

**Minutes:**

**Additional CAP Meeting – Northern Adaptation Area: MCDA Scoring of Shortlisted Pathways Continued**

**Date:** Thursday, 15 June 2023

**Location:** Robin’s Nest, Ngā Manu Nature Reserve, 74 Ngā Manu Reserve Road, Waikanae, (MS teams- link in invite)

**Time:** 2.00 pm – 5.00 pm

**Attendees:**

Jim Bolger (Chair), Jerry Mateparae, Donald Day, Moira Poutama, Martin Manning, Susie Mills, John Barrett, Melanie McCormick, Olivia Bird, Mark Taratoa, Te Rangimārie Williams, Dr Aroha Spinks, Stephen Daysh, Kris Pervan, Jason Holland, Sandhira Naidoo, Ashlyn Gallagher, Yvonna Chrzanowska, Kate MacDonald, Damian Debski, Aastha Shrestha and Abbey Morris

**Observers:** Cam Butler and Tim Sutton

**Apologies:** Elspeth McIntyre, Deanna Rudd, Iain Dawe, and Sophie Handford

Agenda Item	Comments
<b>Opening &amp; Introductions</b>	<p><b>Welcome</b> by Jim Bolger, Chair</p> <p><b>Opening Karakia</b> by John</p> <p>Roundtable introduction from attendees</p>
<b>Confirmation of the Minutes</b>	<p><b>Confirmation of the Minutes</b></p> <ul style="list-style-type: none"> <li>Jerry motioned to move the minutes with minor changes.</li> <li>John seconded the minutes following the changes.</li> </ul>
<b>Project Update</b>	<p><b>Abbey provided an update that:</b></p> <ul style="list-style-type: none"> <li>Jim attended the Strategy, Operations and Finance Council meeting (last Thursday- 8<sup>th</sup> June) and gave an update about Takutai Kāpiti. The video recording will be available on Council’s YouTube Channel soon. <i>Note video recording is now available on YouTube -</i> <a href="https://www.youtube.com/watch?v=jlxTo9UBhrE&amp;list=PLMkbFqbC0LfDEQBz1kskKA4XAE6SWWhsG&amp;index=6&amp;pp=iAQB">https://www.youtube.com/watch?v=jlxTo9UBhrE&amp;list=PLMkbFqbC0LfDEQBz1kskKA4XAE6SWWhsG&amp;index=6&amp;pp=iAQB</a></li> <li>Jerry suggested that it’d be helpful to receive a list of the questions asked by Elected Members.</li> </ul>
<b>Multiple Criteria Decision Analysis (MCDA)</b>	<p><b>Stephen Daysh (TAG)</b></p> <ul style="list-style-type: none"> <li>Stephen gave a quick refresher of the work done in the previous meeting and shared the focus of this meeting will be to incorporate the te ao Māori values criteria for all pathways and score the Rural settlement pathways.</li> <li>Abbey clarified that ‘avoid’ as a pathway option is not shown on the PowerPoint presentation slides – this needs to be in the future. However, as mentioned at previous CAP meetings, the ‘avoid’ pathway will be considered for all timeframes as an adaptation pathway option. Further work for the ‘avoid’ pathway options will be looked at a later CAP workshop towards the end of the project. Jim noted that it’s an important point to note.</li> <li>Stephen reminded that another step in the decision-making process will be the signals and triggers. This is something that the CAP will look at during the April 2024 CAP meeting and all adaptation areas will be covered then for this.</li> </ul>

