

Proposed Natural Resources Plan for the Wellington Region

**Right of Reply
For Hearing Stream 6
Report date: 18 July 2018**

Topic: Natural hazards

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On behalf of Greater Wellington Regional Council

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List of Abbreviations	
Civil Defence and Emergency Management Act	CDEMA
Coastal Ratepayers United Incorporated	Coastal Ratepayers
Kāpiti Coast District Council	KCDC
Masterton District Council	MDC
Natural Hazards Management Strategy	NHMS
New Zealand Coastal Policy Statement 2010	NZCPS
New Zealand Transport Agency	NZTA
Proposed Natural Resources Plan	Proposed Plan
Regional Policy Statement	RPS
Resource Management Act 1991	RMA
South Wairarapa District Council	SWDC
Spark New Zealand Trading Limited	Spark
Wellington City Council	WCC
Wellington Regional Council	Council

1. Introduction and scope

1. My name is Richard Sheild. I wrote the s42A Officer's Report: Natural hazards dated 4 May 2018, released in advance of Hearing Stream 6. My qualifications and experience are set out in that report.
2. This Right of Reply responds to matters raised by submitters and the Hearing Panel since my s42A Officer's Report: Natural hazards was released. Where I include recommendations in this Right of Reply, they replace the recommendations I made in my s42A Officer's Report; otherwise, I stand by the recommendations made in my s42A Officer's Report.

2. Summary of recommendations

3. Appendix A contains a track change version of each provision I recommend changing. Appendix B contains a clean version of my recommended changes. In Appendix C there is a table that lists each provision submitted on, my recommended amendments, if any, and an assessment under s32AA. Changes that I recommend as a result of this Right of Reply are shown in **blue text** that is underlined or ~~struck-out~~. Original recommendations from my s42A Report that I continue to support are shown in **red text** that is underlined or ~~struck-out~~.
4. The original recommendations from my s42A Report are amendments to:
 - Definition of hazard management strategy
 - Policy P27
 - Policy P28
 - Policy P29
 - Policy P30
 - Method M4.

3. Evidence provided to the Hearing Panel

5. The following submitters presented evidence during Hearing Stream 6 relevant to this right of reply topic:
 - CentrePort Limited
 - Coastal Ratepayers United Incorporated (Coastal Ratepayers)

- First Gas Limited
- Kapiti Coast District Council
- KiwiRail Holdings Limited
- Masterton District Council
- Minister of Conservation
- New Zealand Transport Agency (NZTA)
- Powerco
- Spark New Zealand Trading Limited (Spark)
- South Wairarapa District Council
- The Oil Companies
- Transpower New Zealand Limited
- Wellington City Council
- Wellington International Airport Limited
- Wellington Recreational Marine Fishers Association
- Wellington Water Limited

4. Background – Overview of the issues

6. As part of the section 42A report: Natural hazards I considered submissions based on eleven different issues. Those issues were:

- Issue 1 – Overall framework and approach to hazards
- Issue 2 – Giving effect to the NZCPS
- Issue 3 – Risk, residual risk, and the risk-based approach
 - Issue 3.1 – Definitions
 - Issue 3.2 – Objective O20
- Issue 4 – High hazard areas
 - Issue 4.1 – Definition
 - Issue 4.2 – Objective O21
 - Issue 4.3 – Policy P27
- Issue 5 – Hard and soft engineering
 - Issue 5.1 – Definitions
 - Issue 5.2 – Objective O22
 - Issue 5.3 – Policy P28

- Issue 6 – Climate change
 - Issue 6.1 – Defining climate change
 - Issue 6.2 – Giving effect to the NZCPS
 - Issue 6.3 – Wider consideration of climate change
 - Issue 6.4 – Miscellaneous issues
- Issue 7 – Natural buffers
- Issue 8 – The precautionary approach
- Issue 9 – Wellington regional hazards management strategy
- Issue 10 – Sea level rise
- Issue 11 – Hazard management strategy (Method M3)

7. The key matters raised by the planning and technical experts or lay submitters for consideration by the Hearing Panel during Hearing Stream 6 were:

- a) Risk, the risk-based approach, and the use of these concepts in the proposed Plan. In particular, what constitutes “acceptable” risk has been a matter of some concern among submitters.
- b) High hazard areas, especially what constitutes “appropriate” development and whether these provisions give enough consideration to regionally significant infrastructure.
- c) Hard engineering, and whether the current provision for such methods gives effect to the NZCPS and adequately provides for regionally significant infrastructure.

5. Hazards versus risk – a conceptual background

8. This section will provide an explanation of the distinction between hazard and risk.

9. A natural hazard is a natural event (such as a flood, earthquake, or volcanic eruption) that adversely impacts human life and property (Auckland Council, 2014). Natural events are thus not inherently hazardous – a major storm or earthquake that occurs in an isolated area is just that: a natural event. To be a hazard there must be an impact on people or property.

10. Risk refers to the likelihood and consequences of a hazard (Auckland Council, 2014). The higher the likelihood and consequence of a hazard event, the higher the risk is considered to be. A hazard that is low frequency and low impact would thus be low risk in most circumstances. Events that are higher frequency or higher magnitude present higher risk, with events that are both high frequency and high magnitude presenting the highest risk.
11. It is important to note that the consideration of frequency in determining risk can mean that low magnitude but high frequency events may be considered to pose greater risk than high magnitude but low frequency events. For the Wellington Region, this could mean that relatively frequent droughts over summer could be considered higher risk than a 30m tsunami (as an example).
12. The proposed Plan focuses on managing risk rather than the hazard. It is simply not possible to manage the hazard itself – the Council cannot prevent earthquakes, storms, or volcanic eruptions, or control their frequency. The Council can however manage the risk posed by a hazard event when it occurs – more specifically, the consequences of a hazard event. By reducing the consequences of an event, the risk posed is inherently decreased, assuming that the likelihood of such an event remains unchanged.
13. The consequence of a hazard event generally consists of two components – exposure and vulnerability (Auckland Council, 2014). Vulnerability refers to the robustness of infrastructure and the resilience of people in the area, and can be reduced by protecting infrastructure (for example). Exposure refers to the time a person or infrastructure is in a hazard area, and could be reduced by locating people and infrastructure away from areas susceptible to hazards, such as managed retreat.
14. The policy approach of the proposed Plan focuses on reducing the consequences of hazards, generally favouring decreases in exposure over decreases in vulnerability. By focusing on restricting use and development in high hazard areas, the proposed Plan seeks to reduce the quantity of infrastructure and other development in such areas, and the amount of time

people spend unnecessarily in such areas. By reducing this exposure, the proposed Plan consequently aims to reduce risk.

15. An accessible and high-quality detailed explanation of the general concepts of hazards and risk has been provided by Auckland Council's Natural Hazard Risk Communication Toolbox (referenced above).

6. Overarching issues

Background

16. In addition to the specific issues raised on the proposed provisions during the hearing by submitters, and questions from the Panel, there are also a number of broader overarching issues, which will be addressed in this section.

Responses

17. The Panel has queried whether the proposed Plan should be distinguishing between different types of hazards (such as coastal hazards versus those relating to beds of lakes and rivers) rather than treating all hazards the same.

18. The Minister of Conservation has requested a new objective focusing on coastal hazards and risk, on the basis that the hazards objectives as notified do not give effect to the NZCPS direction concerning risk from coastal hazards.

19. The Minister sought a new objective as follows:

“In areas potentially affected by coastal hazards over at least the next 100 years, increases in risk, residual risk, and adverse effects from coastal hazards, including the effects of climate change on people, property or the environment are avoided”.

20. Ms Cooper's planning evidence for the Minister of Conservation is that the above new objective is necessary to give effect to NZCPS direction to avoid increases in risk from coastal hazards. Furthermore, she states that she does not believe this proposed objective should be the only one to refer to coastal hazards and risk, as I had initially interpreted the submission to be requesting.

21. My preference is to avoid duplicating provisions where possible, and thus I recommend that Objective O20 is the only objective referring to risk from

natural hazards. I also note that, as articulated in Ms Greenberg's s42A report Part A: Overall policy framework of the proposed plan, all objectives need to be read together as a whole rather than in isolation. For this reason I do not recommend that the Panel accept the above objective sought by the Minister of Conservation.

22. With regard to Ms Cooper's concern about the risk provisions not aligning with the NZCPS, I have recommended an amendment to Objective O20 below in section 7.2 that I believe addresses this issue.
23. The Panel has also raised the issue of scope in the submission of the Coastal Ratepayers and the amendments requested at the hearing to the broader policy framework. The Panel asked whether scope exists for broader changes to the policy framework as requested by Coastal Ratepayers.
24. In my view there is scope for such broader amendments. The Coastal Ratepayers submission includes broad relief requests that appear to provide scope for a wide variety of prospective amendments to the proposed Plan's hazard provisions, especially those concerning risk.
25. Across pages 1 to 3 of their submission, Coastal Ratepayers express opposition to the entirety of the proposed Plan except for those instances where support is explicitly communicated. However, the submission is flexible when it comes to addressing these concerns. While the submission often recommends specific wording for amendments, the submission also notes on page 3 that such wording recommendations are intended to be examples of acceptable amendments, and alternate wording may be better.
26. It is my opinion that this combination of a broad opposition to the proposed Plan and its hazard provisions, combined with the flexible attitude to amendments taken by the Coastal Ratepayers submission provides scope for broader amendment to the proposed Plan's hazard provisions, provided such amendments address concerns raised by Coastal Ratepayers.

27. "Existing development" is referred to throughout the hazards provisions, and the Panel has queried whether this term includes regionally significant infrastructure.
28. In my view it does. While Policy P28 is broad in its reference to "existing development", the related provision Policy P139 does provide some more clarity. Policy P139 states that new seawalls (an example of hard engineering) are inappropriate except when required to protect existing infrastructure, which would include existing regionally significant infrastructure. As Policy P139 manages hard engineering, and when used to protect regionally significant infrastructure the policy contains a number of other considerations, I believe it is reasonable to conclude that existing development includes regionally significant infrastructure.
29. An issue raised by Mr Dunmore on behalf of Coastal Ratepayers is that if a resource consent applicant cannot meet the permitted activity conditions then there is no pathway to consent.
30. This is not the case. In the case of a seawall, there is no permitted activity rule for the construction of new seawalls or the upgrade of existing seawalls. However, Rules R165-R167 do not prohibit seawalls, and there is still a path to consent that will allow the consideration and construction of seawalls if conditions set by these rules are met.
31. The Panel has also queried the relationship between proposed Plan provisions Objective O53 that deals with functional need and operational requirement to locate in the CMA, and Policies P27, P28, and P132 and NZCPS Policy 6(2)(d), and whether these four provisions give effect to this NZCPS clause.
32. In my view all four proposed Plan provisions do give effect to NZCPS Policy 6(2)(d), which directs that the proposed Plan should "recognise that activities that do not have a functional need for location in the coastal marine area generally should not be there".
33. Objective O53 gives effect to this NZCPS Policy: that "use and development in the coastal marine area has a functional need or operational requirement to be

there". Policy P132 sets out how Objective O53 will be achieved, providing for use and development that either has a functional need or operational requirement, or has no reasonable or practicable alternative to locating in the CMA. This latter clause aligns with the use of the word "generally" in the NZCPS Policy, and provides a pathway to consent for use and development to locate in the CMA that does not have a functional need or operational requirement.

34. Part of Policy P27's function is to control use and development in the CMA, recognising that the CMA is vulnerable to natural hazards. Again, Policy P27 requires either functional need or operational requirement, or that there is no practicable alternative to being located in a high hazard area (in this instance, the CMA) among other criteria that must all be met. This gives effect to NZCPS Policy 6(2)(d) and is also consistent with Policy P132.

35. I believe that Policy P28 does not give effect to NZCPS Policy 6(2)(d), but in my view it does not need to and is a separate issue. If use or development in the CMA is considered appropriate under Policy P27 (and P132), and hard engineering is deemed necessary, then Policy P28 articulates when that use or development may make use of hard engineering to protect that use or development in some circumstances. Hard engineering methods may be used for protecting existing use and development, however they still require functional need, operational requirement, or for there to be no practicable alternative to locate in the CMA, and is not intended to be used as a "get out of jail" card to allow use or development that does not meet the criteria set out in Policies P27 and P132. Policy P28 manages hard engineering mitigation measures for existing use and development. Thus, while Policy P28 does not directly implement NZCPS Policy 6(2)(d), it does give effect to Policy 25(e) of the NZCPS.

36. Similarly, the Panel has queried the extent to which these four provisions try to balance RPS policies 36 (effects on natural character), 51 (risks and consequences of natural hazards), and 52 (effects of hazard mitigation measures), and their relationship to Policy 27 of the NZCPS (strategies for protecting significant development from coastal hazard risk).

37. I would not describe the four aforementioned provisions (Objective O53, Policies P27, P28, and P132) as balancing the three RPS policies mentioned above. Policies P27 and P28 in the proposed Plan are directly related to Policies 51 and 52 of the RPS in that they identify matters to be considered in addressing the risk and consequences of natural hazards and the effects of hazard mitigation measures. Policies 51 and 52 of the RPS are more relevant to Policies P27 and P28 of proposed Plan, as there is a direct line. While there is a connection to Policy 36 of the RPS, that policy is focused on determining when an activity may be inappropriate in the context of its effects on natural character. Any proposal for an activity in a high hazard area would need to be considered against both the hazards provisions and the natural character provisions.
38. The Panel has also raised a broad question of whether it is appropriate to have hard engineering methods, and if so then what are the effects on the natural character of the coastal environment?
39. The direction from higher order documents, particularly the NZCPS and the RPS is that it is generally inappropriate to use hard engineering methods, with only a small number of exceptions, most notably involving regionally significant infrastructure. However, the direction from the higher order documents is that soft engineering is in most circumstances preferred over hard engineering.
40. If approved, hard engineering would generally (but not always) have an adverse impact on natural character – this is one reason the proposed Plan discourages the use of hard engineering methods. And as mentioned above, any proposal for hard engineering would be assessed against the relevant natural character provisions (i.e. Policy P25 of the proposed Plan).
41. It is also my view that the recommended amendment to the title of chapter 3.4 of the proposed Plan should be revised. In Ms Greenberg's S42A Report: Overall policy framework of the proposed Plan – Part B, a Clause 16(2) amendment was made that recommended inserting a new heading: 3.4b Natural hazards, which would cover Objectives O20-O22.

42. After discussion with Ms Legarth, it is my view that rather than insert a new heading, the existing 3.4 heading should be amended to incorporate reference to natural hazards. Given how closely tied natural hazards are to natural character, form, and function; and the adverse effects hazard mitigation measures can have on these, it seems reasonable to have a single heading for all of these aspects.

43. I recommend that the chapter 3.4 heading is amended as follows:

3.4 Natural character, ~~form and function~~, natural processes, and management of hazard risk

~~3.4b Natural hazards~~

44. It is my view that this amended heading is more accurate, and could be done as a minor change under Clause 16(2) of the RMA, as the change does not alter the intent of the proposed Plan.

7. Risk and the risk-based approach

45. A fundamental aspect of the way the proposed Plan addresses natural hazards is its focus on risk and the assessment of risk. Rather than manage hazards, the proposed Plan focuses on managing the risk posed by these hazards.

46. The risk based approach in the plan is relevant to the definitions for **risk**, **residual risk**, and the **risk-based approach**, and Objective O20.

7.1 Definitions

Background

47. There are three definitions relevant to risk in the proposed Plan. These are for **risk**, **residual risk**, and the **risk-based approach**.

48. The definition of **risk** in the notified version of the proposed Plan reads as follows:

“A combination of the probability of a natural hazard and the consequences that would result from an event of a given magnitude. Commonly expressed by the formula: **risk** = hazard x vulnerability”.

