

Appendix 2 – Recommended amendments

Provision	Natural Hazards Proposed RPS Change 1 version (Aug 2022)	Natural Hazards RPS Change 1 s42A wording changes
<p>Issue 1</p>	<p>Effects of Risks from <u>natural hazards</u></p> <p>Natural hazard events in the Wellington region have an adverse impact on people and communities, businesses, property and infrastructure.</p>	<p>Effects of Risks from <u>natural hazards</u></p> <p>Natural hazard events in the Wellington region have an adverse impact on people and communities, <u>the natural environment</u>, businesses <u>and the local economy</u>, property and infrastructure.</p>
<p>Issue 2</p>	<p>Human actions can increase risk and consequences from natural hazards</p> <p>People’s actions including mitigation measures and ongoing development in areas at risk from natural hazards can cause, or increase, the risk and consequences from natural hazards.</p>	<p>Retain as notified</p>
<p>Issue 3 </p>	<p>Climate change will increase both the likelihood and consequences magnitude and frequency of <u>from</u> natural hazard events</p> <p>Climate change will increase the <u>likelihood and consequences risks</u> from natural hazard events that already occur within the region, particularly:</p> <p>(a) sea level rise, exacerbating the effects of coastal erosion and inundation, and river, <u>pluvial and stormwater</u> flooding in low lying areas, especially during storm surge <u>tide events</u></p>	<p>Climate change will increase both the likelihood and consequences magnitude and frequency of <u>from</u> natural hazard events</p> <p>Climate change will increase the <u>likelihood and consequences risks</u> from <u>most</u> natural hazard events that already occur within the region, particularly:</p> <p>(a) sea level rise, exacerbating the effects of coastal erosion and inundation, and river, <u>pluvial and stormwater</u> flooding in low lying areas, especially during storm surge <u>tide events</u></p>

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	<p>(b) increased frequency and intensity of storm events, adding to the risk from floods, landslides, severe wind, storm surge, coastal erosion and inundation</p> <p>(c) increased frequency of drought, placing pressure on water resources and increasing the wildfire risk</p>	<p>(b) increased frequency and intensity of storm events, adding to the risk from floods, landslides, severe wind, storm surge, coastal erosion and inundation</p> <p>(c) increased frequency of drought, placing pressure on water resources and increasing the wildfire risk</p>
Objective 19	The risks and consequences to people, communities, their businesses, property, and infrastructure and the environment from natural hazards and the effects of climate change effects are reduced <u>minimised</u> .	The risks and consequences to people, communities, their businesses, property, and infrastructure and the environment from natural hazards and the effects of climate change effects are reduced <u>avoided or minimised</u> .
Objective 20  FW	<u>Natural hazard and climate change mitigation and adaptation activities minimise the risks from natural hazards and impacts on Te Mana o te Wai, Te Rito o te Harakeke, natural processes, indigenous ecosystems and biodiversity.</u> Hazard mitigation measures, structural works and other activities do not increase the risk and consequences of natural hazard events.	<u>Natural hazard mitigation and adaptation activities minimise the risks from natural hazards, and impacts on, Te Mana o te Wai, Te Rito o te Harakeke, sites of significance to mana whenua/tangata whenua, natural processes, indigenous ecosystems and biodiversity.</u>
Objective 21	The resilience of our Ccommunities are more resilient to natural hazards, including the impacts and the natural environment to the short, medium, and long-term effects of climate change, and sea level rise is strengthened, and people are better prepared for the consequences of natural hazard events.	<u>The resilience of our Ccommunities, are more resilient to natural hazards, including the impacts and the natural environment is strengthened to the short, medium, and long-term effects of climate change, and sea level rise is strengthened, and people are better prepared for the consequences of natural hazard events.</u>
Objective CC.6	<u>Resource management and adaptation planning increases the resilience of communities and the natural environment to the short, medium, and long-term effects of climate change.</u>	<u>Resource management and adaptation planning increases the resilience of communities, infrastructure and the natural environment to the short, medium, and long-term effects of climate change.</u>