	<p><b><i>New pieces of information prepared based on discussion from last CAP meeting:</i></b></p> <ul style="list-style-type: none"> <li>• NAA High-level Menu of Pathway Options was updated to include ‘Wetland’ within Enhance - Item 3 title and commentary.</li> <li>• A ‘Examples of Soft Engineering Erosion Protection on the Kāpiti Coast’ pamphlet have been created. This gives an overview of six soft engineering options and what they are.</li> <li>• A new pathway has been introduced for erosion for Ōtaki Beach, Te Horo and Peka Peka that does not include Soft Engineering as a pathway option. This new pathway is Enhance, Enhance, Retreat.</li> </ul> <p><b>Discussion:</b></p> <ul style="list-style-type: none"> <li>• Aroha led a discussion about the scoring of the te ao Māori values criteria. <b><i>Further details are captured within Appendix 2 of these minutes.</i></b></li> <li>• Jim asked how often the community are out gathering mahinga kai. Aroha and Mark shared that this often – in the summertime you can see people out daily.</li> <li>• Abbey clarified that it would be the signals and triggers that determine when the next pathway is moved to. There is the potential if a short term or medium-term pathway does well at adapting to coastal hazards, it could delay the need for a long-term pathway. This may include Retreat.</li> <li>• Jim mentioned if Retreat becomes required, Council will need to determine / be prepared for where people can retreat/relocate to. Jim noted that there is not a lot of suitable, unused land in the district left.</li> <li>• It was noted that in the event of Retreat, it would be a time where direct door to door consultation would be required for those potentially impacted. However, this is not something that is required yet.</li> <li>• Aroha shared that infrastructure would need to be looked at in advance before it is impacted by coastal hazards.</li> <li>• Martin noted the importance of groundwater monitor regarding sea level rise. Jason asked if it was the level or quality monitoring that Martin was interested in. Martin confirmed that it was the water level monitoring. CAP requested further information about what is currently monitored.</li> </ul>
	<p><b>TEA BREAK</b></p>
<p><b>MCDAs Assessment of Shortlisted Pathways for NAA (contd...)</b></p>	<p>Discussion continued:</p> <ul style="list-style-type: none"> <li>• Mark and Jerry noted that the whole coast is continuous – you cannot carve it up when implementing pathways. This would need to be considered at the time of planning to execute the pathways to prevent negative results.</li> <li>• Aroha commented that from a mana whenua perspective, the coast is also considered as continuous.</li> <li>• Stephen suggested that for the Enhance option, that different types of Enhance tailored to each area could still work though.</li> <li>• Damien commented that as majority of the properties within the Rural settlement, Retreat could be a viable option instead of putting protection in place long term.</li> </ul> <p>The CAP, with all agreeing, locked in the MCDA scoring of the pathways. This resulted in the pathways be ranked from highest scoring (most desirable) to lowest (least favourable).</p> <p><b><i>Full results of the CAP’s decisions for the MCDA scoring for the NAA is captured within Appendix 1 of these minutes.</i></b></p>

<p><b>Next Steps</b></p>	<p><b>Abbey Morris (KCDC)</b></p> <ul style="list-style-type: none"> <li>Abbey shared that at the next CAP meeting on 29<sup>th</sup> June the CAP will start working on the Central Adaptation Area.</li> <li>CAP is hosting a community feedback session on 1 July at Ōtaki Baptist Church where the CAP will present their draft pathways (as landed in this meeting) to the community for feedback.</li> <li>Jason will be attending the Ōtaki Community Board Meeting on Tuesday 20 June to create awareness about the NAA Community Feedback Session.</li> </ul> <p><b>Discussion</b></p> <ul style="list-style-type: none"> <li>Stephen thanked Cam for joining for the NAA – he added he has provided valuable, local knowledge at these CAP meetings.</li> <li>Jim suggested that all of the CAP raise awareness of the upcoming NAA Community Feedback Session.</li> <li>Jerry acknowledged and thanked Aroha for asking for another pathway for adapting to erosion in the NAA that did not include Soft Engineering Protection. This resulted in the most desirable pathway by a significant amount. All attendees gave Aroha a round of applause for this.</li> </ul> <p><b>Meeting closed at 4.55pm</b></p>
<p><b>Closing Karakia</b></p>	<p>By John</p>

<p style="text-align: center;"><b>ATTACHMENTS</b></p>	
	<p style="text-align: center;"><b>Updated NAA Adaptation Pathways PowerPoint Presentation – CAP Workshop 24 May 2023</b></p>
	<p style="text-align: center;"><b>Updated NAA High-level Menu of Pathway Options</b></p>
	<p style="text-align: center;"><b>Examples of Soft Engineering Erosion Protection on the Kapiti Coast pamphlet</b></p>