49. The definition for **residual risk** in the notified version of the proposed Plan reads as follows:

“The **risk** to a subdivision or development that remains after implementation of **risk** treatment or hazard mitigation works”.

50. Finally, the definition for the **risk-based approach** in the notified version of the proposed Plan reads as follows:

“A **risk-based approach** takes account of the intended purpose of a development, the likelihood of natural hazard events occurring the vulnerability and exposure of the site, use or development, the severity and consequences of potential hazard events and the costs and benefits of acting or not acting. An assessment needs to be commensurate with the size and scale of the use or development. The **risk** can be evaluated on a scale from low to high or acceptable to intolerable assessed on the basis of:

- (a) the scale, engineering design and intended life and use for the development, and
- (b) the likelihood, frequency and magnitude of natural hazard events that could potentially affect the site or development, and
- (c) the vulnerability and exposure of the development to natural hazards, and
- (d) the severity of any physical, social, economic and environmental consequences that could arise from natural hazard events affecting the site or development”.

51. In my RMA section 42A report assessing the submissions made on the natural hazards provisions, I did not recommend any amendments to these three definitions, recommending that they were retained as notified.

Response

52. Mr Lewandowski for the Wellington City Council accepts the proposed amendments, but is seeking further clarification. Mr Lewandowski queries when an assessment of risk is required as this is not made clear by the

definition of the risk-based approach. Mr Lewandowski believes such an assessment is required as part of all resource consent applications, and would like explicit confirmation as to whether this is or is not the case.

53. An assessment using a risk-based approach would not be required for all resource consent applications – the term is used purely within the context of natural hazards, and thus consents for discharges (for example) would not require an assessment using the risk-based approach. The intention of the proposed Plan is to require such an assessment for use and development in high hazard areas – the CMA and beds of lakes and rivers. Policies P27 and P28 both refer to an assessment using the risk-based approach, and it is required under Policy P27 as part of determining “appropriate” use in a high hazard area.
54. In my view clarifying when such assessment is necessary would be helpful, and consequently I believe that it would be beneficial to amend the definition of risk-based approach to clarify this.
55. The planning evidence of Mr Percy for Rangitāne o Wairarapa disagrees with the way the risk-based approach is articulated in the proposed Plan. While Mr Percy’s evidence expresses confidence that the proposed Plan has a framework in place for determining what “acceptable” risk is, he raises concerns around the definition of “risk-based approach”.
56. In particular, Mr Percy is concerned that the definition is not directive enough to prevent inconsistent or ad-hoc approaches being used, and that the definition does not align with the risk assessment methodology articulated by Policy 51 of the RPS.
57. The further submission made by the Minister of Conservation opposes the amendments sought by Coastal Ratepayers’ to the definitions of “risk” and “risk-based approach”. Dr Shand’s technical evidence is that key aspects of the definitions proposed by Coastal Ratepayers (“effect” and “outcome”) have specific meanings in the context of coastal hazard management, which differ from the meanings of these words in the RMA. In Dr Shand’s view, it is unnecessary to refer to AS/NZS ISO 31000:2009 as Coastal Ratepayers

request, as guidance published by the Ministry for the Environment provides more specific direction for risk practitioners.

58. Based on this, Ms Cooper’s planning evidence for the Minister of Conservation is that amending the definition of risk is unnecessary, as the current definitions are consistent with terminology used in coastal hazard management practice. However, she does state that she sees merit in amending the definition of risk-based approach to be a more direct translation of RPS Policy 51.
59. Conversely, Dr Shand is of the view that the current definition of the risk-based approach contains too much, and could benefit from streamlining or simplification.
60. I do not agree that the notified definition for “risk-based approach” is too detailed and ought to be streamlined or simplified as Dr Shand contends; the more detail there is to the definition, the clearer and more instructive it is for plan users. The table below provides an evaluation of the components of Policy 51 in the RPS and what the reference to these is in the definition of risk-based approach, if any.

Regional Policy Statement Policy 51 Provision	Referred to in risk-based approach definition?
The frequency and magnitude of natural hazards	Yes, explicitly in clause (b)
Impact of climate change and sea level rise	Yes, implicitly in clause (b)
Whether the location will require hazard mitigation in the future	Yes, implicitly in clause (a)
Civil defence and emergency management implications	Yes, implicitly in clause (d)
Risks and consequences beyond the development site	No, but addressed through Policy P27(c).
Impact on natural buffers	No, but addressed through Policy P30
Avoiding inappropriate development in areas at high risk	No, but addressed through Objective O21 and Policy P27
The need for hazard mitigation in moderate risk areas	Yes, implicitly in clause (a)
Locating of habitable floor areas above the 1:100 year flood level	Yes, implicitly in clauses (a) and (b)

61. As demonstrated in this table, the one aspect of Policy 52 of the RPS that I do not consider to be incorporated into the definition of risk-based approach or adequately addressed elsewhere in the hazards framework is the reference to risks and consequences beyond the development. In my view it would be reasonable to amend the definition of risk-based approach to address this present gap. However, I have not been able to find scope in the submissions for such an amendment.
62. The Panel has queried whether the risk-based approach is consistent with Policy 51 of the RPS, and whether “low” and “acceptable” have the same meaning with regard to the use of the risk-based approach.
63. In Dr Dawe’s view (as expressed in the hearing) the two terms are distinct but can overlap. “Low” risk sits at the bottom end of a continuum that moves to “moderate” risk and then to “high” risk. “Acceptable” risk describes the place on this continuum where a community finds risk from a hazard acceptable, and this will vary from community to community. “Low” risk would generally be acceptable but “moderate” risk may also be considered “acceptable”. In short, low risk will usually be acceptable, but not all acceptable risk will be low.
64. Mr Dunmore for Coastal Ratepayers has submitted extensive evidence articulating their concerns with the way the proposed Plan defines and understands risk, and incorporates it into the proposed Plan’s provisions.
65. One key area of concern for Coastal Ratepayers is the inclusion of AS/NZS ISO 31000:2009 and whether the proposed Plan gives effect to this standard. In Mr Dunmore’s view, the proposed Plan does not give effect to this standard but needs to do so, especially given the reference to the ISO standard in the NZCPS explanation of risk.
66. The NZCPS Glossary describes risk as follows:

“Risk is often expressed in terms of a combination of the consequences of an event (including changes in circumstances) and the associated likelihood of occurrence (AS/NZS ISO 31000:2009 *Risk management – Principles and guidelines*, November 2009)”.

67. As Mr Dunmore notes, this explanation makes explicit reference to the ISO standard on risk management. What is unclear to me is whether the explanation requires that this ISO standard itself must be given effect to in the proposed Plan, whether the proposed Plan must define risk as defined in the ISO standard, or whether the ISO standard does not need to be given effect to.
68. My reading of the Department of Conservation's guidelines for NZCPS Policies 24-27 has led me to conclude that the last of these three is correct. Chapter 3.1 on page 13 of the guidelines published by the Department of Conservation state the following with regard to the NZCPS's definition of risk:
- “The NZCPS 2010 glossary sets out that is often expressed as a combination of ‘the consequences of an event (including changes in circumstances) and the associated likelihood of occurrence’, which is taken from Australian/New Zealand Standard AS/NZS ISO 31000:2009 (ISO 2009)”.
69. The key phrase here in my view is “which is taken from”, which seems to imply that the ISO standard is referenced because it is the source of the explanation used by the NZCPS, rather than because the NZCPS requires that the standard is referred to in a plan's natural hazard provisions. In short, the reference to the ISO standard in the NZCPS explanation of risk appears to be just that: a reference, indicating the source of the information used, much as one would reference the source of data or a claim in an academic paper.
70. This echoes Dr Dawe's understanding, which is that the ISO standard is referred to as a reference for an information source rather than as a direction to use its terminology. The Council's legal advice is that the NZCPS glossary explains rather than defines risk, and is intended to help with interpreting the document's rules and policies. Thus, while the ISO standard can be used to further one's understanding of risk in the context of the NZCPS, the Council's legal counsel opines that if the NZCPS intended to ‘give effect’ to the ISO standard, it would need to be more explicitly referenced in the NZCPS.
71. Dr Shand, on behalf of the Minister for Conservation, indicates in his evidence submitted to the Panel that the ISO standard as a tool for coastal hazard and risk assessment has generally been superseded by guidance published in 2017

by the Ministry for the Environment. In paragraph 81 of his evidence, Dr Shand states that this MFE guidance uses a “practical” definition of risk similar to the definition used in the proposed Plan, with the level of detail provided in this document rendering use of the ISO standard definition unnecessary. Thus, in Dr Shand’s view, the ISO standard has recently been largely replaced by more tailored guidance that practitioners will make use of. I agree that the ISO standard should not be included in the proposed Plan.

72. This relates to another reason I recommend to not specifically refer to or use exact definitions from the ISO standard: the standard is generic, applying to risk of all kinds, rather than specific natural hazard risk. The main definition of risk used in the ISO standard, is the “effect of uncertainty on objectives” which is inherently vague, and would likely need additional definitions or explanatory notes to be inserted to explain what “effect” and “objective” mean, including how they are different from the ways those words are already used in the proposed Plan. In my view, this would not be either efficient or effective.
73. While I do not consider that there is a requirement to use the precise terminology of the ISO standard, I believe it is worth noting that the proposed Plan’s definition of risk is consistent with the standard. While the ISO standard does define risk as the “effect of uncertainty on objectives”, the definition also contains a number of notes. Note 4 of the ISO standard’s definition of risk reads “risk is often expressed in terms of a combination of the consequences of an event and the associated likelihood of occurrence”.
74. This is very similar to how the proposed Plan defines risk: “a combination of the probability of a natural hazard event and the consequences that would result from an event of a given magnitude. Commonly expressed by the formula: risk = hazard x vulnerability”. The only real difference in my view is that the proposed Plan’s definition of risk has been worded in a manner that is specific to natural hazards, the only context in which the proposed Plan refers to risk. However, as both Note 4 of the ISO standard and the proposed Plan’s definition are consistent, it is reasonable to conclude that the proposed Plan’s approach to defining and understanding risk is consistent with the ISO

standard, regardless of whether the proposed Plan needs to implement the standard or not.

75. Mr Dunmore has stated that while avoiding hard engineering may be a priority as set by the NZCPS, there will be instances when soft engineering solutions will be insufficient to protect existing assets and development, so there will be a need for hard engineering in some circumstances.
76. Mr Dunmore is correct in his statement that soft engineering methods will not always be sufficient and sometimes hard engineering will be necessary. However, the NZCPS provides very clear direction as to when hard engineering methods such as seawalls can be used to protect private property.
77. Policy 27(1)(c) of the NZCPS directs that the proposed Plan recognise that “hard protection structures may be the only practical means to protect existing infrastructure of national or regional importance”. I consider that this policy provides clear direction to the proposed Plan to discourage hard engineering methods in the CMA except in a limited set of circumstances, those pertaining to regionally or nationally significant infrastructure.
78. Policy 27(1)(d) meanwhile directs the proposed Plan to recognise and consider “the environmental and social costs of permitting hard protection structures to protect private property”. Similarly, Policy 27(4) of the NZCPS directs that “hard protection structures, where considered necessary to protect private assets, should not be located on public land if there is no significant public or environmental benefit in doing so”.
79. Given how disruptive hard engineering methods such as seawalls can be to natural processes and landscapes (as outlined in the s32 report on natural hazards), the unlikeliness of seawalls providing significant public benefit when they will generally be protecting private property only, and potential social costs in encouraging development in hazard prone areas that nonetheless feel safe due to seawalls and hard engineering structures, I consider that the current framework in the proposed Plan regarding the use of seawalls to protect private property that is not regionally significant infrastructure gives effect to the NZCPS.

80. In my view, the NZCPS provides clear direction to discourage the use of hard engineering in circumstances other than those that involve protecting regionally or nationally significant infrastructure. The NZCPS is especially clear with regard to the use of hard engineering to protect private assets that are not considered as such infrastructure, such as people's homes.
81. Mr Dunmore has stated that Coastal Ratepayers accepts the discretionary activity status for new seawalls, but want the policy framework to align more closely to Policies 51 and 52 of the RPS than it currently does. Mr Dunmore did express that the proposed Plan should refer to the criteria in RPS Policy 36, but agreed that Policy 51 of the RPS is more relevant to coastal hazards and risk.
82. I have addressed the alignment of the proposed Plan's policy framework with Policy 51 of the RPS above in paragraphs 62-63. In my view the proposed Plan's natural hazards framework already aligns with the direction provided in Policy 52 of the RPS. Policy 52 of the RPS consists of the following five aspects/clauses:
- a) The need for hard engineering methods (given effect through Policy P28).
 - b) Whether soft engineering is more appropriate (implicit in Policy P28).
 - c) Avoiding hard engineering unless necessary (given effect in Policy P28).
 - d) Cumulative effects of isolated hard engineering works (given effect through the definition of hazard management strategy – cumulative effects would be assessed as part of an assessment of environmental effects).
 - e) Residual risk remaining after mitigation works (given effect in Policy P27).

Recommendations

83. I recommend that:

83.1 The definitions of **risk** and **residual risk** are retained as notified.

83.2 The definition of **risk-based approach** be amended as follows:

“A **risk-based approach** takes account of the intended purpose of a development, the likelihood of natural hazard events occurring the vulnerability and exposure of the site, use or development, the severity and consequences of potential hazard events and the costs and benefits of acting or not acting. An assessment [is required as part of a resource consent application in high hazard areas and](#) needs to be commensurate with the size and scale of the use or development. The **risk** can be evaluated on a scale from low to high or acceptable to intolerable assessed on the basis of:

(a) the scale, engineering design and intended life and use for the development, and

(b) the likelihood, frequency and magnitude of natural hazard events that could potentially affect the site or development, and

(c) the vulnerability and exposure of [both](#) the development [and areas around the development](#) to natural hazards, and

(d) the severity of any physical, social, economic and environmental consequences that could arise from natural hazard events affecting [both](#) the site or development [and areas around the development](#)”.

84. In my view the scope for these amendments is provided by the following submissions:

- For the recommended amendments to clauses (c) and (d), scope is in S93/001 from Coastal Ratepayers, which sought that the Council ensure that provisions of the proposed Plan comply with the RPS.
- For the recommended amendment clarifying when a risk assessment is needed, scope is in S286/017 from Wellington City Council, who requested that the Council clarify in which circumstances a risk assessment is required with a resource consent application.

7.2 Objective O20

Background

85. Objective O20 as notified in the proposed Plan reads as follows:

“The **risk, residual risk**, and adverse effects from natural hazards and climate change on people, the community, and infrastructure are acceptable”.

86. In my RMA section 42A report on natural hazards I recommended that the objective be retained as notified.

Response

87. Federated Farmers, First Gas, the New Zealand Transport Agency, Rangitane o Wairarapa, Powerco, the Oil Companies, Masterton District Council and South Wairarapa District Council support the retention of O20 as notified in their evidence.

88. Ms Cooper for the Minister of Conservation has raised an issue with the proposed version of Objective O20, stating that it is unclear what “acceptable” means and who determines acceptability. Ms Cooper also stated in paragraphs 60-65 of her planning evidence that she views Policy P27 as providing a framework for determining what constitutes acceptable risk.

89. Ms Wratt for Wellington Water Ltd has raised concerns around the use of the word “acceptable”, stating that it is unclear what “acceptable” means, and to whom. Ms Wratt suggests that replacing the word “acceptable” with “managed” would improve the objective, reasoning that this change would align the language of the objective with that of S6(h) of the RMA.

90. The amended Objective O20 sought in Ms Wratt’s evidence would read as follows:

“The risk, residual risk, and adverse effects from natural hazards and climate change on people, the community and infrastructure are managed~~acceptable~~”.