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<p>Policy 29 [Regulatory]</p>	<p>Policy 29: Avoiding inappropriate <u>Managing subdivision, use and development in areas at risk from natural hazards – district and regional plans</u></p> <p>Regional and district plans shall:</p> <ul style="list-style-type: none"> (a) identify areas <u>affected by</u> natural hazards; and (b) <u>use a risk-based approach to assess the consequences to subdivision, use and development from natural hazard and climate change impacts over a 100 year planning horizon;</u> (c) include <u>objectives, polices and rules to manage subdivision, use and development in those areas where the hazards and risks are assessed as low to moderate; and</u> (d) <u>include objectives, polices and rules to avoid subdivision, use or development and hazard sensitive activities where the hazards and risks are assessed as high to extreme.</u> <p>Explanation</p> <p><u>Policy 29 establishes a framework to:</u></p> <ul style="list-style-type: none"> 1. <u>identify natural hazards that may affect the region or district; and then</u> 2. <u>apply a risk-based approach for assessing the potential consequences to new or existing subdivision, use and development in those areas; and then</u> 3. <u>develop provisions to manage subdivision, use and development in those areas.</u> 	<p>Policy 29: Avoiding inappropriate <u>Managing subdivision, use and development in areas at risk from natural hazards – district and regional plans</u></p> <p>Regional and district plans shall <u>manage subdivision, use and development in areas at risk from natural hazards as follows:</u></p> <p>Avoiding inappropriate <u>Managing subdivision, use and development in areas at risk from natural hazards – district and regional plans</u></p> <p>Regional and district plans shall:</p> <ul style="list-style-type: none"> a) identify areas <u>affected by</u> natural hazards; and b) use a risk-based approach to assess the consequences to <u>new or existing</u> subdivision, use and development from natural hazard and climate change impacts over <u>at least</u> a 100 year planning horizon <u>which identifies the hazards as being low, medium or high;</u> c) include <u>hazard overlays</u>, objectives, polices and rules to manage subdivision, use and development in those areas where the hazards <u>and or</u> risks are assessed as low to <u>medium moderate</u>; and d) include <u>hazard overlays</u>, objectives, polices and rules to avoid subdivision, use or <u>and</u> development and <u>hazard sensitive activities</u> where the hazards and risks are assessed as high to extreme, unless there is a functional or operational need to be located in these areas. <p>Explanation</p>
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	<p><u>The factors listed in Policies 51 and 52 should be considered when implementing Policy 29 and when writing policies and rules to manage subdivision, use and development in areas identified as being affected by natural hazards.</u></p> <p>Explanation</p> <p>The process of identifying ‘areas at high risk’ from natural hazards must consider the potential natural hazard events that may affect an area and the vulnerability of existing and/ or foreseeable subdivision or development. An area should be considered high risk if there is the potential for moderate to high levels of damage to the subdivision or development, including the buildings, infrastructure, or land on which it is situated. The assessment of areas at high risk should factor in the potential for climate change and sea level rise and any consequential effect that this may have on the frequency or magnitude of related hazard events.</p> <p>Examples of the types of natural hazards or hazard events that may cause an area or subdivision or development to be considered high risk include — but are not limited to — fault rupture zones, beaches that experience cyclical or long-term erosion, failure prone hill slopes, or areas that are subject to serious flooding.</p> <p>The factors listed in policies 51 and 52 should be considered when implementing policy 29 and writing policies and rules to avoid inappropriate subdivision and development in areas at high risk.</p> <p>Most forms of residential, industrial or commercial development would not be considered appropriate and should be avoided in</p>	<p>Policy 29 establishes a framework to:</p> <ol style="list-style-type: none"> <u>1. identify natural hazards that may affect the region or district; and then</u> <u>2. apply a risk-based approach for assessing the potential consequences to new or existing subdivision, use and development in those areas; and then</u> <u>3. develop provisions to manage subdivision, use and development in those areas.</u> <p>The factors listed in Policies 51 and 52 should be considered when implementing Policy 29 and when writing policies and rules to manage subdivision, use and development in areas identified as being affected by natural hazards.</p> <p><u>Guidance documents that can be used to assist in incorporating a risk-based approach to hazard risk management and planning include:</u></p> <ul style="list-style-type: none"> <u>• Risk Tolerance Methodology: A risk tolerance methodology for central, regional, and local government agencies who manage natural hazard risks. Toka Tū Ake EQC (2023);</u> <u>• Planning for natural hazards in the Wellington region under the National Policy Statement on Urban Development, GNS Science Misc. Series 140 (2020);</u> <u>• Coastal Hazards and Climate Change: Guidance for Local Government, Ministry for the Environment (2017);</u> <u>• Risk Based Approach to Natural Hazards under the RMA, Prepared for MfE by Tonkin & Taylor (2016);</u>
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	<p>areas at high risk from natural hazards, unless it is shown that the effects, including residual risk, will be managed appropriately.</p> <p>Hazard mitigation works can reduce the risk from natural hazards in high hazard areas.</p> <p>To give effect to this policy, district and regional plans should require assessments of the risks and consequential effects associated with any extensive structural or hard engineering mitigation works that are proposed. For a subdivision or development to be considered appropriate in areas at high risk of natural hazards, any hazard mitigation works should not:</p> <ul style="list-style-type: none"> • Adversely modify natural processes to a more than minor extent, • Cause or exacerbate hazards in adjacent areas to a more than minor extent, • Generally result in significant alteration of the natural character of the landscape, • Have unaffordable establishment and maintenance costs to the community, • Leave a more than minor residual risk, and/or • Result in more than minor permanent or irreversible adverse effects. <p>Examples of how this may be applied to identified high hazard areas include: fault rupture avoidance zones 20 metres either side of a fault trace; setback distances from an eroding coastline; design standards for floodplains; or, requirements for a geotechnical investigation before development proceeds on a hill slope identified as prone to failure.</p>	<ul style="list-style-type: none"> • <u>Planning for Risk: Incorporating risk-based land use planning into a district plan, GNS Science (2013);</u> • <u>Preparing for future flooding: a guide for local government in New Zealand, MfE (2010);</u> • <u>Guidelines for assessing planning policy and consent requirements for landslide prone land, GNS Science (2008);</u> • <u>Planning for development of land on or close to active faults, Ministry for the Environment (2003) and;</u> • <u>Other regional documents and strategies relating to the management of natural hazards.</u>
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	<p>This policy promotes a precautionary, risk-based approach, taking into consideration the characteristics of the natural hazard, its magnitude and frequency, potential impacts and the vulnerability of development.</p> <p>Guidance documents that could be used to assist in the process include:</p> <ul style="list-style-type: none">• Risk Management Standard AS/NZS 4360:2004• Guidelines for assessing planning policy and consent requirements for landslide prone land, GNS Science (2008)• Planning for development of land on or close to active faults, Ministry for the Environment (2003)• Coastal Hazards and Climate Change: A Guidance Manual for Local Government in New Zealand, Ministry for the Environment (2008)• Other regional documents relating to the management of natural hazards. <p>This policy also recognises and supports the Civil Defence Emergency Management principles — risk reduction, readiness, response and recovery — in order to encourage more resilient communities that are better prepared for natural hazards, including climate change impacts.</p> <p>Policy 29 will act to reduce risk associated with natural hazards. The risks are to people and communities, including businesses, utilities and civic infrastructure.</p> <p>This policy and the Civil Defence Emergency Management framework recognise the need to involve communities in preparing for natural hazards. If people are prepared and able</p>	
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	<p>to cope, the impacts from a natural hazard event are effectively reduced.</p>	
<p>Policy 51 [Consideration]</p>	<p>Policy 51: Minimising the risks and consequences of natural hazards – consideration</p> <p>When considering an application for a resource consent, notice of requirement, or a change, variation or review to a district or regional plan, the risk and consequences of natural hazards on people, communities, their property and infrastructure shall be minimised, and/or in determining whether an activity is inappropriate particular regard shall be given to:</p> <p>(a) the frequency and magnitude <u>likelihood and consequences</u> of the range of natural hazards that may adversely affect the proposal or development <u>subdivision, use or development, including residual risk</u> those that may be exacerbated by climate change and sea level rise;</p> <p>(b) the potential for climate change and sea level rise to increase in the frequency or magnitude of a hazard event;</p> <p>(c) whether the location of the <u>subdivision, use or development</u> will foreseeably require hazard mitigation works in the future;</p> <p>(d) the potential for injury or loss of life, social <u>and economic</u> disruption and civil defence emergency management implications – such as access routes to and from the site;</p> <p>(e) <u>whether the subdivision, use or development causes any change in the risk and consequences from natural hazards in areas beyond the application site;</u></p>	<p>Policy 51: Avoiding or Minimising the risks and consequences of natural hazards – consideration</p> <p>When considering an application for a resource consent, notice of requirement, or a change, variation or review to a district or regional plan, the risk and consequences of natural hazards on people, communities, their property and infrastructure shall be <u>avoided or minimised</u>, and/or in determining whether an activity is inappropriate particular regard shall be given to:</p> <p>(a) the frequency and magnitude <u>likelihood and consequences</u> of the range of natural hazards that may adversely affect the proposal or development <u>subdivision, use or development, including residual risk</u> those that may be exacerbated by climate change and sea level rise;</p> <p>(b) the potential for climate change and sea level rise to increase in the frequency or magnitude of a hazard event;</p> <p>(c) whether the location of the <u>subdivision, use or development</u> will foreseeably require hazard mitigation works in the future;</p> <p>(d) the potential for injury or loss of life, social <u>and economic</u> disruption and civil defence emergency management implications – such as access routes to and from the site;</p> <p>(e) <u>whether the subdivision, use or development causes any change in the risk and consequences from natural hazards in areas beyond the application site;</u></p>