<p style="text-align: center;"><b>ACTIONS</b></p>		
	<p style="text-align: center;"><b>Coastal Team to circulate a list of the Elected Member’s questions from Strategy, Operation and Finance Council meeting to CAP.</b></p>	
	<p style="text-align: center;"><b>Coastal Team to provide CAP with information on what is currently monitored regarding water within the district.</b></p>	

**Appendix 1: CAP's MCDA Scoring of NAA Pathways**

		MCDA Criteria/Weighting																			
		Ecology		Landscape		Te ao Māori values		Community Social and Economic Wellbeing		Public Access and Recreation		Regulatory consenting and policy risk		Effectively manages the risks of coastal erosion		Effectively manages the risks of coastal inundation					
CAP Weighting		3		2		3		3		3		1		2		3					
MCDA Scoring																					
Management Unit	Pathways	Pathway Descriptions			Ecology		Landscape		Te ao Māori values		Community Social and Economic Wellbeing		Public Access and Recreation		Regulatory consenting and policy risk		Effectively manages the risks of coastal erosion		Effectively manages the risks of coastal inundation		MCDA Total Score
		Short term	Medium term	Long term	Score	Notes	Score	Notes	Score	Notes	Score	Notes	Score	Notes	Score	Notes	Score	Notes			
Otaki Unit 1A	1	Enhance	Enhance	Soft Engineering Protection	4	<ul style="list-style-type: none"> <li>Enhancement of existing native populations would likely promote ecology and provide greater habitat and resources for flora and fauna.</li> <li>Soft engineering may disrupt bird habitats and shellfish populations but can modify and enhance habitats in the form of enhanced dunes for beach flora and fauna.</li> </ul>	4	<ul style="list-style-type: none"> <li>Enhancement of dunes with native dune vegetation may restore natural character.</li> <li>Soft engineering may disrupt areas, but otherwise maintain an open dynamic coastline influenced by existing settlement.</li> </ul>	2	Refer to NAA MCDA Pre-scoring Te Ao Māori Values additional document	4	<ul style="list-style-type: none"> <li>The option to increase dune resilience over short and medium term aligns with stated community values.</li> <li>Community is actively included in implementation of dune resilience, it could promote social and economic wellbeing, as well as enhance social cohesion &amp; health outcomes.</li> <li>It is uncertain if insurability of personal assets will be maintained.</li> </ul>	4	<ul style="list-style-type: none"> <li>This option will maintain the natural appeal of the coastal environment and ecosystem protection could enhance community values and foster nature appreciation.</li> <li>Public access to the coastal environment will be maintained, however recreation that damages dunes may need to be restricted to protect ecosystems &amp; encourage dune stability.</li> </ul>	4	<ul style="list-style-type: none"> <li>As this option presents the least amount of impact on the existing environment (e.g. no hard engineering structures), there is unlikely to be significant consenting hurdles under the existing system in the short to medium term. Enhancement not likely to require consent or will be easy to obtain and is in line with current regulatory framework.</li> <li>Depending on scale, soft engineering protection may increase risk which elevates risk profile.</li> </ul>	3	<ul style="list-style-type: none"> <li>If designed properly it is likely to effectively manage impacts when erosion risks are lower. Effectiveness is likely to reduce over time trying to hold the shoreline in the same location as present day and thus will require additional space to allow the beach to adjust inland to maintain the dune.</li> <li>Approach is proportionate to nature and scale of risk, and would avoid exacerbation of risk in other areas.</li> <li>Design would be informed by best practise.</li> </ul>	3	<ul style="list-style-type: none"> <li>Option is not chosen to address inundation hazard.</li> <li>By raising the dune crest elevation by planting and dune reconstruction, the risk of overtopping decreases and can be added to responsively as a result of storm erosion.</li> <li>However does not address inundation hazard from pathways up river and inlets.</li> <li>Unlikely to be proportionate to the nature and scale of risk of inundation.</li> </ul>	69