91. Wellington International Airport Limited has also raised concerns regarding the use of “acceptable” in their evidence. Mr Kyle states he believes that replacing the word “acceptable” with “appropriately managed” would better

give effect to both the NZCPS and the RMA. My Kyle cites Policy 25 of the NZCPS and S6(g) of the RMA and their focuses on “management” as a justification for such an amendment.

92. The amended Objective O20 sought in Mr Kyle’s evidence would read as follows:

“The risk, residual risk, and adverse effects from natural hazards and climate change on people, the community and infrastructure *is appropriately managed* ~~are acceptable~~”.

93. I stand by my view that it would be inappropriate to amend Objective O20 to refer to risk being “managed” or “appropriately managed”, because this would contradict both the RPS and the NZCPS.

94. With regard to risk, RPS Policy 51 directs that risk to people, property, communities, and infrastructure shall be minimised. The NZCPS is stricter, with Policy 25 directing that increases in risk from coastal hazards are avoided. In my view, the word “managed” regardless of how it is qualified, does not align with this direction.

95. I do however want to note that I believe the word “acceptable” ought to be replaced with a word that simultaneously provides clearer direction about what outcome Objective O20 is to achieve while also giving effect to the higher order documents.

96. My recommendation is to replace the word “acceptable” with the phrase “not increased” – in my view this is consistent with the direction in the NZCPS to avoid increases in risk. However, in my view there is only scope to apply this terminology to coastal hazards (provided by the Minister of Conservation), as the remaining submissions on Objective O20 focus on coastal hazards exclusively or on reducing the risk threshold. My recommendation would nonetheless be to replace ‘acceptable’ with “not increased” and apply that terminology to all hazards to ensure a consistent approach.

97. The Panel has raised several issues with the notified version of Objective O20. In particular, the Panel is interested in:

- a) Which higher documents provide the direction for the stated outcome of “acceptable” risk?
- b) To whom should this risk be acceptable?
- c) Rather than acceptable, should the objective be focusing on another outcome, such as minimisation?
- d) Does the use of the word “acceptable” give effect to the NZCPS, which requires avoidance?

98. With regard to the point raised in paragraph 94 above, I consider that Objective O20 should be focusing on an outcome other than “acceptable”. While the reference to “acceptable” risk aligns with the risk-based approach and could also be said to align with the RPS direction to minimise risk, I do not believe that aligns with the stricter direction to avoid increases in risk in the NZCPS. I believe this addresses the issues raised in (a) and (d) above. Regarding point (b) above, the risk should be acceptable to the community that bears the risk.

99. With regard to point (c) above, in my view the word “acceptable” should be replaced with “not increased” in the CMA (as directed by the NZCPS) and “minimised” for the beds of lakes and rivers (as directed by the RPS). However as noted above, I am unable to find scope to amend Objective O20 to refer to minimising risk in the beds of lakes and rivers.

100. Finally, my understanding is that risk should be acceptable to both the individual and organisation bearing the risk and the regulatory body, so there is a measure of engagement between the applicant and the Council in such situations.

Recommendations

101. I recommend that the Panel amend Objective O20 as follows:

“The **risk, residual risk**, and adverse effects from natural hazards and climate change on people, the community, and infrastructure are:

(a) not increased in the coastal marine area, and

(b) acceptable [in the beds of lakes and rivers](#)".

102. In my view the scope for these amendments is provided by the following submission:

- S75/022 from the Minister of Conservation, who requested a new objective directing that increases in coastal hazard risk are avoided.

8. High hazard areas

103. One key way the proposed Plan controls use and development in areas that are vulnerable to hazards is through the use of high hazard areas. These areas, defined as the CMA and beds of lakes and rivers, provide spatial control on use and development.

104. The relevant provisions are: the definition of **high hazard areas**, Objective O21, and Policy P27.

8.1 Definition of high hazard areas

Background

105. The definition of **high hazard areas** (also known as "areas at high risk from natural hazards") as notified in the proposed Plan reads as follows:

"For the purposes of the Plan, all areas in the coastal marine area and the beds of lakes and rivers are high hazard areas".

106. In the s42A report on natural hazards I did not recommend any amendments to this definition, preferring that it be retained as notified.

Response

107. Mr Daysh's planning evidence for CentrePort accepts the definition and the rationale behind it, but Mr Daysh also states he expects that greater specificity will be provided in the future.

108. Ms Wratt for Wellington Water Limited opposes the notified definition of high hazard areas, requesting an amended definition that focuses on the assessment of actual hazard in their submission. The main issue raised by Ms Wratt's planning evidence is that the definition is combined with highly directive

provisions, which use language emphasising avoiding use and development. Ms Wratt believes the approach articulated in Policy 29 of the RPS (which explains “high risk” and focuses on identifying areas at high risk from hazards) would be more rigorous and better than the current approach. The Panel has also queried whether the definition of high hazard areas in the proposed Plan is consistent with Policy 29 of the RPS in terms of the “process” referred to in the explanation to the policy.

109. The process envisaged by Policy 29 of the RPS is fairly simple. Identifying areas of high risk must consider the potential hazard events that may impact the area and the vulnerability of development in the area. The explanation states that an area should be considered high risk if there is the potential for moderate to high levels of damage to the development. This assessment should factor in the effects of climate change and sea level rise.
110. The proposed Plan has identified the CMA and all beds of lakes and rivers as being high hazard areas. This approach, as explained in the s42A report, reflects the reality that all areas under the Council’s jurisdiction are high hazard areas, and are susceptible to flooding, erosion, coastal inundation and tsunami for example.
111. As noted by Ms Wratt, the RPS does have a specific definition of “high risk”, which refers to events that are likely to cause moderate to high levels of damage, and provides examples of such events. Coastal erosion as well as coastal inundation relating to sea level rise could certainly qualify, as could freshwater flooding. In my view, the definition of high hazard areas is consistent with both the process articulated in the RPS and the definition of high risk in the RPS, and I am satisfied the Council followed the process set out in the Policy 29 explanation.
112. It is my view that the drafting of the high hazard area provisions (all of the definition of high hazard areas, Objective O21, and Policy P27) was consistent with the rather basic process envisioned in the RPS, and that it is not necessary to amend the definition of high hazard areas.

113. The Panel has queried whether there is any higher order direction for managing natural hazards in the beds of lakes and rivers, either in the RPS or the National Policy Statement on Freshwater Management.
114. I am unable to find any direction in the National Policy Statement on Freshwater Management to managing natural hazards in the beds of lakes and rivers.
115. The RPS however does provide direction to manage such hazards. Policy 29, which directs the Council to identify areas at high risk from natural hazards and include policies and rules to avoid inappropriate subdivision and development in those areas, is not specific to one location or type of hazard. Rather, this policy takes a broad approach and the explanation explicitly refers to areas subject to serious flooding, which includes beds of lakes and rivers.
116. Policy 51 of the RPS also refers to fluvial hazards in its explanation, explicitly naming river flooding and inundation as a hazard in the region that the risks and consequences of risks must be minimised. With these two RPS policies in mind, I consider that there is clear direction for the Council in the proposed Plan to manage hazards and consequential risk in the beds of lakes and rivers.
117. Another issue raised by the Panel is the distinction between high hazard areas and high risk areas – the Panel has noted that the definition refers to both and has requested clarification as to what the distinction is.
118. The distinction between hazard and risk is explained in paragraphs 9-15 above. RPS Policy 29 refers to both high hazard areas and high risk areas. The proposed Plan does focus on managing the risk rather than the hazard, simply because the hazard is outside of human control.
119. In my view, identifying high hazard areas is the first step in a planning process that would move to then identifying which of these high hazard areas are high risk areas. In the case of the Wellington region and the areas that the Council has jurisdiction over, this is one and the same. The Council has jurisdiction over the CMA and beds of lakes and rivers, all of which are both high hazard and high risk.

120. I acknowledge that it would perhaps be clearer and less confusing to simply refer to such as areas as “high risk areas” rather than “high hazard areas”, as this aligns the proposed Plan’s approach to managing hazard risk. However, I do not consider there is any scope for recommending such a change.

Recommendations

121. I recommend that the definition of high hazard areas be retained as notified.

8.2 Objective O21

Background

122. Objective O21 as notified in the proposed Plan reads as follows:

“Inappropriate use and development in **high hazard areas** is avoided”.

123. In the s42A report on natural hazards I did not recommend any amendments to this objective, recommending that it be retained as notified.

Response

124. CentrePort, Powerco, the Oil Companies, Masterton District Council, South Wairarapa District Council, First Gas, NZTA, and Spark have expressed support for Objective O21 in its notified form in their evidence.
125. The evidence of Ms Cooper for the Minister of Conservation has raised concern regarding what constitutes “inappropriate” development, which is not specified or articulated in Objective O21.
126. As noted in my RMA section s42A report on natural hazards, this guidance is provided in the policy rather than the objective – Policy P27 provides a means of determining what is and is not inappropriate development in a high hazard area (it describes how O21 will be achieved).
127. The evidence of Mr Kyle for Wellington International Airport Limited reaffirms support for the use of the word “inappropriate” as well as opposition to the lack of reference to functional need and operational requirement. Mr Kyle states that his understanding is that inappropriate use and development is generally that which does not have a functional need or operational requirement to be located in a high hazard area. Mr Kyle believes that

Objective O21 would better give effect to the NZCPS and s6 of the RMA if it was amended to read as follows:

~~“Inappropriate~~ Use and development in high hazard areas is avoided, unless it has a functional need or operational requirement to be located there.”

128. In my view the amendment sought by Mr Kyle is unnecessary. Objective O21 is intended to provide the higher-level goal, which is that inappropriate use and development in high hazard areas is avoided. The exception for some use and development that has a functional need or operational requirement to locate in the CMA is already provided for in Policy P27(a), provided that use or development meets the remaining criteria in clauses (b) to (e).
129. The amendment sought by Mr Kyle would both duplicate Policy P27 and be contrary to the intentions of the proposed Plan, which is that the benefits of regionally significant infrastructure be recognised while recognising the regionally significant infrastructure can have significant adverse environmental effects. This is what I believe this proposed amendment would encourage: currently, Policy P27 requires that use and development has functional need or operational requirement, and meets other criteria, while the proposed amendment would require only a functional need or operational requirement.
130. In terms of giving effect to the NZCPS, in my view the high hazard areas provisions already do. Policy 6(1)(a) of the NZCPS directs that the Council recognise that the provision of infrastructure is important to the social, economic, and cultural wellbeing of people in communities. The proposed Plan does provide this recognition in the relevant policy, Policy P27, which as stated above explicitly recognises functional need and operational requirements as a key component of acceptable use and development in high hazard areas. Therefore, I do not recommend amending Objective O21 as requested by My Kyle.

Recommendations

131. I recommend that Objective O21 is retained as notified.

8.3 Policy P27

Background

132. Policy P27 as notified in the proposed Plan reads as follows:

“Use and development, including hazard mitigation methods, in high hazard areas shall be avoided except where:

(a) they have a functional need or operational requirement or there is no practicable alternative to be so located, and

(b) the risk to the development and/or residual risk after hazard mitigation measures, assessed using a risk-based approach, is low, and

(c) the development does not cause or exacerbate natural hazards in other areas, and

(d) interference with natural processes (coastal, fluvial and lacustrine processes) is minimised, and

(e) natural cycles of erosion and accretion and the potential for natural features to fluctuate in position over time, including movements due to climate change and sea level rise, are taken into account”.

133. In my RMA section s42A report on natural hazards I recommended that Policy P27 should be amended to read as follows:

“Use and development, including hazard mitigation methods, in high hazard areas shall be avoided except where:

(a) they have a functional need or operational requirement or there is no practicable alternative to be so located, and

(b) the risk to the development and/or residual risk after hazard mitigation measures, assessed using a risk-based approach, is ~~low~~ acceptable, and

(c) the development does not cause or exacerbate natural hazards in other areas, and

(d) ~~interference with adverse effects on~~ natural processes (coastal, river and lake fluvial and lacustrine processes) ~~is~~ are minimised, and

(e) natural cycles of erosion and accretion and the potential for natural features to fluctuate in position over time, including movements due to climate change and sea level rise over at least the next 100 years, are taken into account”.

134. My reasoning for recommending these amendments is provided in paragraphs 198-255 of the s42A report on natural hazards.

Response

135. KCDC, Powerco and the Oil Companies support the proposed amendments to Policy P27.
136. The planning evidence of Ms Cooper for the Minister of Conservation accepts the proposed amendment to Policy P27 clause (e) that adds reference to the next 100 years, but disagrees with the remaining recommended amendments.
137. After giving the matter further thought, I am in agreement with Ms Cooper that clause (b)'s recommended reference to “acceptable” is ambiguous enough to present challenges in resource consenting. I am of the view that using a clearer term would be beneficial.
138. I note that in the original submission the Minister of Conservation requested that “low” be replaced with the phrase “not increased, and reduced if practicable”. However, Ms Cooper states in paragraph 65 of her planning evidence that the notified wording of Policy P27(b) is acceptable to the Minister.
139. This leaves a choice between “low” and “not increased, and reduced if practicable” for Policy P27(b). It is my view that the former, “low”, would be the better option. The latter phrase simply requires that risk may not be increased, while the former allows for an increase in risk provided that the overall risk still remains low. I thus recommend that Policy P27(b) is retained as notified, rather than amended as recommended in my s42A report on natural hazards.

140. Mr Lewandowski for the Wellington City Council stated during his presentation of evidence that he was unable to find the statutory direction for referring to sea level rise in the proposed Plan.
141. Policy 51(b) of the RPS directs that “the potential for climate change and sea level rise to increase the frequency or magnitude of a hazard event” is to be given particular regard when determining whether an activity is inappropriate. This in my view provides the direction for the reference to sea-level rise, as Policy 51 of the RPS focuses on minimising the risks and consequences of natural hazards, while Policy P27 uses the high hazard area designation to achieve this.
142. The evidence of Mr Kyle for Wellington International Airport Limited is that the proposed amendments do not fully give effect to the NZCPS, particularly the direction provided in Policy 25. In particular, Mr Kyle states that the direction provided by the NZCPS around regionally significant infrastructure has not been given effect to by Policy P27.
143. In his evidence Mr Kyle seeks that Policy P27 be amended as follows:
- “Use and development, including hazard mitigation methods, in high hazard areas shall be avoided except where:
- (a) they have a functional need or operational requirement or there is no practicable alternative to be so located, and
 - (b) remediation or mitigation measures can appropriately manage the risk and/or residual ~~the risk to the development and/or residual risk after hazard mitigation measures, assessed using a risk-based approach, is low,~~ and
 - (c) the development does not cause or exacerbate natural hazards in other areas, and
 - (d) ~~interference with~~ adverse effects on natural processes (coastal, river and lake fluvial and lacustrine processes) ~~is minimised~~ are avoided, remedied, or mitigated, and

(e) natural cycles of erosion and accretion and the potential for natural features to fluctuate in position over time, including movements due to climate change and sea level rise over at least the next 100 years, are taken into account”.

144. Mr Daysh for CentrePort supports the above relief requested by Wellington International Airport, with Mr Daysh approving of its use of the full toolbox of avoid, remedy, or mitigate, while removing the references to “interference with” and “minimised”. The crux of CentrePort’s concern is that functional need and operational requirement are adequately recognised in the proposed Plan.

145. In my view the proposed amendment to clause (b) would have the same issue as the word “acceptable” does, in that it is potentially ambiguous to refer to measures that can “appropriately manage” risk.

146. I do however agree with Mr Kyle’s suggestion that clause (d) is amended to replace the word “minimised” with the full toolbox of “avoided, remedied, or mitigated”, as I agree that such wording would better align with the RMA while providing greater precision.