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	<p>(f) minimising effects on the impact of the proposed subdivision, use or development on any natural features that may act as a buffer to or reduce the impacts of a from natural hazards event; and where development should not interfere with their ability to reduce the risks of natural hazards;</p> <p>(g) avoiding inappropriate subdivision, use or development and <i>hazard sensitive activities</i> where the hazards and risks are assessed as high to extreme; in areas at high risk from natural hazards;</p> <p>(h) appropriate hazard risk management and/or adaptation and/or mitigation measures for subdivision, use or development in areas where the hazards and risks are assessed as low to moderate hazard areas, including an assessment of residual risk; and</p> <p>(i) the allowance for floodwater conveyancing in identified overland flow paths and stream corridors; and</p> <p>(j) the need to locate habitable floor areas levels of habitable buildings and buildings used as places of employment above the 1% AEP (1:100 year) flood level, in identified flood hazard areas.</p> <p>Explanation Policy 51 aims to minimise the risk and consequences of natural hazards events through sound preparation, investigation and planning prior to development. This policy reflects a need to employ a precautionary, risk-based approach, taking into consideration the likelihood of the hazard and the vulnerability of the development.</p>	<p>(f) minimising effects on the impact of the proposed subdivision, use or development on any natural features that may act as a buffer to or reduce the impacts of a from natural hazards event; and where development should not interfere with their ability to reduce the risks of natural hazards;</p> <p>(g) avoiding inappropriate subdivision, use or development and <i>hazard sensitive activities</i> where the hazards and risks are assessed as high to extreme; in areas at high risk from natural hazards, unless there is a functional or operational need to be located in these areas;</p> <p>(h) appropriate hazard risk management and/or adaptation and/or mitigation measures for subdivision, use or development in areas where the hazards and risks are assessed as low to moderate hazard areas, including an assessment of residual risk; and</p> <p>(i) the allowance for floodwater conveyancing in identified overland flow paths and stream corridors; and</p> <p>(j) the need to locate habitable floor areas levels of habitable buildings and buildings used as places of employment above the 1% AEP (1:100 year) flood level, in identified flood hazard areas.</p> <p>Explanation Policy 51 aims to minimise the risk and consequences of natural hazards events through sound preparation, investigation and planning prior to development. This policy reflects a need to employ a precautionary, risk-based approach, taking into consideration the likelihood of the hazard and the vulnerability of the development.</p>
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	<ul style="list-style-type: none">• Typical natural hazards in the region include, but are not limited to:• Flooding and inundation (river, stormwater, coastal)• Earthquake (groundshaking, amplification, liquefaction, ground displacement)• Coastal hazards (erosion, storm surge, tsunami)• Mass movement (landslip, rockfall) <p>Other site specific hazards may become apparent during the course of an assessment for a proposal or development; however, those above are the most serious hazards to consider.</p> <p>Policy 51 refers to residual risk, which is the risk that remains after protection works are put in place. Stopbanks, seawalls and revetments and other engineered protection works can create a sense of security and encourage further development. In turn, this increases the extent and value of assets that could be damaged if the protection works fail or an extreme event exceeds the structural design parameters.</p> <p>Policy 51(g) will cease to have effect once policy 29 has been given effect to in the relevant district plan.</p> <p>The term areas at high risk refers to those areas potentially affected by natural hazard events that are likely to cause moderate to high levels of damage to the subdivision or development, including the land on which it is situated. It applies to areas that face a credible probability of experiencing significant adverse impacts in a hazard event – such as such as fault rupture zones, beaches that experience cyclical or long term</p>	
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	<p>erosion, failure prone hill slopes, or areas that are subject to repeated flooding.</p> <p>Policy 51(i) requires that particular regard to be given, in identified flood hazard areas, to the need to locate floor levels above the expected level of a 1 in 100 year flood or 1% annual exceedance probability (AEP), to minimise damages. It also recognises that access routes should be located above this level, to allow evacuation or emergency services access to and from a site. The clause uses the 1% annual exceedance probability as a minimum standard, allowing for the possibility that it may need to be higher in certain areas, depending on the level of risk.</p> <p>To promote more resilient communities that are better prepared for natural hazards, including climate change impacts, there is a need to support the Civil Defence Emergency Management principles of hazards and/or risk reduction, readiness, response and recovery.</p> <p>Reduction is concerned with minimising the adverse impacts from natural hazards through sound planning and management. Readiness is about preparing for hazard events before they occur and involves local authorities, civil defence emergency management and the community. An important way to achieve this is through public education and by providing information and advice in order to raise awareness of natural hazard issues. Response and recovery are the important functions carried out by local authorities and civil defence emergency management during and after a civil defence emergency.</p> <p>The policy recognises the need to involve the community in preparing for natural hazards. If people are prepared and able</p>	
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	<p>to cope, the impacts from a natural hazard event are effectively reduced.</p>	
<p>Policy 52  [Consideration]</p>	<p>Policy 52: Minimising adverse effects of hazard mitigation measures – consideration</p> <p>When considering an application for a resource consent, notice of requirement, or a change, variation or review of a district or regional plan, for hazard mitigation measures, particular regard shall be given to:</p> <ul style="list-style-type: none"> (a) the need for structural protection works or hard engineering methods; (b) whether non-structural, <i>soft engineering</i>, <i>green infrastructure</i>, room for the river or Mātauranga Māori options provide a more appropriate or suitably innovative solution; (c) avoiding structural protection works or <i>hard engineering</i> methods unless it is necessary to protect existing development, <i>regionally significant infrastructure</i> or property from unacceptable risk and the works form part of a long-term hazard management strategy that represents the best practicable option for the future; (d) <u>the long-term viability of maintaining the structural protection works with particular regard to how climate change may increase the risk over time;</u> (e) <u>adverse effects on <i>Te Mana o te Wai</i>, mahinga kai, <i>Te Rito o te Harakeke</i>, natural processes, or the local indigenous ecosystem and biodiversity;</u> (f) <u>sites of significance to mana/tangata whenua identified in a planning document recognised by an iwi</u> 	<p>Policy 52: <i>Minimising</i> adverse effects of hazard mitigation measures – consideration</p> <p>When considering an application for a resource consent, notice of requirement, or a change, variation or review of a district or regional plan, for hazard mitigation measures, particular regard shall be given to:</p> <ul style="list-style-type: none"> (a) the need for structural protection works or hard engineering methods; (b) whether non-structural <i>nature-based solutions</i>, Mātauranga Māori <i>green infrastructure</i>, room for the river or <i>soft engineering</i> options provide a more appropriate <i>or suitably innovative</i> solution; (c) avoiding structural protection works or <i>hard engineering</i> methods unless it is necessary to protect existing development, <i>regionally significant infrastructure</i> or property from unacceptable risk and the works form part of a long-term hazard management strategy <i>agreed to by relevant authorities</i> that represents the best practicable option for the future; (d) <u>the long-term viability of maintaining the structural protection works with particular regard to how climate change may increase the risk over time;</u> (e) <u>adverse effects on <i>Te Mana o te Wai</i>, mahinga kai, <i>Te Rito o te Harakeke</i>, natural processes, or the local indigenous ecosystems and biodiversity;</u>