	2	Enhance	Soft Engineering Protection	Soft Engineering Protection	3	<ul style="list-style-type: none"> <li>Enhancement of existing native populations will likely initially promote ecology and provide greater habitat and resources for flora and fauna. Soft engineering - beach renourishment equally good and bad aka 50/50 - Ashlyn</li> <li>Soft engineering may disrupt bird habitats and shellfish populations but can modify and enhance habitats in the form of enhanced dunes for beach flora and fauna.</li> </ul>	3	<ul style="list-style-type: none"> <li>Initial enhancement of dunes with native dune vegetation may restore natural character.</li> <li>Soft engineering may disrupt areas of coastal environment but otherwise maintain an open dynamic coastline influenced by existing settlement.</li> </ul>	1	Refer to NAA MCDA Pre-scoring Te Ao Māori Values additional document	4	<ul style="list-style-type: none"> <li>The option to increase dune resilience over short term aligns with stated community values. To ensure support for this option over medium-long term, the community may need assurance (evidence, information &amp; engagement) on suitable soft engineering responses.</li> <li>Community is actively included in implementation, it could promote social and economic wellbeing, as well as enhance social cohesion &amp; health outcomes.</li> <li>It is uncertain if insurability of personal assets will be maintained.</li> </ul>	4	<ul style="list-style-type: none"> <li>This option will maintain the natural amenity and landscape values of the coastal environment and ecosystem protection could enhance community values and foster nature appreciation.</li> <li>Public access to the coastal environment will be maintained, however recreation that damages dunes may need to be restricted to protect ecosystems &amp; encourage dune stability.</li> </ul>	3	<ul style="list-style-type: none"> <li>Consenting risk increased as a result of additional soft engineering protection. Consents required in the short term, will likely not have a difficult consenting pathway.</li> <li>As there are additional soft engineering works proposed in this option there may be a few additional consenting requirements in comparison to the above.</li> <li>Soft engineering protection presents less consenting hurdles as opposed to hard engineering protection but still may face challenges.</li> </ul>	4	<ul style="list-style-type: none"> <li>If designed properly it is likely to effectively manage impacts when erosion risks are lower. Effectiveness is likely to reduce over time trying to hold the shoreline in the same location as present day and thus will probably require increasing soft-engineering intervention or additional space to allow the beach to adjust inland.</li> <li>Approach is proportionate to nature and scale of risk, and would avoid exacerbation of risk in other areas.</li> <li>Design would be informed by best practise.</li> </ul>	3	<ul style="list-style-type: none"> <li>Option is not chosen to address inundation hazard.</li> <li>By raising the dune crest elevation by planting and dune reconstruction, the risk of overtopping decreases and can be modified responsively as a result of storm erosion.</li> <li>However does not address inundation hazard from pathways up river and inlets.</li> <li>Unlikely to be proportionate to the nature and scale of risk of inundation.</li> </ul>	62
	3	Enhance	Soft Engineering Protection	Hard Engineering Protection	2	<ul style="list-style-type: none"> <li>Enhancement of existing native populations will likely initially encourage positive ecological benefits.</li> <li>Ongoing engineering protection however has the potential to reduce ecology by damaging beach, dune, and estuary ecology, and overall may support lower biodiversity and prevent the natural migration of habitats.</li> </ul>	1	<ul style="list-style-type: none"> <li>Initial enhancement may restore natural character.</li> <li>Ongoing engineering and introduction of hard structures and potential reduction in natural beach profile may further reduce natural character and result in adverse landscape effects.</li> <li>Structures may remove some existing areas of high natural character encompassing parts of Otaki Dunes.</li> </ul>	2	Refer to NAA MCDA Pre-scoring Te Ao Māori Values additional document	2	<ul style="list-style-type: none"> <li>The option to increase dune resilience over short term aligns with stated community values.</li> <li>To ensure support for engineering options over the medium-long term, the community may need assurance (evidence, information &amp; engagement) on suitable soft / hybrid/ hard engineering responses.</li> <li>Community is actively included in implementation, it could promote social and economic wellbeing, as well as enhance social cohesion &amp; health outcomes.