147. Ms Wratt for Wellington Water Limited has raised issues with the proposed amendments. Ms Wratt expresses concern over what she views as conflict between various proposed Plan provisions, some of which encourage regionally significant infrastructure, and some of which discourage such infrastructure. In particular, Ms Wratt cites Policy 6(1)(a) of the NZCPS as providing statutory direction to recognise the benefits of regionally significant infrastructure, at least in the CMA. Ms Wratt also expresses concern that the phrase “no practicable option” sets too high a bar.

148. If amended as requested by Ms Wratt for Wellington Water, Policy P27 would read as follows:

“Use and development, including hazard mitigation methods, in high hazard areas shall be avoided except where:

(a) they have a functional need or operational requirement or ~~there is no practicable alternative~~ it is the best practicable option to be so located, and

~~(b) the risk to the development and/or residual risk after hazard mitigation measures, assessed using a risk-based approach, is low, and~~

(e b) the development does not cause or exacerbate natural hazards in other areas, and

~~(d c) interference with adverse effects on~~ natural processes (coastal, river and lake fluvial and lacustrine processes) ~~is~~ are minimised, and

(e d) natural cycles of erosion and accretion and the potential for natural features to fluctuate in position over time, including movements due to climate change and sea level rise over at least the next 100 years, are taken into account”.

149. I do not support the deletion of clause (b) from Policy P27. In order to ensure that the risk to development is carefully evaluated and managed, it is my view that deleting this clause would fail to give effect to the direction in RPS Policy 51 to minimise the risks and consequences of natural hazards. I also do not support inserting a reference to “the best practicable option” in place of “there is no practicable alternative”, as this wording would provide a pathway for use and development to occur in a high hazard area regardless of whether it needs to be there or not. This is contrary to the proposed Plan’s intent, which is that use and development in a high hazard area is located in such an area only if it has a functional need or operational requirement to be so located – the amendment proposed by Ms Wratt would not achieve this in my view.

150. Ms Whitney for the Masterton District Council and South Wairarapa District Council offers a mixed response to my recommended amendments. While supporting the recommended amendments to clauses (b) and (d), Ms Whitney questions whether it is appropriate for the 100 year timeframe to refer to both the CMA and the beds of lakes and rivers, given the direction comes from the NZCPS and thus only applies to the CMA. Ms Whitney is also concerned that

Policy P27 does not recognise the scale of an activity in a high hazard area, which could result in full risk assessments being submitted unnecessarily during the resource consent process.

151. To address these issues, Ms Whitney suggests that Policy P27 is amended as follows:

“Use and development, including hazard mitigation methods, in high hazard areas shall be avoided except where:

(a) they have a functional need or operational requirement or there is no practicable alternative to be so located, and

(aa) taking into account the scale of the activity and potentially significant natural hazard risk

~~(b i)~~ the risk to the development and/or residual risk after hazard mitigation measures, assessed using a risk-based approach, is ~~low~~ acceptable, and

~~(c ii)~~ the development does not cause or exacerbate natural hazards in other areas, and

~~(d iii) interference with~~ adverse effects on natural processes (coastal, river and lake fluvial and lacustrine processes) ~~is~~ are minimised, and

~~(e iv)~~ natural cycles of erosion and accretion and the potential for natural features to fluctuate in position over time, including movements due to climate change, and specific to the Coastal Marine Area, sea level rise over at least the next 100 years, are taken into account”.

152. I do not agree with the insertion of the term “and specific to the Coastal Marine Area” sought in Ms Whitney’s evidence, as it would change the structure of that clause in a way that separates climate change and sea level rise and treats them as two separate matters, when the two issues are included in the same sub-clause the matters are difficult to disentangle. It is thus my preference that the phrase is not inserted.

153. It is also unnecessary to insert the proposed clause (aa) in my view, as direction to take account of the scale of the activity is already provided in the definition of risk-based approach, which Policy P27 requires to be carried out as part of determining use and development to be acceptable in a high hazard area.
154. First Gas's tabled letter in lieu of appearance stands by the amendments it originally requested in its submission, stating that it generally supports Policy P27 but wants to see two amendments made.
155. If amended as requested by First Gas, Policy P27 would read as follows:
- “Use and development, including hazard mitigation methods, in high hazard areas shall be avoided except where:
- (a) they have a functional need or operational requirement or there is no practicable alternative to be so located, and
 - (b) the risk to the development and/or residual risk after hazard mitigation measures, assessed using a risk-based approach, is low, and
 - (c) the development does not cause or exacerbate natural hazards in other areas *to an unacceptable degree*, and
 - ~~(d) interference with natural processes (coastal, fluvial and lacustrine processes) is minimised, and~~
 - (e) natural cycles of erosion and accretion and the potential for natural features to fluctuate in position over time, including movements due to climate change and sea level rise, are taken into account”.
156. NZTA has also requested the amendment above to Policy P27 clause (c), adding reference to “an unacceptable degree”.
157. As some use and development in a high hazard (particularly hazard mitigation measures such as seawalls) can have significant effects on natural processes, I do not support the deletion of Policy P27 clause (d). This is particularly important in the CMA, where seawalls and other hard engineering solutions

can have significant adverse effects on coastal processes, especially deposition and erosive processes.

158. For similar reasons I also do not agree with the proposed amendment to clause (c), qualifying that development does not cause or exacerbate natural hazards in other areas to an unacceptable degree. Certain hazard mitigation measures (especially seawalls and other hard structures) can have adverse effects in areas other than at the location of the use and development because of the way they distort natural processes.
159. The Panel has raised a potential grammatical issue with Policy P27, querying whether the proposed amendment should refer to “riverine” rather than “river in clause (d)”.
160. This is correct, and is a minor amendment that I consider should be inserted.
161. The Panel have also queried whether there has been an evaluation of the permitted activities in the proposed Plan to determine whether they meet the requirements of Policy P27, and whether they were developed to ensure they were acceptable under Policy P27. In a related point, the Panel also queried whether all relevant activities that are classified as controlled or restricted discretionary have scope to be assessed against Policy P27.
162. For the benefit of the Panel, I have conducted an admittedly somewhat brief assessment of the permitted activity rules for the coastal marine areas and beds of lakes and rivers against Policy P27 to determine whether they are appropriate. To be considered appropriate under Policy P27, a permitted activity would need to meet the following five criteria:
 - a) Have a functional need, operational requirement, or no practicable alternative to being in a high hazard area.
 - b) Be at low risk from natural hazards.
 - c) Not cause/exacerbate natural hazards in other areas.
 - d) Have minimal interference on natural processes.

- e) Account for natural processes including erosion, accretion, climate change, and sea level rise.

163. This analysis uses the notified versions of the rules, but I have also examined the proposed amendments (red-line) versions to determine whether the amended versions are also compatible with Policy P27.

Rule	Does the rule implement Policy P27?
Rule R112: Maintenance, repair, replacement, upgrade or use of existing structures (excluding the Barrage Gates)	Yes, all criteria are met.
Rule R113: Diversion of flood water by existing structures	Yes, all criteria are met.
Rule R114: River crossing structures	Yes, all criteria are met.
Rule R115: Culverts	Yes, all criteria are met.
Rule R116: Establishing a small dam and existing dams	Yes, all criteria are met.
Rule R117: New structures	Yes, all criteria are met.
Rule R118: Removing or demolishing structures	Yes, all criteria are met.
Rule R119: Clearing flood debris and beach recontouring	Yes, all criteria are met.
Rule R120: Minor sand and gravel extraction	Yes, all criteria are met.
Rule R121: Maintenance of drains	Yes, all criteria are met.
Rule R122: Removing vegetation	Yes, all criteria are met.
Rule R123: Planting	Yes, all criteria are met.
Rule R124: Entry or passage over bed (excluding livestock access)	Yes, all criteria are met.
Rule R149: Maintenance or repair of structures	Yes, all criteria are met.
Rule R150: Minor additions or alterations to structures	Yes, all criteria are met.
Rule R152: Removal or demolition of a structure or part of a structure	Yes, all criteria are met.
Rule R154: New temporary structures outside sites of significance	Yes, all criteria are met.
Rule R156: New or replacement navigation aids	Yes, all criteria are met.
Rule R163: Replacement of structures or parts of structures	Yes, all criteria are met.

Rule R168: Alteration to structures identified in Schedule E2 or Schedule E3	Yes, all criteria are met.
Rule R170: Additions to structures identified in Schedule E3	Yes, all criteria are met.
Rule R173: Additions or alterations to structures inside the Commercial Port Area	Yes, all criteria are met.
Rule R175: New structures associated with passenger and cargo handling inside the Commercial Port Area	Yes, all criteria are met.
Rule R176: Use of boatsheds	Yes, all criteria are met.
Rule R180: New swing moorings inside Mooring Areas	Yes, all criteria are met.
Rule R182: Occupation of space by a structure owned by a network utility operator	Yes, all criteria are met.
Rule R185: General surface water and foreshore activities	Yes, all criteria are met.
Rule R188: Minor disturbances	Yes, all criteria are met.
Rule R189: Clearance of stormwater pipes	Yes, all criteria are met.
Rule R190: Launching, retrieving, or temporary mooring of vessels	Yes, all criteria are met.
Rule R191: Disturbance associated with beach grooming	Yes, all criteria are met.
Rule R193: River and stream mouth cutting	Yes, all criteria are met.
Rule R196: Motor vehicles	No, as no functional need/operational requirement for driving on the beach in many circumstances.
Rule R197: Motor vehicles for certain purposes	Yes, all criteria are met.
Rule R206: Red-deposition of wind-blown sand	Yes, all criteria are met.
Rule R217: Planting	Yes, all criteria are met.

164. Of the permitted activity rules, only Rule R196 does not align with Policy P27 in my view, in that Rule R196 permits driving on beaches when there is neither a functional need nor operational requirement to do so in most cases (other than vehicles associated with things like whale strandings). Rule R197 provides for driving on beaches when there is a functional need or operational requirement. It is thus my view that Rule R196 does not give effect to Policy P27.

165. I have also provided a table below that addresses query concerning assessing controlled and restricted discretionary activities, albeit in a brief manner.
166. This analysis uses the notified versions of the rules, but I have also examined the proposed amendments (red-line) versions to determine whether the amended versions also have the scope to be assessed against Policy P27.

Rule	Does the rule have scope to be assessed against Policy P27?
Rule R125: Structures within a site identified in Schedule C (mana whenua)	Yes – the structure must meet the relevant permitted activity guidelines under this rule. This means any structure consented under this rule will also comply with Policy P27.
Rule R151: Additions or alterations to structures	Yes – the structure cannot be a seawall, and the Council retains control over the effects on natural processes, and the rule also refers to associated disturbance and deposition, which can affect natural processes. Natural processes are referred to in Policy P27(d).
Rule R153: Removal or demolition of a structure or part of a structure	Yes – disturbance and deposition associated with the activity must be considered, and these can have an effect on natural processes. Natural processes are referred to in Policy P27(d).
Rule R155: New temporary structures	Yes – the Council retains discretion over the effects on natural processes, and the rule also refers to associated disturbance and deposition, which can affect natural processes. Natural processes are referred to in Policy P27(d).
Rule R157: New or replacement structures for special purposes	Yes – the Council retains control over the effects on natural processes, and the rule also refers to associated disturbance and deposition, which can affect natural processes. Natural processes are referred to in Policy P27(d).
Rule R164: Replacement of structures	Yes – disturbance and deposition associated with the activity must be considered, and these can have an effect on natural processes. Natural processes are referred to in Policy P27(d).
Rule R165: Additions or alterations to existing seawalls	Yes – the Council retains control over the effects on natural processes, and the rule also refers to associated disturbance and deposition, which can affect natural processes. Natural processes are referred to in Policy P27(d).

Rule R169: Additions or alterations to structures identified in Schedule E2 or Schedule E3	Yes – the Council retains discretion over the effects on natural processes, and the rule also refers to associated disturbance and deposition, which can affect natural processes. Natural processes are referred to in Policy P27(d).
Rule R174: Additions or alterations to structures inside the Commercial Port Area	Yes – the Council retains discretion over the effects on natural processes, and the rule also refers to associated disturbance and deposition, which can affect natural processes. Natural processes are referred to in Policy P27(d).
Rule R183: Renewal of existing resource consents for occupation of space by structures	No – the rule does not reference any aspect of Policy P27.
Rule R186: General surface water and foreshore activities	Yes – disturbance and deposition associated with the activity must be considered, and these can have an effect on natural processes. Natural processes are referred to in Policy P27(d).
Rule R192: Reach recontouring for coastal restoration purposes	Yes – deposition associated with the activity must be considered, and this can have an effect on natural processes. The Council also retains control over the effects of disturbance and deposition, as well as the potential to create a coastal flooding hazard. Natural processes are referred to in Policy P27(d).
Rule R200: Dredging for flood protection purposes or erosion mitigation	Yes – deposition associated with the activity must be considered, and this can have an effect on natural processes. The Council also retains control over the effects on natural processes. Natural processes are referred to in Policy P27(d).
Rule R202: Maintenance dredging outside a Commercial Port Area or navigation protection areas	Yes – deposition associated with the activity must be considered, and this can have an effect on natural processes. The Council also retains control over the effects on natural processes. Natural processes are referred to in Policy P27(d).
Rule R207: Deposition for beach renourishment	Yes – deposition associated with the activity must be considered, and this can have an effect on natural processes. The Council also retains control over the effects on natural processes. Natural processes are referred to in Policy P27(d).

167. The Panel has also queried whether the lack of rules relating to high hazard areas located in the beds of lakes and rivers is problematic; whether restrictions

are appropriate if Policy P27 applies to the Council's entire jurisdiction; and whether Policy P27 recognises the scale of an activity.

168. I do not consider the lack of rules specifically referencing high hazard areas in the beds of lakes and rivers to be problematic. As demonstrated in the above assessment, the activities classified as permitted within beds of lakes and rivers are consistent with Policy P27. I also note that structures such as hard engineering measures are covered (albeit not explicitly) by Rules R117 and R129, and all beds of lakes and rivers are considered high hazard areas.
169. In my view it is appropriate to have restrictions on use and development in high hazard areas despite such areas including essentially the Council's entire jurisdiction. These restrictions do not prevent use and development in high hazard areas; they aim to ensure that use and development in high hazard areas needs to be there and has accounted for the vulnerability of such areas to natural hazards.
170. Policy P27 itself does not explicitly recognise the scale of an activity; however the assessment process Policy P27 articulates for rules that have Council discretion does. In order to be considered appropriate use or development, the risk to that development has to be determined to be low, as determined by an assessment using the risk-based approach. The definition of risk-based development specifically states that "an assessment needs to be commensurate with the size and scale of the use or development". Thus, any activity that meets the criteria of Policy P27 will have had its scale recognised during the assessment process.

Recommendations

171. I recommend that Policy P27 be amended as follows:

"Use and development, including hazard mitigation methods, in high hazard areas shall be avoided except where:

- (a) they have a functional need or operational requirement or there is no practicable alternative to be so located, and

(b) the risk to the development and/or residual risk after hazard mitigation measures, assessed using a risk-based approach, is low acceptable, and

(c) the development does not cause or exacerbate natural hazards in other areas, and

(d) ~~interference with adverse effects on~~ natural processes (coastal, riverine and lake fluvial and lacustrine processes) ~~is are~~ minimised-avoided, remedied, or mitigated, and

(e) natural cycles of erosion and accretion and the potential for natural features to fluctuate in position over time, including movements due to climate change and sea level rise over at least the next 100 years, are taken into account”.

172. In my view the scope for these amendments is provided by the following submissions:

- For the recommended amendments to clause (d) inserting “avoided, remedied, or mitigated”, scope is in S282/035 from Wellington International Airport Limited, which sought the replacement of “minimised” with “avoided, remedied, or mitigated”.
- For the replacement of “river” with “riverine”, in my view this is a minor correction of an error that does not change the intent of the policy, and could thus be made under Schedule 1 clause 16(2) of the RMA.