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	<p><u>authority and lodged with a local authority or scheduled in a city, district or regional plan;</u></p> <p>(g) <u>a no more than minor increase in risk to nearby areas as a result of changes to natural processes from the hazard mitigation works;</u></p> <p>(h) the cumulative effects of isolated structural protection works;</p> <p>(i) <u>any</u> residual risk remaining after mitigation works are in place,</p> <p>so that they <u>minimise</u> reduce and do not increase the risks from <u>of</u> natural hazards.</p> <p>Explanation <u>Policy 52 recognises that the effects of hard protection structures can have adverse effects on the environment, increase the risks from natural hazards over time and transfer the risks to nearby areas. It provides direction to consider lower impact methods of hazard mitigation such as non-structural, soft engineering, green infrastructure, room for the river or Mātauranga Māori options, that may be more appropriate providing they can suitably mitigate the hazard.</u></p> <p>Objective 19 seeks to reduce the risks and consequences from natural hazards, while Objective 20 aims to ensure activities, including hazard mitigation measures, do not increase the risk and consequences from natural hazards. Policy 52 promotes these objectives.</p> <p>Having established there is a need for protection works, non-structural and soft engineering methods should be the first option for hazard mitigation. Soft engineering methods may include, for example; hazard avoidance or controlled activity</p>	<p>(f) <u>sites of significance to mana whenua/tangata whenua identified in a planning document recognised by an iwi authority and lodged with a local authority or scheduled in a city, district or regional plan;</u></p> <p>(g) <u>a no more than minor increase in risk to nearby areas as a result of changes to natural processes from the hazard mitigation works;</u></p> <p>(h) the cumulative effects of isolated structural protection works;</p> <p>(i) <u>any</u> residual risk remaining after mitigation works are in place,</p> <p>so that they <u>minimise</u> reduce <u>and do not increase</u> the risks from <u>of</u> natural hazards.</p> <p>Explanation <u>Policy 52 recognises that the effects of hard engineering protection structures can have adverse effects on the environment, increase the risks from natural hazards over time and transfer the risks to nearby areas. It provides direction to consider lower impact methods of hazard mitigation such as non-structural, soft engineering, nature-based solutions green infrastructure, room for the river or Mātauranga Māori options, that may be more appropriate, providing they can suitably mitigate the hazard.</u></p>
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	<p>zones; setback or buffer distances; managed retreat or land retirement; a 'do nothing' policy; restoration projects for wetlands, dunes or hillslopes prone to flooding, slipping or erosion.</p> <p>Activities such as river bed gravel extraction which may assist in the avoidance or mitigation of natural hazards are also a consideration under this policy.</p> <p>Structural measures or hard engineering methods can have significant environmental effects and should be considered as the least desirable option for natural hazard control. Where there is an unacceptable risk to development or property, there may be a place for structural measures or hard engineering methods, if they are part of a long-term hazard management strategy that includes other measures. Policy 51 will need to be considered alongside policy 52(c) when deciding whether a development faces an unacceptable risk or not.</p> <p>The risk that remains after protection works are put in place is known as the residual risk. Stopbanks, seawalls, and revetments and other engineered protection works can create a sense of security and encourage further development. In turn, this increases the extent and value of assets that could be damaged if the protection works fail or an extreme event exceeds the structural design parameters.</p>	
<p>Policy CC.16 [Non-regulatory]</p>	<p><u>Policy CC.16: Climate change adaptation strategies, plans and implementation programmes – non-regulatory</u></p> <p><u>Regional, city and district councils should, under the Local Government Act 2002, partner with mana whenua / tangata whenua and engage local communities in a decision-making process to develop and implement strategic <i>climate change adaptation</i> plans that map out management options over short,</u></p>	<p><u>Policy CC.16: Climate change adaptation strategies, plans and implementation programmes – non-regulatory</u></p> <p><u>Regional, city and district councils should, under the Local Government Act 2002, partner with mana whenua / tangata whenua and engage local communities in a decision-making process to develop and implement strategic <i>climate change adaptation</i> plans that map out management options over short,</u></p>