</li> <li>It is uncertain if insurability of personal assets will be maintained.</li> </ul>	2	<ul style="list-style-type: none"> <li>In short-medium term this option will maintain the natural appeal of the coastal environment and allow public access.</li> <li>Over time, it is likely that access to foreshore could be lost at high tide and eventually lost completely. Maintaining public access to the coastal environment would need to be integrated into the design of the engineering solution to ensure co-benefits for people and the environment.</li> <li>If adaptation option also includes ongoing dune maintenance, then recreation that damages dunes may need to be restricted to protect ecosystems &amp; encourage dune stability.</li> </ul>	2	<ul style="list-style-type: none"> <li>Hard engineered hazard mitigation methods are discouraged under existing statutory frameworks because of the adverse effects they can have on the environment.</li> <li>Policy directions in the NZCPS and the Regional Policy Statement state that hard engineering options should only be used as a last resort and the GWRC Natural Resources Plan contains a number of scheduled sites in the area.</li> <li>Therefore, this pathway may face significant consenting hurdles in its later stages.</li> </ul>	4	<ul style="list-style-type: none"> <li>Likely to effectively manage shoreline retreat at the time of implementation, but will require ongoing maintenance especially as sea level continues to rise in the long term.</li> <li>The design of any structure will be proportionate to the nature and scale of the risk, but it may cause end effects erosion and will enhance foreshore scour at its toe.</li> <li>Design would be informed by best practise to reduce these effects but there will be environmental impacts and changes to the beach associated with this option over the longer term (i.e. beach narrowing and loss of volume).</li> </ul>	2	<ul style="list-style-type: none"> <li>Option is not chosen to address inundation hazard.</li> <li>A designed crest elevation of an eventual hard structure would result in a reduction of the overtopping hazard, but would not effectively manage the wider inundation risks up river and inlet pathways.</li> </ul>	42
	4	Enhance	Soft Engineering Protection	Retreat	4	<ul style="list-style-type: none"> <li>Initial enhancement of existing native populations would likely improve existing ecology and promote greater habitat and resources for flora and fauna.</li> <li>Retreat favours ecological restoration by providing habitats for species to recolonise neighbouring areas that may become destroyed.</li> </ul>	5	<ul style="list-style-type: none"> <li>Initial enhancement may restore natural character.</li> <li>Soft engineering may disrupt natural character and result in more limited adverse landscape effects in the context of existing settlement.</li> <li>Retreat provides opportunities to restore dune planting in the absence of hard engineering and offers opportunity to restore natural character in longer term.</li> </ul>	2	Refer to NAA MCDA Pre-scoring Te Ao Māori Values additional document	4	<ul style="list-style-type: none"> <li>The option to increase dune resilience over short and medium term aligns with stated community values.</li> <li>To ensure support for soft engineering over medium term, the community may need assurance (evidence, information &amp; engagement) on suitable soft engineering / hybrid responses.</li> <li>In the long term, the community is more likely to consider retreat if are involved in the decision, and have assurance that suitable land is available to allow the community the choice to stay together and that support is in place to promote social and economic wellbeing, and enhance social cohesion &amp; health outcomes.</li> <li>It is uncertain if insurability of personal assets will be maintained.</li> </ul> <p>Commentary from the room:</p> <ul style="list-style-type: none"> <li>Yvonna (TAG) shared that the Insurance Council of New Zealand has not yet made a statement regarding insurance (or lack of) when it comes to coastal hazard risks.</li> <li>Iain (GWRC) noted that IAG have stated that they cover insurance for unknown risk but not the knowns.</li> <li>Martin commented that the CAP need to keep in consideration the access to houses too, not just the actual houses.</li> </ul>	4	<ul style="list-style-type: none"> <li>This option will maintain the natural amenity and landscape of the coastal environment.