9. Hard engineering

173. A common way of protecting use and development against natural hazards, especially coastal hazards, is to use hard engineering methods such as seawalls. The proposed Plan discourages the use of hard engineering by controlling the use of seawalls and other hard structures, with policies discouraging the use of such measures except when necessary. The relevant provisions here are the definitions of hard engineering and soft engineering, Objective O22, and Policy P28.

9.1 Definitions of hard engineering and soft engineering

Background

174. The definition of **hard engineering** in the notified version of the proposed Plan reads as follows:

“Engineering works that use structural materials such as concrete, steel, timber or rock armour to provide a hard, inflexible edge between the land-water interface along rivers, shorelines or lake edges. Typical structures include groynes, seawalls, revetments or bulkheads that are designed to prevent erosion of the land. Also referred to as ‘structural engineering’”.

175. The definition of **soft engineering** in the notified version of the proposed Plan reads as follows:

“Works such as beach nourishment and dune rebuilding that use non-structural materials (e.g. sand, cobbles, native plants) to mimic natural coastal features that can act to mitigate the impacts from natural hazards”.

176. In my RMA section 42A report on natural hazards I did not recommend any amendments to these definitions, recommending that they be retained as notified.

Response

177. The Panel has questioned whether soft engineering only relates to the CMA, or if it also applies to fluvial environments. If soft engineering also applies to fluvial environments, the Panel has queried whether there is scope to amend the definition to refer to fluvial environments as well as the CMA.

178. Soft engineering can indeed be used in beds of lakes and rivers to mitigate the impacts of natural hazards as well as in the CMA. As an example, riparian planting is a soft engineering approach that can be used to mitigate the impacts of fluvial flooding.

179. The definition for soft engineering begins with the words “works such as...”, which I believe makes it clear that the coastal examples listed in the definition are not an exhaustive list of soft engineering options, but rather an explanation for the lay person as to what soft engineering is and what it aims to achieve.

180. With that said, I consider that the definition of “soft engineering” could be improved to make it clearer to plan users that the definition is also applicable to beds of lakes and rivers.
181. I recommend that the definition of soft engineering is amended to include reference to riparian planting as an example, and to specify that soft engineering can mimic both coastal and riverine features. This amendment would not alter the effect or the intent of the definition in my view, and while there is no scope in the submissions for such an amendment, it is my view this change could be made as a Schedule 1 clause 16(2) amendment.
182. On a similar note, the Minister of Conservation has stated that hard engineering can be used to both prevent and induce erosion, and has queried whether this should be added to the definition of hard engineering.
183. Again, this is certainly correct, but again there is no scope I can find to amend the definition in such a way. I do not consider this to be a significant issue, as hard engineering will be used predominately to prevent erosion rather than induce it, the former of which the definition of hard engineering focuses on.

Recommendations

184. Retain the definition of **hard engineering** as notified.
185. Amend the definition of **soft engineering** as follows:

“Works such as beach nourishment, ~~and~~ dune rebuilding and riparian planting that use non-structural materials (e.g. sand, cobbles, native plants) to mimic natural coastal and riverine features that can act to mitigate the impacts of natural hazards.”

9.2 Objective O22

Background

186. Objective O22 as notified in the proposed Plan reads as follows:

“**Hard engineering** mitigation and protection methods are only used as a last practicable option”.

187. In my RMA section 42A report on natural hazards I did not recommend any amendments to this objective, recommending that it be retained as notified.

Response

188. Powerco and the Oil Companies have stated they accept the notified version of the objective.

189. However, several submitters oppose the provision in its notified form.

190. Mr Daysh's evidence for CentrePort opposes Objective O22 and considers that it does not provide for the maintenance, repair, and upgrade of regionally significant infrastructure where hard engineering may be the only feasible option. Mr Daysh states that he does not believe other provisions relating to regionally significant infrastructure provide sufficient recognition of the need for hard engineering. My understanding is that CentrePort are seeking the following amendment:

“Hard engineering mitigation and protection methods are only used as a last practicable option unless there is a functional need or operational requirement”.

191. Mr Edwards on behalf of the New Zealand Transport Agency is also opposed to the notified version of Objective O22, and has recommended the same wording proposed by Mr Daysh above.

192. Jamie Falloon for Federated Farmers expressed opposition of Objective O22 in their evidence. The reason given is that Objective O22 as currently worded is a policy rather than an objective. The evidence of Mr Falloon for Federated Farmers is to delete the objective.

193. Ms Wratt for Wellington Water limited opposes Objective O22 in its notified form. The submission seeks greater recognition of the need to use hard engineering when it is not the last practicable option to protect regionally significant infrastructure. Ms Wratt argues that RPS Policy 52 and NZCPS Policy 25 do not envisage a prohibition on hard engineering methods, and that the objective could better give effect to higher order documents by providing for regionally significant infrastructure.

194. If amended as requested by Ms Wratt for Wellington Water Limited, Objective O22 would read as follows:

“Soft engineering methods are encouraged, and hard engineering methods are only used where these are the best practicable option for managing coastal hazards in relation to regionally significant infrastructure. ~~Hard engineering mitigation and protection methods are only used as a last practicable option~~”.

195. First Gas's evidence remains opposed to Objective O22 and has requested that it is deleted.

196. The Panel has queried what the environmental outcome sought by Objective O22 is, and whether O22 is more of a policy means of achieving Objectives O20 and O21. In a similar vein, the Panel has also queried whether Objective 20 in the RPS (that hazard mitigation measures do not increase the risk and consequences of natural hazard events) provides the outcome that Objective O22 is currently seeking, with RPS Policy 52 (minimising the effects of hazard mitigation measures) explaining how this will be achieved.

197. In my view RPS Objective 20 manages the effects of hazard mitigation measures such as seawalls on risk; and RPS Policy 52 sets out criteria to determine when hard engineering solutions such as seawalls may be considered an appropriate response to coastal hazard risk. I do not consider that RPS Objective 20 provides the full outcome that Objective O22 is seeking to achieve; Objective 20 of the RPS focuses on the impacts hard engineering structures have on the risk presented by natural hazards but does not account for other adverse impacts of hard engineering, such as impacts on natural character and natural processes.

198. After further consideration, I agree with Federated Farmers that Objective O22 is more of a policy than an objective. I consider that Objective O22 is a means of giving effect to Objectives O20 and O21, in my view it is mainly a means of giving effect to Objectives O17 and O19:

Objective O17 is “The natural character of the coastal marine area, rivers, lakes, and their margins and natural wetlands is preserved and protected from inappropriate use and development”.

Objective O19 is “The interference from use and development on natural processes is minimised”.

199. The provisions in the proposed Plan are to give effect to the NZCPS objective 5 and policy 27, which emphasises the use of alternatives to hard engineering in a number of situations. One of the main reasons the proposed Plan discourages hard engineering is that such methods can have significant adverse impacts on natural processes. For instance, a seawall prevents natural processes from operating and can accelerate erosion at each end as it disrupts natural coastal processes and coastal geomorphology.
200. Policy P28 provides more explicit articulation of the environmental outcome sought with regard to hard engineering, which is that it is avoided except in a limited range of circumstances. I therefore consider that Policy P28 provides clearer articulation and direction than Objective O22, and is a policy that gives effect to Objective O19. This approach also gives effect to Policy 52 of the RPS.
201. With Policy P28 giving effect to Objective O19, I am of the view that Objective O22 is redundant. Policy P28 also more clearly articulates when hard engineering can be used. I therefore recommend the deletion of Objective O22, as requested by Federated Farmers and First Gas.
202. I do not believe that this deletion will create gaps in the proposed Plan or change environmental outcomes. I view this deletion as more of a rationalisation, removing a provision that does not provide a clear environmental outcome and duplicates Policy P28.

Recommendations

203. I recommend that Objective O22 be deleted:

~~“Hard engineering mitigation and protection methods are only used as a last practicable option”.~~

204. In my view the scope for this deletion is provided by the following submissions:

- S145/021 from First Gas and S352/072 from Federated Farmers, both of which requested the deletion of the objective.

9.3 Policy P28

Background

205. Policy P28 as notified in the proposed Plan reads as follows:

“**Hard engineering** mitigation and protection methods shall be avoided except where it is necessary to protect existing development from unacceptable **risk**, assessed using the **risk-based approach**, and the works either form part of a **hazard management strategy** or the environmental effects are considered to be no more than minor”.

206. In my RMA section 42A report on natural hazards I recommended that Policy P28 should be amended to read as follows:

“Hard hazard engineering mitigation and protection shall be avoided except:

(a) where necessary to protect development from unacceptable **risk**, assessed using the **risk-based approach**; and

(b) the development demonstrates a **functional need or operational requirement** to locate in a particular location; and

(i) where the environmental effects are more than minor the works form part of a risk hazard management strategy; or

(ii) any adverse effects are no more than minor and are otherwise avoided, remedied or mitigated ~~the environmental effects are considered to be no more than minor~~”.

207. My reasons for this recommended amendment are provided in my RMA section 42A report on natural hazards, in paragraphs 314-359.

Response

208. Ms Thomson's evidence for KCDC and Ms Whitney's evidence for Masterton District Council and South Wairarapa District Council accepted my recommended amendments to Policy P28.
209. The Panel has queried whether the references to functional need and operational requirement in Policy P28 are necessary, given that both terms are used in Policy P27.
210. After giving this some thought, I consider that referring to functional need and operational requirement is not necessary in Policy P28. The preamble to Policy P27 already refers to "use and development, including hazard mitigation measures", and Policy P27(a) requires functional need or operational requirement, unless there are no practicable options. Combined with the direction in Objective O21 to avoid inappropriate use and development in high hazard areas, Policy P27 essentially already directs that hard engineering methods shall be avoided unless they have a functional need or operational requirement, and meet number of other criteria. In my view, my recommendation that reference to functional need or operational requirement be inserted would create duplication in the proposed Plan.
211. Not referring to functional need or operational requirement in Policy P28 does not make the policy framework less permissive to hard engineering methods – Policy P27 still provides for such methods to be used if there is a functional need or operational requirement for them to be used, as long as conditions set out in clauses (b) to (e) of Policy P27 are met, which is already required by the proposed Plan as notified. I am therefore of the view that removing reference to functional need and operational requirement would be beneficial, as it would reduce duplication and resolve a tension in the provisions.
212. The Panel has also raised the issue of whether Policies P27 and P28 can be combined, and if there is scope for such an amendment.
213. While I agree that Policies P27 and P28 could be combined fairly easily, I recommend that they remain separate. My view is that these two policies essentially function as a two-step process for use and development in a high

hazard area. First, a use or development must be considered appropriate under Policy P27, and then once confirmed to be appropriate, Policy P28 deals specifically with hard engineering methods that may be used to reduce the risk to that use or development. I also do not believe there to be scope in the submissions for merging the two policies.

214. Mr le Marquand for Powerco and the Oil Companies also expresses support for the amendments in his evidence, but requests greater provision for regionally significant infrastructure. In particular, Mr le Marquand seeks the addition of a specific clause for regionally significant infrastructure that provides a higher acceptable effects threshold.

215. If amended as requested by Mr le Marquand for Powerco and the Oil Companies, Policy P28 would read as follows:

“Hard hazard engineering mitigation and protection shall be avoided except:

(a) where necessary to protect development from unacceptable **risk**, assessed using the **risk-based approach**; and

(b) it is demonstrated that the mitigation and protection methods have a functional need or operational requirement to locate in a particular location; and

(i) where the environmental effects are more than minor the works form part of a risk hazard management strategy; or

(ii) any adverse effects are no more than minor and are otherwise avoided, remedied or mitigated ~~the environmental effects are considered to be no more than minor;~~ or

(iii) it is for regionally significant infrastructure and significant adverse effects are avoided, remedied or mitigated”.

216. As discussed in paragraphs 195-196, Policy P27 already requires hard engineering methods to have functional need or operational requirement, rendering clause (b) redundant. My view is that the proposed clause (b)(iii) is

inappropriate. As worded, clause (b)(iii) would provide for the use of hard engineering with more than minor effects that is not part of a broader considered strategy. This is contrary to the proposed Plan's intent, and consequently I do not believe such an amendment to be appropriate.

217. First Gas's evidence offers a mixed response to the recommended amendments – while supporting the changes to clauses (a) and (b), the insertion of subclauses (i) and (ii) are stated to be a matter of concern. The current iteration of these subclauses, which emphasise effect thresholds are clunky in First Gas' view, and First Gas would prefer these subclauses be rewritten to facilitate assessment of effects, rather than dividing by thresholds.

218. I note here that an assessment of effects is a key component of a hazard management strategy, as stated in the term's definition, and in requiring hard engineering works to be part of a broader hazard management strategy it is my view that Policy P28 already facilitates such assessment.

219. There are several submitters who oppose my recommended amendments to Policy P28.

220. CentrePort, supported by KiwiRail, expresses concern that my recommended amendment does not adequately provide for regionally significant infrastructure and the need to use hard engineering to protect such infrastructure.

221. Mr Daysh seeks the wording used in CentrePort's submission, which is as follows:

“Hard engineering mitigation and protection methods shall be avoided except where:

(a) there is a functional and operational need; or

(b) it is necessary to protect existing and planned future development from unacceptable risk, assessed using the risk-based approach, and the works either form part of a hazard management strategy or the environmental effects are considered to be no more than minor”.

222. Mr Edwards for NZTA opposes the recommended amendments, preferring that the only amendment that is made should be to refer to “existing and planned development” rather than just “development”.
223. I do not agree with the Policy P28 clause (a) as sought in the evidence of Mr Daysh as shown above, as in my view this would provide for the use of hard engineering without requiring that it is part of a broader hazard risk management strategy, which is what the proposed Plan intends. Such an amendment would also not give effect to Policy 25(e) of the NZCPS, which directs that hard protection structures shall be discouraged.
224. I also do not agree with Mr Daysh that providing for planned future development in the beds of lakes and rivers, and in the CMA is appropriate, given the breadth of the proposed amendment and the uncertainty it would create.
225. Evidence of Federated Farmers opposes the proposed amendments, stating that the RPS and NZCPS provide for more measured and rounded assessments than Policy P28 currently provides for. Federated Farmers stand by the relief requested in the original submission.
226. I have addressed the original relief requested by Federated Farmers in paragraphs 343-345 of the s42A report on natural hazards, and in my view the response provided there still applies.
227. Evidence of Wellington Water Ltd has expressed concern that the proposed amendments to Policy P28 do not adequately recognise the need for hard engineering in some circumstances, especially pertaining to regionally significant infrastructure. In Ms Wratt's view, regionally significant infrastructure should be explicitly recognised in Policy P28.
228. If amended as sought by the evidence of Wellington Water Limited, Policy P28 would read as follows:

“Hard engineering mitigation and protection methods shall be avoided except:

(a) where it is necessary to protect existing development from unacceptable risk, assessed using the risk-based approach, and the works either form part of a hazard management strategy; or

(b) the works are required to protect the safe and efficient operation of regionally significant infrastructure, or

(c) the development demonstrates a functional need or operational requirement to locate in a particular location; and

- (i) where the environmental effects are considered to be no more than minor, the works either form part of a hazard management strategy, or*
- (ii) any adverse effects are no more than minor and are otherwise avoided, remedied or mitigated".*

229. I do not support the exemption sought for regionally significant infrastructure that this proposed clause (b) would create, as in my view this would fail to give effect to Policy 51(c) of the RPS, which directs that particular regard shall be given to “avoiding structural protection works or hard engineering methods unless it is necessary to protect existing development 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”. I do not see a basis in this policy for excluding regionally significant infrastructure from the requirement to have a coherent hazard risk management strategy assessing the use of hard engineering.

230. Spark’s submission has requested that the phrase “be avoided except” be replaced with “only be implemented”. The reason given for this is that the term “avoid” is extremely directive in the post-King Salmon environment, and does not reflect the NZCPS approach to hard engineering methods.