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	<p>medium and long term timeframes, using a range of tools and methods including, but not limited to:</p> <ul style="list-style-type: none"> (a) <u>Te Ao Māori and Mātauranga Māori approaches;</u> (b) <u>Dynamic adaptive planning pathways or similar adaptive planning approaches;</u> (c) <u>City, district or regional plan objectives, policies and rules that address subdivision, use and development for areas impacted by climate change and sea level rise;</u> (d) <u>Options for managed retreat or relocation;</u> (e) <u>A consideration of <i>Te Mana o te Wai</i> and <i>Te Rito o te Harakeke</i>;</u> (f) <u>Hazard mitigation options including soft engineering, <i>green infrastructure</i> or room for the river, and methods to reduce the risks from natural hazards exacerbated by climate change and sea level rise; and</u> (g) <u>Equitable funding options required to implement the programme.</u> <p>Explanation <u>Policy CC.16 provides a range of options for development and implementation of adaptation strategies or plans to suit a particular programme or local circumstances. In some instances, the outcomes may require implementation as objectives, policies, and rules in regional or district plans, but this is not expected to be a requirement.</u></p>	<p>medium and long term timeframes, using a range of tools and methods including, but not limited to:</p> <ul style="list-style-type: none"> (a) <u>Te Ao Māori and Mātauranga Māori approaches;</u> (b) <u>Dynamic adaptive planning pathways or similar adaptive planning approaches;</u> (c) <u>City, dDistrict or regional plan objectives, policies and rules that address subdivision, use and development for areas impacted by climate change and sea level rise;</u> (d) <u>Options for managed retreat or relocation;</u> (e) <u>A consideration of <i>Te Mana o te Wai</i> and <i>Te Rito o te Harakeke</i>;</u> (f) <u>Hazard mitigation options including soft engineering, <i>green infrastructure or room for the river</i> <i>nature-based solutions</i> and methods to reduce the risks from natural hazards exacerbated by climate change and sea level rise; and</u> (g) <u>Equitable funding options required to implement the programme.</u> <p>Explanation <u>Policy CC.16 provides a range of options for development and implementation of adaptation strategies or plans to suit a particular programme or local circumstances. In some instances, the outcomes may require implementation as objectives, policies, and rules in regional or district plans, but this is not expected to be a requirement.</u></p>
<p>Policy CC.17 [Non-regulatory]</p>	<p><u>Policy CC.17: Iwi climate change adaptation plans – non-regulatory</u></p>	