</li> <li>Public access to the coastal environment will be maintained in the short term, and is likely to continue in the medium and long term. Over all time periods, soft engineering of dunes may need to be restricted to protect ecosystems &amp; encourage dune stability.</li> <li>As managed retreat gets underway consenting may be required to allow some greenfields subdivision but may also provide further opportunities for recreation.</li> </ul>	3	<ul style="list-style-type: none"> <li>Option of retreat has limited effects on the environment in comparison to hard protection structures.</li> <li>Currently limited national direction on how to undertake managed retreat, however, this is expected to be addressed within the Climate Change Adaptation Act.</li> <li>May be difficult to justify soft engineering approaches if the plan is to retreat in the longer term, but smaller scale approaches may be cost effective to 'buy time' to effect a managed retreat.</li> <li>Retreat may also create additional consenting issues dependent on relocation plan (e.g. subdivision of new land and where to find this new land). While retreat may be a future option, planning should commence now to plan for that eventuality.</li> </ul>	5	<ul style="list-style-type: none"> <li>Effectively manages the risks of coastal erosion over time, and takes actions in the short-medium term to reduce risks over that period.</li> <li>Enhancement will be proportionate to the scale of risk under the lower SLR scenarios, but under higher SLR scenarios could result in retreat being implemented earlier than pathway 4.</li> <li>Retreat would result in total removal of risk to individuals from erosion. It would be proportionate to the nature and scale of the risk to those impacted to retreat.</li> </ul>	3	<ul style="list-style-type: none"> <li>Over the short-medium term the actions will not effectively manage the inundation hazard, however long term retreat will remove the risk to individuals impacted in the area.</li> <li>However, the properties retreated due to the erosion hazard in Otaki Beach are not the same properties that are at risk from erosion; and therefore both hazards need to be considered for retreat to be effective in reducing risk to both hazards.</li> </ul>	74
	5	Enhance	Enhance	Retreat	5	<ul style="list-style-type: none"> <li>Enhancement may improve existing native populations and likely will encourage positive ecological benefits when performed long term and coupled with pest management.</li> <li>Retreat favours ecological restoration by providing habitats for species to recolonise neighbouring areas that may become destroyed.</li> </ul>	5	<ul style="list-style-type: none"> <li>Enhancement of dune vegetation and habitats provides opportunities to restore natural character</li> <li>Retreat provides further opportunities to restore natural character in the longer term</li> </ul>	5	Refer to NAA MCDA Pre-scoring Te Ao Māori Values additional document	4	<ul style="list-style-type: none"> <li>The option to increase dune resilience over short and medium term aligns with stated community values.</li> <li>Community is actively included in implementation of dune resilience, it could promote social and economic wellbeing, as well as enhance social cohesion &amp; health outcomes.</li> <li>The longer term option to retreat allows for time for local government and communities to plan and prepare for the costs for relocation.</li> <li>It is uncertain if insurability of personal assets will be maintained.</li> </ul>	4	<ul style="list-style-type: none"> <li>This option will maintain the natural appeal of the coastal environment and ecosystem protection could enhance both community and environmental values and foster nature appreciation.</li> <li>Public access to the coastal environment will be maintained, however recreation that damages dunes may need to be restricted to protect ecosystems &amp; encourage dune stability.</li> <li>The long term option for retreat could enable recreation and public access to be planned for, developed and maintained prior to the actual relocation of the community.</li> </ul>	4	<ul style="list-style-type: none"> <li>From a consenting perspective, enhancement across the short and medium term is preferred due to enhancement of existing environment aligning with statutory framework.</li> <li>Option of retreat has limited effects on the environment in comparison to other options such as hard engineering structures.</li> <li>Currently limited national direction on how to undertake managed retreat, however, this is expected to be addressed within the Climate Change Adaptation Act.