231. I have already addressed this point in paragraph 323 of my s42A report on natural hazards and I consider that the same response, that “only be implemented” is more encouraging, applies here.

232. Mr Lewendowski for Wellington City Council believes that my recommended amendments do not adequately provide for or recognise the benefits of hard

engineering in some circumstances, and has requested that the policy be amended to contain such wording.

233. In my view there is clear direction in the high order documents to discourage hard engineering in most situations. Both Policy 52(c) of the RPS and Policy 27 of the NZCPS both provide this direction, which in the case of the RPS is articulated through the use of the word “avoid”. The only context in which the benefits of hard engineering are recognised is in Policy 27(1)(c) of the NZCPS, which refers to regionally or nationally significant infrastructure.
234. Evidence of the Minister of Conservation has expressed a mixed view on the recommended amendments to Policy P28. Ms Cooper considers that my amendments do clarify the management of adverse effects and are useful additions to the policy, but has expressed concern about the recommended clause (b) concerning functional need and operational requirement and if that is necessary. Ms Cooper’s evidence is that Policy P28 provides additional guidance on hazard mitigation measures when Policy P27 conditions have already been met, which I agree with.
235. Ms Cooper thus recommends amending Policy P28 as follows:
- “Hard engineering mitigation and protection methods shall be avoided except where it is necessary to protect existing development from unacceptable risk, assessed using the risk-based approach, ~~and~~ Where the environmental effects are more than minor the works either form part of a hazard management strategy; or the adverse effects are no more than minor and are otherwise avoided, remedied or mitigated. ~~environmental effects are considered to be no more than minor~~”.
236. The key difference between my recommended amendment in my RMA section 42A report on natural hazards and the amendment sought by Ms Cooper to Policy P28 above is the lack of reference to functional need and operational requirement in Ms Cooper’s proposal. I consider my recommendation in paragraphs 195-196 to remove that previously recommended insertion addresses Ms Cooper’s concerns.

237. The Panel has queried whether the proposed amendment to Policy P28 clause (b)(ii) should read “any adverse effects are no more than minor, are otherwise avoided, remedied or mitigated”, removing the word “and” while replacing it with a comma.
238. After giving this matter thought, my response is that the remainder of that sentence after the word “minor” should be removed, as this would reword clause (b) to reflect the original intent of Policy P28 to require either effects that are no more than minor, or effects to be part of a hazard risk management strategy if more than minor.

Recommendations

239. I recommend that Policy P28 be amended as follows:

“Hard hazard engineering mitigation and protection shall be avoided except:

~~(a)~~ where necessary to protect existing development from unacceptable **risk**, assessed using the **risk-based approach**; and

~~(b) the development demonstrates a functional need or operational requirement to locate in a particular location; and~~

~~(i) (a) any adverse effects are no more than minor, or where the environmental effects are more than minor the works form part of a risk hazard management strategy; or~~

~~(ii) (b) where the environmental effects are more than minor the works form part of a hazard risk management strategy. any adverse effects are no more than minor and are otherwise avoided, remedied or mitigated the environmental effects are considered to be no more than minor”.~~

240. In my view the scope for these amendments is provided by the following submission: S282/036 from Wellington International Airport Limited, who requested the policy be restructured.

10. Miscellaneous issues

241. Aside from the overarching issues and three key issues identified in previous paragraphs, there are several less prominent or less contentious issues relating to other provisions. These are discussed in this section.

10.1 Policy P29

Background

242. Policy P29 as notified in the proposed Plan reads as follows:

“Policy P29: Climate change

Particular regard shall be given to the potential for climate change to cause or exacerbate natural events that could adversely affect use and development, including:

- (a) coastal erosion and inundation (storm surge), and
- (b) river and lake flooding and erosion, or aggradation, and
- (c) stormwater ponding and impeded drainage, and
- (d) sea level rise, using the best available guidance for the Wellington Region”.

243. In my section 42A report on natural hazards I recommended that Policy P29 should be amended to read as follows:

“Policy P29: Effects of cClimate change

Particular regard shall be given to the potential for climate change to threaten biodiversity, aquatic ecosystem health and mahinga kai, or to cause or exacerbate natural events over at least the next 100 years that could adversely affect use and development, including:

- (a) coastal erosion and inundation (storm surge), and
- (b) river and lake flooding and erosion, ~~or~~ aggradation, decreased minimum flows, and

(c) stormwater ponding and impeded drainage, and

(d) relative sea level rise, using the best available guidance for the Wellington Region”.

244. My reasoning for recommending these amendments is provided in paragraphs 385-411 of my s42A report on natural hazards.

Response

245. Ms Thomson on behalf of KCDC and Ms Wratt on behalf of Wellington Water Limited accept the recommended amendments to Policy P29.

246. I note that in their evidence Federated Farmers is opposed to the recommended amendments to Policy P29. Mr Falloon opposes the reference to “decreased minimum flows”, stating this is a policy construct rather than an environmental effect. She suggests a reference to “extended low flows impacting on reliability of supply for out-of-stream values” would be more appropriate. However, Mr Falloon also acknowledges that Federated Farmers did not submit on Policy P29 in their original submission.

247. The evidence of the Minister of Conservation expresses a mixed view of the proposed amendments to Policy P29. While expressing approval for the proposed references to “over at least the next 100 years” and “relative” sea level rise, Ms Cooper states she is not convinced that Policy P29 is the appropriate place in the proposed Plan to insert the references to aquatic ecosystem health, mahinga kai, biodiversity, and minimum flows. In her view this is a separate issue from natural hazards and the effects of climate change on hazards. She suggests that the effects of climate change on biodiversity and ecosystems could be better addressed in a new policy or in existing provisions in chapter 4.5.

248. If amended as requested by Ms Cooper for the Minister of Conservation, Policy P29 would read as follows:

“Particular regard shall be given to the potential for climate change to cause or exacerbate natural events over at least the next 100 years that could adversely affect use and development, including:

- (a) coastal erosion and inundation (storm surge), and
- (b) river and lake flooding and erosion, aggradation, and
- (c) stormwater ponding and impeded drainage, and
- (d) relative sea level rise, using ~~the best available guidance~~ reliable scientific data for the Wellington Region”.

249. After further consideration I agree that replacing the phrase “best available guidance” with “reliable scientific data” would be beneficial.
250. While I consider that Ms Cooper raises a fair point with regard to the insertion of aquatic ecosystem health, biodiversity, mahinga kai, and decreased minimum flows, it remains my recommendation that these be referred to in Policy P29. This is in large part because retaining all of these references in Policy P29 rather than spreading them throughout the provisions would keep all of the references to the effects of climate change in one policy.

Recommendations

251. I recommend that Policy P29 be amended as follows:

“Policy P29: Effects of cClimate change

Particular regard shall be given to the potential for climate change to threaten biodiversity, aquatic ecosystem health and mahinga kai, or to cause or exacerbate natural events over at least the next 100 years that could adversely affect use and development, including:

- (a) coastal erosion and inundation (storm surge), and
- (b) river and lake flooding and erosion, ~~or~~ aggradation, decreased minimum flows, and
- (c) stormwater ponding and impeded drainage, and
- (d) relative sea level rise, using ~~the best available guidance~~ reliable scientific data for the Wellington Region”.

252. In my view the scope for these amendments is provided by the following submission:

- S175/041 from Joan Allin and Rob Crozier, who requested the replacement of “guidance” with “evidence”. While the terminology I propose differs, the submission from Joan Allin and Rob Crozier also seeks other conditions that would address the concerns expressed. In my view the recommended insertion of “reliable scientific data” achieves what Joan Allin and Rob Crozier are requesting.

10.2 Policy P30

Background

253. Policy P30 as notified in the proposed Plan reads as follows:

“The adverse effects of use and development on natural features such as beaches, dunes or wetlands that buffer development from natural hazards shall be minimised”.

254. In my section 42A report on natural hazards I recommended that Policy P30 should be amended to read as follows:

“The adverse effects of use and development on natural features such as beaches, dunes or **natural wetlands** that buffer development from natural hazards shall be minimised, and the restoration and enhancement of natural buffers shall be provided for”.

255. My reasoning for recommending these amendments is provided in paragraphs 420-434 of my RMA section 42A report on natural hazards.

Response

256. Evidence of Federated Farmers offers a mixed response to the proposed amendments to Policy P30, accepting the amended reference to natural wetlands while opposing the direction to provide for the restoration and enhancement of natural buffers. In Federated Farmers’ view, this is already provided for in Policy P8 (activities that are recognised as beneficial).

257. Evidence of KCDC disagrees with my recommended amendment to Policy P30, expressing concern that the amended policy would impose significant additional costs on KCDC. Ms Thomson (on behalf of KCDC) states that she believes that restoration and enhancement is not required in Policy P30. It is clear that KCDC would prefer that the reference to restoring and enhancing natural buffers be removed.
258. I note here that the NZCPS provides clear direction to provide for the restoration and enhancement of natural buffers. Objective 5 of the NZCPS is to ensure that coastal hazard risks are managed by “protecting or restoring natural defences to coastal hazards”. Policy 26(1) of the NZCPS directs that the proposed Plan “provide where appropriate for the protection, restoration, and enhancement of natural defences that protect coastal land uses”. With this direction in mind, it is my view that it is appropriate to include reference to both the restoration and enhancement of natural buffers to give effect to the NZCPS.
259. The evidence of Minister of Conservation has expressed support for providing for the restoration and enhancement of natural buffers in the recommended amendments to Policy P30, but suggests an alternative wording that Ms Cooper considers to be both more elegant and directive, which is as follows:
- “Provide for the restoration or enhancement of ~~The adverse effects of use and development on~~ natural features such as beaches, dunes, or wetlands that buffer development from natural hazards, ~~shall be~~ and ensure the adverse effects of use and development on them are minimised”.*
260. The Panel has queried whether it is grammatically correct for a sentence to end using the word “for”, or whether better wording could be used.
261. I agree with Ms Cooper that the proposed amendment to Policy P30 is inelegant in its wording, and that the amendment sought by the Minister of Conservation is a better alternative. I recommend that the wording proposed by Ms Cooper be adopted.

Recommendations

262. I recommend that Policy P30 be amended as follows:

“Provide for the restoration or enhancement of ~~The adverse effects of use and development on~~ natural features such as beaches, dunes or **natural wetlands** that buffer development from natural hazards ~~shall be~~ and ensure the adverse effects of use and development on them are minimised, ~~and the restoration and enhancement of natural buffers shall be provided for~~”.

263. In my view the scope for these amendments is provided by the following submission:

- S75/063 from the Minister of Conservation, which requests the precise wording I have recommended in this Right of Reply.

10.3 Definition of hazard management strategy

Background

264. In the notified version of the proposed Plan, “hazard management strategy” is defined as follows:

“Hazard Management Strategy

A coherent, integrated framework for the management of a hazard, normally developed by a local authority or appropriately qualified agency, and including some or all of the following elements; hazard and risk identification, impact assessment, potential mitigation works (costs/impacts/maintenance), assessment of environmental effects, assessment of alternate options, cost-benefit analysis, budget allocation; community engagement and implementation plan”.

265. In my RMA section 42A report on natural hazards, I recommended that the definition of ‘hazard management strategy’ be amended as follows:

“~~Hazard~~ Risk Management Strategy

A coherent, integrated framework for the management of risk a ~~hazard~~, normally developed by a local authority or appropriately qualified agency, and including some or all of the following elements; ~~hazard and~~ risk identification,

impact assessment, potential mitigation works (costs/impacts/maintenance), assessment of environmental effects, assessment of alternate options, cost-benefit analysis, budget allocation; community engagement and implementation plan.

The scale of a risk management strategy should reflect the scale of the proposed development or activity”.

266. The reasoning for recommending this amendment is located in paragraphs 478-486 in my RMA section 42A report on natural hazards.

Response

267. The Panel has raised the concern that the proposed amendment may strip away necessary context from the definition, and whether it would be better to refer to hazards in the definition, as either hazards or hazard risk.
268. In my view this is indeed an issue. When recommending the original amendment shown in paragraph 265, my focus was on distinguishing a hazard management strategy (as per the definition) from the hazard management strategy (as per Method M3) while aligning the definition with the proposed Plan's broader approach to hazards, which focuses on managing risk from hazards rather than the hazard events themselves.
269. In making the recommendation on the definition, my assumption was that a plan user consulting this definition would be doing after reading Policy P28, where the term is used. However, I agree that my recommendation to amend the definition is unlikely to provide greater clarity to a plan user if they are consulting the definition without having the context provided by the policy. I recommend that the definition is amended to refer to a “hazard risk management strategy”, to clarify that such a strategy is relevant exclusively to the risk posed by natural hazards.

Recommendations

270. Amend the definition for hazard management strategy as follows:

“**Hazard Risk** Management Strategy

A coherent, integrated framework for the management of ~~risk a~~-hazard risk, normally developed by a local authority or appropriately qualified agency, and including some or all of the following elements; hazard and risk identification, impact assessment, potential mitigation works (costs/impacts/maintenance), assessment of environmental effects, assessment of alternate options, cost-benefit analysis, budget allocation; community engagement and implementation plan.

The scale of a hazard risk management strategy should reflect the scale of the proposed development or activity”.

271. In my view the scope for these amendments is provided by the following submission:

- S352/030 from Federated Farmers, who requested the insertion of references to risk. The references to hazards remain from the notified version in this recommended amendment.

10.4 Method M3

Background

272. In the notified version of the proposed Plan, Method M3 reads as follows:

“Wellington Regional Council will work in partnership with city and district councils and stakeholders to develop and implement a Wellington regional hazards management strategy. The purpose of the strategy is to facilitate a consistent approach to managing natural hazards between local authorities in the region”.

273. In my section 42A report on natural hazards I did not recommend any amendments to this method.

Response

274. The Panel has queried the policy link to Method M3 in the proposed Plan – the diagram I presented showed Method M3 as an “off-shoot” of Objective O20. The Panel has asked whether there is a policy in the proposed Plan that Method M3 relates to, instead of just an objective.

275. In my view Method M3 cannot be linked to one primary policy in the proposed Plan. Given the emphasis Method M3 places on integrated management, it relates to several policies. These are Policy P1, which emphasises integrated catchment management, as well as Policies P27 and P28 from the hazards section.
276. KCDC seek a more directive approach from Method M3 than it currently provides, and suggests inserting a replacement date in the Method.
277. I do not consider this to be necessary. The Wellington regional hazards management strategy has been drafted and made operational, which was the outcome envisioned and directed by Method M3. As the strategy is already in effect, there would be minimal value in amending Method M3.

Recommendations

278. I recommend that Method M3 be retained as notified.

10.5 Method M4

Background

279. Method M4 as notified in the proposed Plan reads as follows:

“Wellington Regional Council will develop regional guidance for managing the impacts from sea level rise. This will include providing the best available information on the local rates of change using tide gauge records and continuous GPS records to understand relative sea level change and forecast estimates using the latest internationally peer-reviewed science and measurements.

Forecasts of sea level rise will be reviewed after each International Panel of Climate Change report and a re-analysis of the local rates of sea level change will be undertaken at least every 10 years.

The purpose of this is to enable a consistent approach between local authorities to manage climate change related coastal hazards”.

280. In my section 42A report on natural hazards I recommended that Method M4 should be amended to read as follows:

“Wellington Regional Council will develop regional guidance for managing the impacts from sea level rise. This will include providing the best available information on the local rates of change using tide gauge records and continuous GPS records to understand relative sea level change and forecast estimates using the latest internationally peer-reviewed science and measurements.

Forecasts of sea level rise will be reviewed after each ~~International~~ Intergovernmental Panel ~~of-on~~ Climate Change report and a re-analysis of the local rates of sea level change will be undertaken at least every 10 years.