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	<p><u>Regional council will assist mana whenua / tangata whenua in the development of iwi <i>climate change adaptation</i> plans to manage impacts that may affect Māori relationships with their whenua, tikanga and kaupapa Māori, sites of significance, wai Māori and wai tai values, mahinga kai, wāhi tapu and other taonga.</u></p> <p>Explanation <u>Policy CC.17 recognises that climate change will disproportionately affect Māori, especially as a lot of Māori land is located in hazard prone areas near rivers and the coast. This policy directs the regional council to assist mana whenua / tangata whenua, where appropriate, with the development of iwi-led <i>climate change adaptation</i> plans.</u></p>	<p>Retain as notified</p>
<p>Method 14</p>	<p><u>Undertake research, prepare and disseminate information about natural hazards and climate change effects in order to:</u></p> <ul style="list-style-type: none"> (a) guide local authority <u>planning and decision-making</u>; and (b) raise awareness and understanding of natural hazards <p><i>Implementation: Wellington Regional Council*, city and district councils and Civil Defence Emergency Management Group</i></p>	<p><u>Undertake research, prepare and disseminate information about natural hazards and climate change effects in order to:</u></p> <ul style="list-style-type: none"> (a) guide local authority <u>planning and decision-making</u>; and (b) raise awareness and understanding of natural hazards <u>and climate change</u> <p><i>Implementation: Wellington Regional Council*, city and district councils and Civil Defence Emergency Management Group</i></p>
<p>Method 22</p>	<p><u>Method 22: Integrated hazard risk management and climate change adaptation planning Information about areas at high risk from natural hazards</u></p> <p><u>Integrate hazard risk management and <i>climate change adaptation</i> planning in the Wellington region by:</u></p> <ul style="list-style-type: none"> (a) <u>developing non-statutory strategies, where appropriate, for integrating hazard risk</u> 	<p><u>Method 22: Integrated hazard risk management and climate change adaptation planning Information about areas at high risk from natural hazards</u></p> <p><u>Integrate hazard risk management and <i>climate change adaptation</i> planning in the Wellington region by:</u></p> <ul style="list-style-type: none"> (a) <u>developing non-statutory strategies, where appropriate, for integrating hazard risk</u>

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	<p><u>management and <i>climate change adaptation</i> approaches between local authorities in the region;</u></p> <p>(b) <u>developing consistency in natural hazard provisions in city, district and regional plans;</u></p> <p>(c) <u>assisting mana/tangata whenua in the development of iwi <i>climate change adaptation</i> plans.</u></p> <p>Prepare and disseminate information about how to identify areas at high risk from natural hazards, as relevant to the development of hazard management strategies to guide decision-making. <i>Implementation: Wellington Regional Council* and city and district councils</i></p>	<p><u>management and <i>climate change adaptation</i> approaches between local authorities in the region;</u></p> <p>(b) <u>developing consistency in natural hazard provisions in city, district and regional plans;</u></p> <p>(c) <u>assisting mana whenua/tangata whenua in the development of iwi <i>climate change adaptation</i> plans.</u></p> <p>Prepare and disseminate information about how to identify areas at high risk from natural hazards, as relevant to the development of hazard management strategies to guide decision-making. <i>Implementation: Wellington Regional Council* and city and district councils</i></p>
	<p>Method 23: Information about natural features to protect property from natural hazards</p> <p>Prepare and disseminate information about how to identify features in the natural environment that can offer natural protection to property from the effects of erosion and inundation.</p> <p><i>Implementation: Wellington Regional Council * and city and district councils</i></p>	<p>Retain as notified</p>
<p>AER 1</p>	<p>1. Regional and district plans:</p> <p>(a) identify areas at high risk from natural hazards; and</p>	<p>1. Regional and district plans have:</p> <p>(a) identify areas at high risk from natural hazards; used a risk-based approach to assess hazards and risks to new or existing subdivision, use and development from natural hazard and</p>

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	<p>(b) contain policies and rules to avoid subdivision and inappropriate development in those areas.</p> <p>2. There is no new subdivision and inappropriate development in areas at high risk from natural hazards</p>	<p><u>climate change impacts over at least a 100 year planning horizon;</u> and</p> <p>(b) contain policies and rules to avoid subdivision and inappropriate development in those areas. <u>included hazard overlays, objectives, polices and rules to manage or avoid new or existing subdivision, use and development in those areas.</u></p>
AER 2	<p>1. There is no increase in the risk from natural hazards as a result of subdivision, use or development (including mitigation works).</p> <p>2. Where hazard mitigation <u>and climate change</u> measures are employed, there is a greater number and range of soft engineered measures used, <u>that achieve integrated management and broad environmental outcomes.</u></p>	<p>1. There is no increase in the risk from natural hazards as a result of subdivision, use or development (including mitigation works).</p> <p>2. Where hazard mitigation <u>and climate change mitigation</u> measures are employed, there is a greater number and range of soft engineered measures <u>nature-based solutions</u> used, <u>that achieve integrated management and broad environmental outcomes.</u></p>
AER 3	<p>1. Over 75 per cent of the community surveyed has an understanding of the consequences from local natural hazards.</p> <p>2. Over 75 per cent of the community surveyed is prepared for natural hazard events.</p>	Retain as notified