</li> <li>Retreat may also create additional consenting issues dependent on relocation plan (e.g. subdivision of new land and where to find this new land). While retreat may be a future option, planning should commence now to plan for that eventuality.</li> </ul>	5	<ul style="list-style-type: none"> <li>Effectively manages the risks of coastal erosion over time, and takes actions in the short-medium term to reduce risks over that period.</li> <li>Enhancement will be proportionate to the scale of risk under the lower SLR scenarios, but under higher SLR scenarios could result in retreat being implemented earlier than pathway 4.</li> <li>Retreat would result in total removal of risk to individuals from erosion. It would be proportionate to the nature and scale of the risk to those impacted to retreat.</li> </ul>	3	<ul style="list-style-type: none"> <li>Over the short-medium term the actions will not effectively manage the inundation hazard, however long term retreat will remove the risk to individuals impacted in the area.</li> <li>However, the properties retreated due to the erosion hazard in Otaki Beach are not the same properties that are at risk from erosion; and therefore both hazards need to be considered for retreat to be effective in reducing risk to both hazards.</li> </ul>	87
1	Enhance	Accommodate	Additional Hard Protection	3	<ul style="list-style-type: none"> <li>Enhancement may improve existing native populations likely encouraging positive ecological benefits.</li> <li>The introduction of hard protection however may have long term negative adverse effects on ecological sites and species associated with waterways i.e. Otaki River and Waiohū Stream.</li> </ul>	2	<ul style="list-style-type: none"> <li>Initial enhancement may restore natural character and provide landscape benefits.</li> <li>Eventual introduction of hard structures would reduce natural character and may result in adverse landscape effects over longer term.</li> <li>Structures may remove existing areas of high natural character at mouth of Waiohū Stream.</li> </ul>	4	Refer to NAA MCDA Pre-scoring Te Ao Māori Values additional document	4	<ul style="list-style-type: none"> <li>Initial short term enhancement option aligns with community values and maintains social cohesion.</li> <li>Those in higher inundation risk areas may need support to understand optional costs to proactively protect their dwellings from moisture and mould (floodproofing, relocatable buildings, elevate floors, etc.).</li> <li>Continue community education re: protecting &amp; hazard, and emergency management to foster resilience.</li> <li>It is uncertain if insurability of personal assets will be maintained.</li> </ul> <p>CAP commentary: Insurance companies may continue providing insurance if hard protection is done - as it minimises risk.</p>	3	<ul style="list-style-type: none"> <li>In short-medium term, this option will maintain the natural appeal of the coastal environment and ecosystem protection could further enhance community values.</li> <li>Public access to the coastal environment will be maintained, however recreation that damages dunes may need to be restricted to prevent destruction of dune stability.</li> <li>Where possible, additional hard protection, should allow for public access and recreation and provide other co-benefits.</li> </ul>	2	<ul style="list-style-type: none"> <li>Accommodation and additional hard protection on a larger scale will trigger more stringent consenting requirements compared to enhancement and soft-engineering methods.</li> <li>Hard-engineering approaches are discouraged under the NZCPS and RPS because of the adverse effects they can have on the environment.</li> <li>Furthermore, the GWRC Natural Resources Plan contains a number of scheduled sites in the area with associated consenting rules.</li> <li>Therefore, this pathway may face regulatory hurdles in its later stages especially as it will require buy-in from GWRC to approve and undertake flood protection works along the Otaki River and Waiohū Stream.</li> </ul>	1	<ul style="list-style-type: none"> <li>Pathway is not created to address the erosion hazard.</li> <li>Pathway will not effectively manage the erosion hazard.</li> </ul>	4	<ul style="list-style-type: none"> <li>Effectively reduces the risk to individual properties by raising houses above agreed flood levels but the risk remains to roading, access and services.</li> <li>Also, a residual risk to housing will remain in the short to medium term until this can be reduced by the engineered mitigation options in the longer term.</li> </ul>	62	