The purpose of this is to enable a consistent approach between local authorities to manage climate change related coastal hazards”.

281. My reasoning for recommending these amendments is provided in paragraphs 464-476 of my section 42A report on natural hazards.

Response

282. The evidence of Wellington Recreational Marine Fishers Association have reaffirmed their belief that Method M4 needs to account for storm surges, and should include reference to being able to predict these events in advance.
283. I have addressed this issue in paragraphs 469-470 of my section 42A report on natural hazards, and I concluded that this was not a matter for Method M4, and was instead the domain of Method M3. In my view the same response applies here. The submitter did not provide a response to the recommendation in my section 42A report or new evidence, and therefore I have not changed my response to here.

Recommendations

284. I recommend that Method M4 be amended as recommended in my RMA section 42A report on natural hazards.

11. Conclusions

285. In this Right of Reply I have recommended:

- Amendments to the definition of “risk-based approach” that clarify when a risk assessment is required and that it can include an assessment of the effects beyond the development site.
- Amendment to the definition of “hazard management strategy” to clarify its applicability is to hazard risk only.
- Amendment to the definition of “soft engineering” to include explicit reference to fluvial environments.
- Amendment to the section heading 3.4 to clarify it also applies to hazards.
- Amendment to Objective O20 to distinguish between the coast and beds of lakes and rivers, and to specify that risk must not be increased in the CMA.
- Deletion of Objective O22.
- Amendments to Policy P27 to add reference to avoiding, remedying, or mitigating adverse effects, and to correct a minor grammatical error.
- Amendment to Policy P28 to simplify the policy without changing its meaning, and to remove reference to functional need and operational requirement.
- Amendment to Policy P29 to refer to “reliable scientific data”.
- Amendment to Policy P30 to incorporate clearer wording.

12. References

Auckland Council. (2014). Natural Hazard Risk Communication Toolbox.
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<https://www.civildefence.govt.nz/assets/Uploads/NHRCToolbox/NHRCToolbox-Auckland-Council.pdf>

Standards Australia/New Zealand. (2009). AS/NZS ISO 31000: Risk management – Principles and guidelines. Sydney and Wellington: Standards Australia and New Zealand

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Appendix A: Track changes for hazard provisions

Redline version – Natural hazards

<p>Hard engineering</p>	<p>Engineering works that use structural materials such as concrete, steel, timber or rock armour to provide a hard, inflexible edge between the land-water interface along rivers, shorelines or lake edges. Typical structures include groynes, seawalls, revetments or bulkheads that are designed to prevent erosion of the land. Also referred to as 'structural engineering'.</p>
<p>High hazard areas (also known as areas at high risk from natural hazards)</p>	<p>For the purposes of the Plan, all areas in the coastal marine area and the beds of lakes and rivers are high hazard areas.</p>
<p>Risk</p>	<p>A combination of the probability of a natural hazard and the consequences that would result from an event of a given magnitude. Commonly expressed by the formula: risk = hazard x vulnerability.</p>
<p>Risk-based approach (natural hazards)</p>	<p>A risk-based approach takes account of the intended purpose of a development, the likelihood of natural hazard events occurring the vulnerability and exposure of the site, use or development, the severity and consequences of potential hazard events and the costs and benefits of acting or not acting. An assessment is required as part of a resource consent application in high hazard areas and needs to be commensurate with the size and scale of the use or development. The risk can be evaluated on a scale from low to high or acceptable to intolerable assessed on the basis of:</p> <ul style="list-style-type: none"> (a) the scale, engineering design and intended life and use for the development, and (b) the likelihood, frequency and magnitude of natural hazard events that could potentially affect the site or development, and (c) the vulnerability and exposure of both the development and areas around the development to natural hazards, and (d) the severity of any physical, social, economic and environmental consequences that could arise from natural hazard events

	affecting both the site or development and areas around the development .
Hazard Risk Management Strategy	<p>A coherent, integrated framework for the management of risk a hazard risk, normally developed by a local authority or appropriately qualified agency, and including some or all of the following elements; hazard and risk identification, impact assessment, potential mitigation works (costs/impacts/maintenance), assessment of environmental effects, assessment of alternate options, cost-benefit analysis, budget allocation; community engagement and implementation plan.</p> <p>The scale of a hazard risk management strategy should reflect the scale of the proposed development or activity.</p>
Soft engineering	Works such as beach nourishment, and dune rebuilding and riparian planting that use non-structural materials (e.g. sand, cobbles, native plants) to mimic natural coastal and riverine features that can act to mitigate the impacts of natural hazards.

3.4 Natural character, ~~form and function,~~ [natural processes, and management of hazard risk](#)

Objective O20 

The **risk, residual risk**, and adverse effects from natural hazards and climate change on people, the community, and infrastructure are:

[\(a\) not increased in the coastal marine area, and](#)

[\(b\) acceptable in the beds of lakes and rivers.](#)

Objective O21 

Inappropriate use and development in **high hazard areas** is avoided.

Objective O22 

~~Hard engineering mitigation and protection methods are only used as a last practicable option.~~

4.4.4 Policies – Natural hazards

Policy P27: High hazard areas

Use and development, including hazard mitigation methods, in high hazard areas shall be avoided except where:

- (a) they have a functional need or operational requirement or there is no practicable alternative to be so located, and
- (b) the risk to the development and/or residual risk after hazard mitigation measures, assessed using a risk-based approach, is **low acceptable**, and
- (c) the development does not cause or exacerbate natural hazards in other areas, and
- (d) ~~interference with adverse effects on~~ natural processes (coastal, **riverine and lake fluvial and lacustrine** processes) **is are minimised avoided, remedied, or mitigated**, and
- (e) natural cycles of erosion and accretion and the potential for natural features to fluctuate in position over time, including movements due to climate change and sea level rise **over at least the next 100 years**, are taken into account.

Policy P28: Hazard mitigation measures

Hard hazard engineering mitigation and protection shall be avoided except:

- ~~(a)~~ where necessary to protect existing development from unacceptable **risk**, assessed using the **risk-based approach**; and
- ~~(b) the development demonstrates a functional need or operational requirement to locate in a particular location; and~~
 - ~~(i) (a) any adverse effects are no more than minor, or where the environmental effects are more than minor the works form part of a risk hazard management strategy; or~~

~~(ii) (b) where the environmental effects are more than minor the works form part of a hazard risk management strategy. any adverse effects are no more than minor and are otherwise avoided, remedied or mitigated the environmental effects are considered to be no more than minor”.~~

Policy P29: **Effects of c**Climate change 

Particular regard shall be given to the potential for climate change **to threaten biodiversity, aquatic ecosystem health and mahinga kai, or** to cause or exacerbate natural events **over at least the next 100 years** that could adversely affect use and development, including:

- (a) coastal erosion and inundation (**storm surge**), and
- (b) river and lake flooding and erosion, ~~or~~ aggradation, **decreased minimum flows**, and
- (c) **stormwater** ponding and impeded drainage, and
- (d) **relative** sea level rise, using ~~the best available guidance~~ **reliable scientific data** for the Wellington Region.

Policy P30: Natural buffers 

~~Provide for the restoration or enhancement of The adverse effects of use and development on~~ natural features such as beaches, dunes or **natural** wetlands that buffer development from natural hazards ~~shall be~~ **and ensure the adverse effects of use and development on them are** minimised, ~~and the restoration and enhancement of natural buffers shall be provided for.~~

6.2 Methods – Natural hazards

Method M3: Wellington regional hazards management strategy

Wellington Regional Council will work in partnership with city and district councils and stakeholders to develop and implement a Wellington regional hazards management strategy. The purpose of the strategy is to facilitate a consistent approach to managing natural hazards between local authorities in the region.

Method M4: Sea level rise

Wellington Regional Council will develop regional guidance for managing the impacts from sea level rise. This will include providing the best available information on the local rates of change using tide gauge records and continuous GPS records to understand relative sea level change and forecast estimates using the latest internationally peer-reviewed science and measurements.

Forecasts of sea level rise will be reviewed after each ~~International Intergovernmental~~ Panel ~~of on~~ Climate Change report and a re-analysis of the local rates of sea level change will be undertaken at least every 10 years.

The purpose of this is to enable a consistent approach between local authorities to manage climate change related coastal hazards.

Appendix B: 'Clean' version for hazard provisions

Redline version – Natural hazards

Hard engineering	Engineering works that use structural materials such as concrete, steel, timber or rock armour to provide a hard, inflexible edge between the land-water interface along rivers, shorelines or lake edges. Typical structures include groynes, seawalls, revetments or bulkheads that are designed to prevent erosion of the land. Also referred to as 'structural engineering'.
High hazard areas (also known as areas at high risk from natural hazards)	For the purposes of the Plan, all areas in the coastal marine area and the beds of lakes and rivers are high hazard areas.
Risk	A combination of the probability of a natural hazard and the consequences that would result from an event of a given magnitude. Commonly expressed by the formula: risk = hazard x vulnerability.
Risk-based approach (natural hazards)	<p>A risk-based approach takes account of the intended purpose of a development, the likelihood of natural hazard events occurring the vulnerability and exposure of the site, use or development, the severity and consequences of potential hazard events and the costs and benefits of acting or not acting. An assessment is required as part of a resource consent application in high hazard areas and needs to be commensurate with the size and scale of the use or development. The risk can be evaluated on a scale from low to high or acceptable to intolerable assessed on the basis of:</p> <ul style="list-style-type: none"> (a) the scale, engineering design and intended life and use for the development, and (b) the likelihood, frequency and magnitude of natural hazard events that could potentially affect the site or development, and (c) the vulnerability and exposure of both the development and areas around the development to natural hazards, and (d) the severity of any physical, social, economic and environmental consequences that could arise from natural hazard events

	affecting both the site or development and areas around the development.
Hazard Risk Management Strategy	<p>A coherent, integrated framework for the management of hazard risk, normally developed by a local authority or appropriately qualified agency, and including some or all of the following elements; hazard and risk identification, impact assessment, potential mitigation works (costs/impacts/maintenance), assessment of environmental effects, assessment of alternate options, cost-benefit analysis, budget allocation; community engagement and implementation plan.</p> <p>The scale of a hazard risk management strategy should reflect the scale of the proposed development or activity.</p>
Soft engineering	Works such as beach nourishment, dune rebuilding and riparian planting that use non-structural materials (e.g. sand, cobbles, native plants) to mimic natural coastal and riverine features that can act to mitigate the impacts of natural hazards.

3.4 Natural character, natural processes, and management of hazard risk

Objective O20

The **risk, residual risk**, and adverse effects from natural hazards and climate change on people, the community, and infrastructure are:

- (a) not increased in the coastal marine area
- (b) acceptable in the beds of lakes and rivers.

Objective O21

Inappropriate use and development in **high hazard areas** is avoided.

4.4.4 Policies – Natural hazards

Policy P27: High hazard areas

Use and development, including hazard mitigation methods, in high hazard areas shall be avoided except where:

- (a) they have a functional need or operational requirement or there is no practicable alternative to be so located, and
- (b) the risk to the development and/or residual risk after hazard mitigation measures, assessed using a risk-based approach, is acceptable, and
- (c) the development does not cause or exacerbate natural hazards in other areas, and
- (d) adverse effects on natural processes (coastal, riverine and lake processes) are avoided, remedied, or mitigated, and
- (e) natural cycles of erosion and accretion and the potential for natural features to fluctuate in position over time, including movements due to climate change and sea level rise over at least the next 100 years, are taken into account.

Policy P28: Hazard mitigation measures 

Hard hazard engineering mitigation and protection shall be avoided except where necessary to protect existing development from unacceptable **risk**, assessed using the **risk-based approach**; and

- (a) any adverse effects are no more than minor, or
- (b) where the environmental effects are more than minor the works form part of a hazard risk management strategy.

Policy P29: Effects of climate change 

Particular regard shall be given to the potential for climate change to threaten biodiversity, aquatic ecosystem health and **mahinga kai**, or to cause or exacerbate natural events over at least the next 100 years that could adversely affect use and development, including:

- (a) coastal erosion and inundation (**storm surge**), and
- (b) river and lake flooding and erosion, aggradation, decreased minimum flows, and
- (c) **stormwater** ponding and impeded drainage, and

(d) relative sea level rise, using reliable scientific data for the Wellington Region.

Policy P30: Natural buffers

Provide for the restoration or enhancement of natural features such as beaches, dunes or natural wetlands that buffer development from natural hazards and ensure the adverse effects of use and development on them are minimised.

6.2 Methods – Natural hazards

Method M3: Wellington regional hazards management strategy

Wellington Regional Council will work in partnership with city and district councils and stakeholders to develop and implement a Wellington regional hazards management strategy. The purpose of the strategy is to facilitate a consistent approach to managing natural hazards between local authorities in the region.

Method M4: Sea level rise

Wellington Regional Council will develop regional guidance for managing the impacts from sea level rise. This will include providing the best available information on the local rates of change using tide gauge records and continuous GPS records to understand relative sea level change and forecast estimates using the latest internationally peer-reviewed science and measurements.

Forecasts of sea level rise will be reviewed after each Intergovernmental Panel on Climate Change report and a re-analysis of the local rates of sea level change will be undertaken at least every 10 years.

The purpose of this is to enable a consistent approach between local authorities to manage climate change related coastal hazards.

Appendix C: s32AA assessment of recommended amendments

This table sets out only the provisions of the notified proposed Plan on this topic **for which submissions were specifically received**. This table does not include provisions for which no specific submissions were received but that may be affected by consequential amendments. Where the officer has recommended amendments, these are set out below. Additions to the notified text are in underline and deletions are ~~strike through~~ text. The section 32AA assessment follows alongside for each of the provisions where amendments have been recommended by the officer. If the officer does not recommend any changes, the provision appears in grey.

Red text amendments = recommendations from the officer's s42A report

Blue text amendments = updated recommendations from the officer's Right of Reply

Note that requests for **new** provisions are not included in these tables.