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<p>Hazard sensitive activity [Definition]</p>	<p>Hazard sensitive activity Means any building that contains one or more of the following activities:</p> <ul style="list-style-type: none"> • <u>community facility</u> • <u>early childhood centre</u> • <u>educational facility</u> • <u>emergency service facilities</u> • <u>hazardous facilities and major hazardous facilities</u> • <u>healthcare activity</u> • <u>kōhanga reo</u> • <u>marae</u> • <u>residential activity</u> • <u>retirement village</u> • <u>research activities</u> • <u>visitor accommodation</u> 	<p>Hazard sensitive activity Means any building that contains one or more of the following activities:</p> <ul style="list-style-type: none"> • <u>community facility</u> • <u>early childhood centre</u> • <u>educational facility</u> • <u>emergency service facilities</u> • <u>hazardous facilities and major hazardous facilities</u> • <u>healthcare activity</u> • <u>kōhanga reo</u> • <u>marae</u> • <u>residential activity</u> • <u>retirement village</u> • <u>research activities</u> • <u>visitor accommodation</u>
<p>Major hazard facility [Definition]</p>		<p>Major hazard facility <u>Has the same meaning as the Health and Safety at Work (Major Hazard Facilities) Regulations 2016 - means a facility that WorkSafe has designated as a lower tier major hazard facility or an upper tier major hazard facility under regulation 19 or 20.</u></p>
<p>Minimise [Definition]</p>		<p><u>Reduce to the smallest amount reasonably practicable. Minimised, minimising and minimisation have the corresponding meaning."</u></p>
<p>Nature-based solutions [Definition]</p>	<p>Nature-based solutions  <u>Actions to protect, enhance, or restore natural ecosystems, and the incorporation of natural elements into built environments, to reduce greenhouse gas emissions and/or strengthen the resilience of humans, indigenous biodiversity and the natural environment to the effects of climate change.</u></p>	<p>Nature-based solutions  <u>Actions to protect, enhance, or restore natural ecosystems, and the incorporation of natural elements into built environments, to reduce greenhouse gas emissions and/or strengthen the resilience of humans, indigenous biodiversity and the natural environment to the effects of climate change.</u></p>

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	<p><u>Examples include:</u> <u>Reducing greenhouse gas emissions (climate change mitigation):</u></p> <ul style="list-style-type: none"> • <u>planting forests to sequester carbon</u> • <u>protecting peatland to retain carbon stores</u> <p><u>Increasing resilience (climate change adaptation):</u></p> <p><u>(a) providing resilience for people</u></p> <ul style="list-style-type: none"> • <u>planting street trees to provide relief from high temperatures</u> • <u>restoring coastal dunelands to provide increased resilience to the damaging effects of storms linked to sea level rise</u> • <u>leaving space for rivers to undertake their natural movement and accommodate increased floodwaters</u> • <u>the use of water sensitive urban design, such as rain gardens to reduce stormwater runoff in urban areas</u> <p><u>(b) providing resilience for ecosystems and species</u></p> <ul style="list-style-type: none"> • <u>restoring indigenous forest to a healthy state to increase its resilience to increased climate extremes leaving space for estuarine ecosystems, such as salt marshes, to retreat inland in response to sea level rise.</u> 	<p><u>Examples include:</u> <u>Reducing greenhouse gas emissions (climate change mitigation):</u></p> <ul style="list-style-type: none"> • <u>planting forests to sequester carbon</u> • <u>protecting peatland to retain carbon stores</u> <p><u>Increasing resilience (climate change adaptation):</u></p> <p><u>(c) providing resilience for people</u></p> <ul style="list-style-type: none"> • <u>planting street trees to provide relief from high temperatures</u> • <u>restoring coastal dunelands to provide increased resilience to the damaging effects of storms linked to sea level rise</u> • <u>leaving space for rivers to undertake their natural movement and accommodate increased floodwaters (also known as ‘room for the river’)</u> • <u>the use of water sensitive urban design, such as rain gardens to reduce stormwater runoff in urban areas</u> <p><u>(d) providing resilience for ecosystems and species</u></p> <ul style="list-style-type: none"> • <u>restoring indigenous forest to a healthy state to increase its resilience to increased climate extremes leaving space for estuarine ecosystems, such as salt marshes, to retreat inland in response to sea level rise.</u>
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Chapter introduction	
<p>A natural hazard is defined in the Resource Management Act as any atmospheric, earth or water related occurrence (including earthquake, tsunami, erosion, volcanic, and geothermal activity, landslip, subsidence, sedimentation, wind, drought, fire, or flooding) which may adversely affect human life, property, or other aspects of the environment. On their own, natural processes do not constitute a hazard. Natural events become hazardous when they may adversely affect human lives.</p> <p><u>Regional, city and district councils all have responsibilities under the Resource Management Act to manage the significant risks from these natural hazards as a matter of national importance. Additionally, particular regard must be given to the effects of climate change when achieving the sustainable management purpose of the Act.</u></p> <p>The Wellington region has one of the most physically diverse environments in New Zealand. It is also one of the most populous regions and, consequently, our communities <u>and the areas that we value</u> are affected by a wide range of natural hazards. <u>The hazard exposure of people and communities, the natural environment, businesses and the economy, food production (including mahinga kai), water security, property and infrastructure is increasing because of climate change. The impacts and costs of responding to natural hazards and climate change is not felt equitably. Some communities have no, or only limited, resources to enable mitigation and adaptation and will bear a greater burden than others.</u></p> <p>With the exception of geothermal activity, the region is subject to all types of natural hazard events. Commonly, there are two or more hazards associated with a given event. For example, a rainstorm may cause flooding and landslips.</p> <p>The three most potentially damaging and costly natural hazards events that can occur in the region are:</p>	

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- Earthquake: High magnitude earthquake (7.0+) from the rupture of a local fault (especially the Wellington Fault) affecting **Te Whanganui-a-Tara**/Wellington city, **Te Awa Kairangi**/Hutt valley, Porirua, Kāpiti Coast and towns in the Wairarapa District
- Flooding: Major river flooding in the Hutt valley, Kāpiti Coast and the central Wairarapa plains. Flooding is the most frequently occurring hazard event in the region
- Tsunami: Large tsunami (particularly one that is locally generated) affecting low-lying areas around **Te Whanganui-a-Tara**/Wellington Harbour and the southern bays, settlements along the southern and eastern Wairarapa coast, **Te Awarua-o-Porirua** Harbour and the Kāpiti Coast

Other natural hazards have more localised impacts but occur more frequently. These include:

