaction Damage is Unlikely
-  Liquefaction Category is Undetermined

All proposed Te Puke Flood Hazard Maps are recommended to be deleted

All proposed Te Puke liquefaction maps are recommended to be deleted



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Email: gis@westernbay.govt.nz
 Date: 17/08/2022
 Operator: mlb
 Map: E:\Shape\DistrictPlan\Te Puke Structure Plan and Plan Change\Te Puke - Natural Hazards Map - 20

Scale A3 - 1:17,500

0 100 200 400 600 800 1,000 Meters



TE PUKE NATURAL HAZARDS MAP