Amendment no./Submission no.	Chapter	Provision	Text of provision with any recommended amendments	Evaluation of amendment (section 32AA assessment)
	2 Interpretation	Hard engineering	Engineering works that use structural materials such as concrete, steel, timber or rock armour to provide a hard, inflexible edge between the land-water interface along rivers, shorelines or lake edges. Typical structures include groynes, seawalls, revetments or bulkheads that are designed to prevent erosion of the land. Also referred to as 'structural engineering'.	<u>N/A</u>
S352/030	2 Interpretation	Hazard Risk Management Strategy	A coherent, integrated framework for the management of risk a <u>hazard risk</u> , normally developed by a local authority or appropriately qualified agency, and including some or all of the following elements; <u>hazard and</u> risk identification, impact	Effectiveness and efficiency: This proposed amendment enhances the provision's efficiency and effectiveness by providing greater clarity to plan users and aligning the provision with the Plan's wider approach to hazard risk. In particular, the reference to the scale of a strategy being

Amendment no./Submission no.	Chapter	Provision	Text of provision with any recommended amendments	Evaluation of amendment (section 32AA assessment)
			<p>assessment, potential mitigation works (costs/impacts/maintenance), assessment of environmental effects, assessment of alternate options, cost-benefit analysis, budget allocation; community engagement and implementation plan.</p> <p><u>The scale of a hazard risk management strategy should reflect the scale of the proposed development or activity</u></p>	<p>aligned with the scale of a development serves to make implementing the Plan's approach to risk more efficient and effective by making it clear to plan users that small developments only require small strategies.</p> <p>Costs (environmental, economic, social, and cultural): There are unlikely to be new costs associated with this proposed amendment.</p> <p>Benefits (environmental, economic, social, and cultural): There is a potential economic benefit in making it clear that small developments only need small risk management strategies – this could save plan users money and resources that might otherwise be used preparing an unnecessarily complex strategy.</p> <p>Risk of acting or not acting: The risk to not acting is that the definition remains ambiguous regarding the scale of a risk management strategy. This could result in strategies being prepared that do not reflect the scale of the activity. The strategies could then waste resources being prepared if too detailed for the activity, or fail to adequately address the risk if too brief. Not acting also potentially leaves it unclear to Plan users that an assessment is required only in the</p>

Amendment no./Submission no.	Chapter	Provision	Text of provision with any recommended amendments	Evaluation of amendment (section 32AA assessment)
				<p>context of natural hazards and the risk they pose.</p> <p>Decision about most appropriate option: I consider that this proposed amendment is the most appropriate means of addressing issues raised by submitters while emphasising efficiency and effectiveness.</p>
	2 Interpretation	High hazard areas (also known as areas at high risk from natural hazards)	For the purposes of the Plan, all areas in the coastal marine area and the beds of lakes and rivers are high hazard areas.	<u>N/A</u>
	2 Interpretation	Risk	A combination of the probability of a natural hazard and the consequences that would result from an event of a given magnitude. Commonly expressed by the formula: risk = hazard x vulnerability.	<u>N/A</u>
S93/001 S286/017	2 Interpretation	Risk-based approach (natural hazards)	A risk-based approach takes account of the intended purpose of a development, the likelihood of natural hazard events occurring the vulnerability and exposure of the site, use or development, the severity and consequences of potential hazard events and the costs and benefits of acting or not acting. An assessment is required as part of a resource consent application in high	<p>Effectiveness and efficiency:</p> <p>This recommended amendment enhances the provision's efficiency by clarifying when an assessment is needed, more clearly explaining the boundaries of risk in the proposed Plan. Inserting this reference into the definition of the risk-based approach seems an efficient (if not the most efficient) means of doing so.</p>

Amendment no./Submission no.	Chapter	Provision	Text of provision with any recommended amendments	Evaluation of amendment (section 32AA assessment)
			<p>hazard areas and needs to be commensurate with the size and scale of the use or development. The risk can be evaluated on a scale from low to high or acceptable to intolerable assessed on the basis of:</p> <ul style="list-style-type: none"> (a) the scale, engineering design and intended life and use for the development, and (b) the likelihood, frequency and magnitude of natural hazard events that could potentially affect the site or development, and (c) the vulnerability and exposure of both the development and areas around the development to natural hazards, and (d) the severity of any physical, social, economic and environmental consequences that could arise from natural hazard events affecting both the site or development and 	<p>Costs (environmental, economic, social, and cultural): There may be financial costs associated with requiring assessment of effects beyond the development site – the scale increases and may require more time/resources to complete.</p> <p>Benefits (environmental, economic, social, and cultural): There may be an environmental benefit in requiring the consideration of effects more broadly than those at just the site.</p> <p>Risk of acting or not acting: Not acting leaves a gap in the definition's alignment with the RPS, and may lead consent applicants to include risk assessments with applications when not required.</p> <p>Decision about most appropriate option: I consider that this proposed amendment is the most appropriate means of addressing issues raised by submitters while emphasising efficiency and effectiveness.</p>

Amendment no./Submission no.	Chapter	Provision	Text of provision with any recommended amendments	Evaluation of amendment (section 32AA assessment)
			areas around the development.	
Section 16(2) amendment	2 Interpretation	Soft engineering	Works such as beach nourishment, and dune rebuilding and riparian planting that use non-structural materials (e.g. sand, cobbles, native plants) to mimic natural coastal and riverine features that can act to mitigate the impacts of natural hazards.	<p>Effectiveness and efficiency: This enhances the Plan's efficiency and effectiveness by removing ambiguity as to whether the definition applies to fluvial as well as coastal environments.</p> <p>Costs (environmental, economic, social, and cultural): No new costs.</p> <p>Benefits (environmental, economic, social, and cultural): The amendment provides greater clarity to Plan users.</p> <p>Risk of acting or not acting: Not acting would leave the definition potentially ambiguous for plan users, but is unlikely to have adverse environmental effects.</p> <p>Decision about most appropriate option: I consider that this proposed amendment is the most appropriate means of addressing issues raised by submitters while emphasising efficiency and effectiveness.</p>

Amendment no./Submission no.	Chapter	Provision	Text of provision with any recommended amendments	Evaluation of amendment (section 32AA assessment)
Section 16(2) amendment	3 Objectives	3.4 Natural character, form and function, natural processes, and management of hazard risk.		<p>Effectiveness and efficiency: This amendment is the most efficient and effective way of aligning the title of the section with its contents.</p> <p>Costs (environmental, economic, social, and cultural): No new costs.</p> <p>Benefits (environmental, economic, social, and cultural): This amended heading aligns more closely with the contents of the policies.</p> <p>Risk of acting or not acting: There is no risk to not acting.</p> <p>Decision about most appropriate option: I consider that this proposed amendment is the most appropriate means of addressing issues raised by submitters while emphasising efficiency and effectiveness.</p>
S75/022	3 Objectives	Objective O20: Risk from natural hazards	The risk, residual risk , and adverse effects from natural hazards and climate change on people, the community, and infrastructure are:	<p>Effectiveness and efficiency: In my view inserting the direction to not increase risk from coastal hazards into the existing objective is more efficient and effective</p>

Amendment no./Submission no.	Chapter	Provision	Text of provision with any recommended amendments	Evaluation of amendment (section 32AA assessment)
			<p>(a) not increased in the coastal marine area, and (b) acceptable in the beds of lakes and rivers.</p>	<p>than adopting the objective proposed by the Minister of Conservation, which would add a new provision that would clash with the existing Objective O20. This amendment would avoid that issue.</p> <p>Costs (environmental, economic, social, and cultural): There are possible economic costs to this more stringent requirement regarding development in the CMA.</p> <p>Benefits (environmental, economic, social, and cultural): There is a possible environmental and cultural benefit resulting from less development in the CMA and thus reduced impacts on the environment.</p> <p>Risk of acting or not acting: Not acting would leave this provision incompatible with the NZCPS. There is a potential significant risk associated with preventing the use and development of regionally significant infrastructure in the CMA.</p> <p>Decision about most appropriate option: I consider that this proposed amendment is the most appropriate means of addressing issues raised by submitters while</p>

Amendment no./Submission no.	Chapter	Provision	Text of provision with any recommended amendments	Evaluation of amendment (section 32AA assessment)
				emphasising efficiency and effectiveness.
	3 Objectives	Objective O21:High hazard areas	Inappropriate use and development in high hazard areas is avoided.	N/A
S145/021 S352/072	3 Objectives	Objective O22: Hard engineering	Hard engineering mitigation and protection methods are only used as a last practicable option.	<p>Effectiveness and efficiency: This amendment enhances efficiency by removing a redundant objective that is more of a policy and is duplicated in that chapter.</p> <p>Costs (environmental, economic, social, and cultural): There are no costs to this amendment, as it is duplicated in the Plan's policies.</p> <p>Benefits (environmental, economic, social, and cultural): There are no significant benefits to this amendment – it simply removes redundancy from the proposed Plan.</p> <p>Risk of acting or not acting: There is no risk to not acting – not doing so would simply leave a redundant provision in the Plan.</p> <p>Decision about most appropriate option: I consider that this proposed amendment is the most appropriate</p>

Amendment no./Submission no.	Chapter	Provision	Text of provision with any recommended amendments	Evaluation of amendment (section 32AA assessment)
				means of addressing issues raised by submitters while emphasising efficiency and effectiveness.
<p>S29/022 S55/020 S75/060 S135/062 S175/039 S282/035</p>	<p>4 Policies</p>	<p>Policy P27: High hazard areas</p>	<p>Use and development, including hazard mitigation methods, in high hazard areas shall be avoided except where:</p> <p>(a) they have a functional need or operational requirement or there is no practicable alternative to be so located, and</p> <p>(b) the risk to the development and/or residual risk after hazard mitigation measures, assessed using a risk-based approach, is low <u>acceptable</u>, and</p> <p>(c) the development does not cause or exacerbate natural hazards in other areas, and</p> <p>(d) interference with adverse effects on natural processes (coastal, <u>riverine and lake fluvial and lacustrine</u> processes) is <u>are</u> minimised-avoided, remedied, or mitigated, and</p> <p>(e) natural cycles of erosion and accretion and the potential for natural features to fluctuate in position over time, including movements due to climate change and sea level rise <u>over at least the next 100 years</u>, are taken into account.</p>	<p>Effectiveness and efficiency:</p> <p>This proposed amendment enhances the efficiency and effectiveness of the provision in a number of ways. The reference to “acceptable” rather than “low” risk more closely aligns the provision with the existing risk provisions and approaches in the Plan.</p> <p>The “plain English” terms for river and lake processes would make the provision easier for plan users to understand, thus enhancing its efficiency and effectiveness.</p> <p>Finally, inserting reference to the 100 year timeframe adds clarity to the provision by inserting an explicit timeframe that must be accounted for. This amendment also helps to give effect to the NZCPS. This greater clarity and linking to the NZCPS would help make the Plan more efficient and effective.</p> <p>Costs (environmental, economic, social, and cultural):</p> <p>There are unlikely to be new costs associated with this proposed amendment.</p>

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				<p>Benefits (environmental, economic, social, and cultural): There is a potential environmental benefit to the explicit longer term consideration required for natural processes. The simpler language should make the provision easier for plan users without a technical or scientific background to understand. The reference to the full toolbox of avoid, remedy, and mitigate provides greater flexibility to consent holders.</p> <p>Risk of acting or not acting: Not acting is unlikely to pose a significant risk. With that said, failing to act could still leave the provision less clear for Plan users than it could be and less aligned with higher order documents than it could be.</p> <p>Decision about most appropriate option: I consider that this proposed amendment is the most appropriate means of addressing issues raised by submitters while emphasising efficiency and effectiveness.</p>
S282/036	4 Policies	Policy P28: Hazard mitigation measures	Hard hazard engineering mitigation and protection shall be avoided except: (a) where necessary to protect existing development from unacceptable risk , assessed using the risk-based approach ;	<p>Effectiveness and efficiency: The greater clarity makes this amended policy more efficient and effective than the notified version.</p>

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			<p>and (b) the development demonstrates a functional need or operational requirement to locate in a particular location; and (i) (a) any adverse effects are no more than minor, or where the environmental effects are more than minor the works form part of a risk hazard management strategy; or (ii) (b) where the environmental effects are more than minor the works form part of a hazard risk management strategy. any adverse effects are no more than minor and are otherwise avoided, remedied or mitigated the environmental effects are considered to be no more than minor”.</p>	<p>Costs (environmental, economic, social, and cultural): No new costs.</p> <p>Benefits (environmental, economic, social, and cultural): There are unlikely to be significant benefits other the greater clarity to Plan users as to when a hazard risk management strategy is required.</p> <p>Risk of acting or not acting: I do not see a risk in not acting. Not acting would leave the provision somewhat less clear to Plan users than it could be, but this is a minor issue.</p> <p>Decision about most appropriate option: I consider that this proposed amendment is the most appropriate means of addressing issues raised by submitters while emphasising efficiency and effectiveness.</p>
S42/003 S47/003 S48/003 S49/003	4 Policies	Policy P29: <u>Effects of climate change</u>	Particular regard shall be given to the potential for climate change <u>threaten biodiversity, aquatic ecosystem health and mahinga kai, or</u> to cause or exacerbate natural events <u>over at least the next 100</u>	<p>Effectiveness and efficiency: This proposed amendment enhances the Plan’s efficiency and effectiveness by incorporating relative sea level rise into the provision, allowing the plan to more effectively account for local</p>

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<p>S50/003 S51/003 S57/003 S64/003 S76/062 S90/003 S93/066 S101/003 S137/003 S175/041 S353/068</p>			<p><u>years</u> that could adversely affect use and development, including:</p> <p>(a) coastal erosion and inundation (storm surge), and</p> <p>(b) river and lake flooding and erosion, of aggradation, <u>decreased minimum flows</u>, and</p> <p>(c) stormwater ponding and impeded drainage, and</p> <p>(d) <u>relative</u> sea level rise, using <u>the best available guidance</u> <u>reliable scientific data</u> for the Wellington Region.</p>	<p>conditions and changes. Additionally, the proposed references align the Plan more closely with the region's Climate Change Strategy while also incorporating ecological aspects into the policy.</p> <p>Costs (environmental, economic, social, and cultural): There are unlikely to be new costs.</p> <p>Benefits (environmental, economic, social, and cultural): This proposed amendment provides a potential environmental benefit in that it incorporates a variety of ecosystem-related aspects into the provision, and there is a potential cultural benefit resulting from the greater provision for mahinga kai. There is also clarification as to the role of scientific data over more generalised "guidance".</p> <p>Risk of acting or not acting: Not acting would leave the Plan with no consideration of the effects of climate change on aspects of ecosystems, contravening the Council's existing climate change strategy.</p> <p>Decision about most appropriate option: I consider that this proposed amendment is the most appropriate</p>

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				means of addressing issues raised by submitters while emphasising efficiency and effectiveness.
S75/063 S152/013	4 Policies	Policy P30: Natural buffers	<p><u>Provide for the restoration or enhancement of</u> The adverse effects of use and development on natural features such as beaches, dunes or natural wetlands that buffer development from natural hazards shall be and ensure the adverse effects of use and development on them are minimised, and the restoration and enhancement of natural buffers shall be provided for</p>	<p>Effectiveness and efficiency: This proposed amendment makes the Plan more efficient and effective by more clearly giving effect to the NZCPS and providing greater support for restoring natural buffers.</p> <p>Costs (environmental, economic, social, and cultural): There is a possible economic cost involved in restoring and enhancing natural buffers in locations where they have been heavily degraded or cannot be restored purely through natural processes.</p> <p>Benefits (environmental, economic, social, and cultural): There is a potentially significant environmental benefit in the restoration of natural buffers, which can provide habitat and other ecological benefits. There is also a potential social and economic benefit in terms of developing greater natural buffer protection over time that could provide protection against hazards.</p> <p>Risk of acting or not acting: Without action the policy will not incorporate reference to restoring</p>

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				<p>and enhancing natural buffers, which would mean the provision would not adequately give effect to the NZCPS.</p> <p>Decision about most appropriate option: I consider that this proposed amendment is the most appropriate means of addressing issues raised by submitters while emphasising efficiency and effectiveness.</p>
	6 Methods	Method M3: Wellington regional hazards management strategy	Wellington Regional Council will work in partnership with city and district councils and stakeholders to develop and implement a Wellington regional hazards management strategy. The purpose of the strategy is to facilitate a consistent approach to managing natural hazards between local authorities in the region.	<u>N/A</u>
S135/187 S163/151	6 Methods	Method M4: Sea level rise	Wellington Regional Council will develop regional guidance for managing the impacts from sea level rise. This will include providing the best available information on the local rates of change using tide gauge records and continuous GPS records to understand relative sea level change and forecast estimates using the latest internationally peer-reviewed science and measurements.	<p>Effectiveness and efficiency: This proposed amendment enhances the efficiency and effectiveness of the provision by correcting a minor error in the proposed method.</p> <p>Costs (environmental, economic, social, and cultural): The amendment is a minor correction. There is no cost to the change.</p>

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			<p>Forecasts of sea level rise will be reviewed after each International Intergovernmental Panel of on Climate Change report and a re-analysis of the local rates of sea level change will be undertaken at least every 10 years.</p> <p>The purpose of this is to enable a consistent approach between local authorities to manage climate change related coastal hazards.</p>	<p>Benefits (environmental, economic, social, and cultural): The amendment enhances the accuracy of the provision by inserting the correct name of the IPCC.</p> <p>Risk of acting or not acting: Not acting leaves the method with a factually inaccurate organisation name.</p> <p>Decision about most appropriate option: I consider that this proposed amendment is the most appropriate means of addressing issues raised by submitters while emphasising efficiency and effectiveness.</p>