- Localised flooding and inundation from streams and stormwater overflow. This can occur throughout the region in low-lying areas – such as Porirua – around tributary streams of the larger rivers – such as ~~the~~ **Te Awa Kairangi**/Hutt River – and in areas that have short steep catchments – such as Paekākāriki.
- Coastal erosion and inundation, often associated with storm surge, affects some seafront and low lying coastal developments in the region. Some sections of the coastline are in long term retreat – such as Paekākāriki and Te Kopi. Other areas have episodes of erosion that form part of a cycle of erosion and deposition – such as Paraparaumu or Riversdale. Due to climate change induced sea level rise, it is expected that the areas impacted by coastal erosion and inundation will increase with time, and that this hazard will occur on a more frequent basis.
- Landslips in the hill suburbs of **Te Whanganui-a-Tara**/Wellington city, ~~the~~ **Te Awa Kairangi**/Hutt valley, Eastbourne, Wainuiomata, Porirua, Paekākāriki and in the Wairarapa hill country.

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- Drought, especially in central Wairarapa and the coastal hills between Flat Point and Castlepoint.
- Wildfire, particularly in hill suburbs on urban fringes near heavily vegetated slopes, including western and southern Te Whanganui-a-Tara/Wellington suburbs, Eastbourne, Wainuiomata, Te Awa Kairangi/Hutt valley and Porirua, and farmland in the eastern Wairarapa hill country.
- High winds that can occur throughout the region and cause widespread damage to buildings, infrastructure and forestry.
- Sedimentation and erosion of rivers and streams, river mouths and tidal inlets, that can exacerbate the flood risk by raising *bed* levels and undermining banks.

People's actions, including mitigation measures and ongoing development in areas at high risk from natural hazards, can cause or increase the risk from natural hazards. Examples include seawalls or groynes that can cause localised erosion of the adjacent shoreline, and building on landslip prone slopes. Stopbanks and seawalls can also create a sense of security and encourage further development, increasing the extent and value of the assets at risk.

In the medium to long term, climate change effects ~~have the potential to~~ will increase both the frequency and magnitude of natural hazard events that already occur in the region.

A major consequence of climate change is sea level rise. ~~The sea level is expected to rise over half a meter by 2100.~~¹ Based on the Intergovernmental Panel on Climate Change 6th assessment report, and measurements of vertical land movement, NZ SeaRise - Te Tai Pari O Aotearoa projects relative sea level in the Wellington region to rise between 0.8 – 1.3 m by 2100 but, 2.0 m of sea level rise by the end of the century cannot be ruled out.^[1]

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Climate change will increase the frequency and magnitude natural hazards that already occur in the region and exacerbate the impacts and consequences from these events. For example, 30 cm of sea level rise on top of what has already occurred over the past 120 years, will mean that a 1 percent AEP (1:100 yr) coastal flooding event has the potential to occur every one to two years.

The main natural hazards associated with a rise in sea levels are coastal erosion and inundation. Sea level rise will also put increasing pressure on the coastal margin. As the shoreline adjusts, sediment will be redistributed around the coast and may cause shorelines to form new orientations. Beaches that are currently stable may begin to erode as the shoreline adjusts to a higher water level, while those that are currently eroding may experience an increased rate of retreat.

Climate change ~~is expected to~~ will increase the intensity and duration of westerly weather systems and reduce easterly conditions. This will exacerbate differences in the regional climate, by bringing higher rainfall to the west and reducing coastal rains in the east. It will also bring longer periods of northerly gales to the entire region, particularly in the spring months. Western and southern areas of the region may also have higher rainfall in the winter, increasing the landslide risk during wet winters, particularly in extreme rainfall events. This will put pressure on stormwater systems and flood protection works. Higher rainfall may also result in higher rates of sedimentation at river mouths and in estuaries, increasing the flood risk in those areas by raising the base level of the river *bed*.

It is also expected that central and eastern Wairarapa will become drier over the next 100 years. Droughts will occur more frequently and persist for longer periods. Research suggests that winter rainfall will decline in the long term, which may lead to a reduction in groundwater recharge rates and pressure on water resources. Dry conditions also result in a heightened risk of wildfire.

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The regionally significant issues and the issues of significance to the Wellington region's iwi authorities for natural hazards are:

1. ~~Effects of~~ Risks from natural hazards

Natural hazard events in the Wellington region have an adverse impact on people and communities, the natural environment, businesses and the economy, property and infrastructure.

2. Human actions can increase risk and consequences from natural hazards

People's actions including mitigation measures and ongoing development in areas at risk from natural hazards can cause, or increase, the risk and consequences from natural hazards.

3. Climate change will increase ~~both the likelihood and consequences~~ both the likelihood and consequences  ~~magnitude and frequency of from~~ magnitude and frequency of from natural hazard events

Climate change will increase the likelihood and consequences ~~risks~~ from most natural hazard events that already occur within the region, particularly:

- (a) sea level rise, exacerbating the effects of coastal erosion and inundation, ~~and~~ river, pluvial and stormwater flooding in low lying areas, especially during storm ~~surge~~ tide events
- (b) increased frequency and intensity of storm events, adding to the risk from floods, landslides, severe wind, storm surge, coastal erosion and inundation
- (c) increased frequency of drought, placing pressure on water resources and increasing the wildfire risk

1-Intergovernmental Panel on Climate Change (IPCC) (2007), *Climate Change 2007: The Physical Science Basis. Summary for Policymakers*. Contribution of working group I to the fourth assessment report of the IPCC, 18pp.

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[1] IPCC, 2021: Summary for Policymakers. In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, 31pp.