Oahu Unit B	2	Enhance	Additional Hard Protection	Retreat	3	<ul style="list-style-type: none"> <li>Enhancement of existing native populations will likely initially encourage positive ecological benefits.</li> <li>Hard engineering protection may reduce ecology by damaging beach, dune, and estuary ecology, and overall may support lower biodiversity and prevent the natural migration of habitats.</li> <li>Retreat provides opportunity for ecological restoration, however this would occur in an already modified environment.</li> <li>For enhance adaptation area (when present in adaptation pathway) enhance the wetlands too, not just the existing hard elements. Menu to be change to be dune and wetland enhancement.</li> </ul>	3	<ul style="list-style-type: none"> <li>Initial enhancement may restore natural character and provide landscape benefits.</li> <li>Additional hard protection may reduce natural character and result in adverse landscape effects.</li> <li>Retreat provides opportunities to restore natural character, however this would occur in the context of increased modification.</li> </ul>	4	Refer to: NAA MCDA Pre-scoring Te Ao Māori Values additional document	3	<ul style="list-style-type: none"> <li>Initial short term enhancement option aligns with community values and maintains social cohesion.</li> <li>The costs of medium term hard protection should be considered alongside cost associated with retreat in long term (floodproofing, relocatable buildings, elevate floors, etc.)</li> <li>Clear communication &amp; support for those in higher inundation risk areas so they understand costs of options to protect their dwellings &amp; risks to health vs costs of eventual retreat. Continue community education re: protecting &amp; hazard, and emergency management to foster resilience.</li> <li>It is uncertain if insurability of personal assets will be maintained.</li> </ul>	3	<ul style="list-style-type: none"> <li>This option will initially maintain the natural appeal of the coastal environment. Ecosystem protection could further enhance community values and public access to the coastal environment.</li> <li>In the medium term, additional hard protection may need to be designed to incorporate public access and opportunities for recreation, nature appreciation and other co-benefits.</li> <li>Long term retreat may offer opportunities for recreation.</li> </ul>	1	<ul style="list-style-type: none"> <li>Coastal restoration and enhancement is encouraged under the present regulatory framework and will not face any major consenting hurdles. However, the hard protection components of this pathway will face consenting hurdles as there are significant sites in the area scheduled in the GWRC Natural Resources Plan and will require buy-in from GWRC to approve and undertake flood protection works along the Okaiki River and Waiohū Stream. With a longer term aim to retreat, these works may be harder to justify. As managed retreat gets underway consenting may be required to allow some greenfields subdivision. Retreat may also create additional consenting issues dependent on relocation plan (e.g., subdivision of new land and where to find this new land).</li> </ul>	2	<ul style="list-style-type: none"> <li>Pathway over the short-medium term will not address erosion risks.</li> <li>Properties being retreated from the inundation hazard will be different to the properties being retreated from erosion, and therefore retreating properties due to inundation hazards will only effectively manage the erosion risk for a small amount of properties.</li> </ul>	4	<ul style="list-style-type: none"> <li>Short-medium term will help reduce the increasing risk until retreat is undertaken, which is highly likely to effectively manage the risks by removing individuals from the area.</li> <li>As an incremental approach, it is likely to be proportionate to the nature and scale of the risk over time.</li> </ul>	62
	3	Enhance	Accommodate	Retreat	5	<ul style="list-style-type: none"> <li>Initial enhancement would likely improve existing ecology and promote greater habitat and resources for flora and fauna.</li> <li>Retreat favours ecological restoration by providing habitats for species to recolonise neighbouring areas that may become destroyed.</li> </ul>	5	<ul style="list-style-type: none"> <li>Initial enhancement would likely restore natural character and provide landscape benefits.</li> <li>Response avoids introduction of built structures within areas contributing to natural character in the context of the existing settlement.</li> <li>Retreat offers opportunity to expand areas of restored natural character.</li> </ul>	6	Refer to: NAA MCDA Pre-scoring Te Ao Māori Values additional document	4	<ul style="list-style-type: none"> <li>Initial short term enhancement option aligns with community values and maintains social cohesion.</li> <li>Those in higher inundation risk areas may need support to understand options / costs to proactively protect their dwellings from moisture and mould (floodproofing, relocatable buildings, elevate floors, etc.) in light of future re-location / retreat.</li> <li>Continue community education re: protecting &amp; hazard, and emergency management to foster resilience and assist transition to retreat.</li> <li>It is uncertain if insurability of personal assets will be maintained.</li> </ul>	4	<ul style="list-style-type: none"> <li>This option will initially maintain the natural appeal of the coastal environment and ecosystem protection could enhance community values and public access to the coastal environment.</li> <li>In the medium term, the public may need assurance (governance/planning) that public access and opportunities for recreation and other ecology co-benefits will not be negatively impacted.</li> <li>Currently there is limited national direction on how to undertake managed retreat however, this is expected to be addressed within the Climate Change Adaptation Act.</li> <li>As managed retreat gets underway consenting may be required to allow some greenfields subdivision. Retreat may also create additional consenting issues dependent on relocation plan (e.g., subdivision of new land and where to find this new land).</li> </ul>	3	<ul style="list-style-type: none"> <li>Pathway over the short-medium term will not address erosion risks.</li> <li>Properties being retreated from the inundation hazard will be different to the properties being retreated from erosion, and therefore retreating properties due to inundation hazards will only effectively manage the erosion risk for a small amount of properties.</li> </ul>	4	<ul style="list-style-type: none"> <li>Effectively reduces the risk to individual properties by raising houses above agreed flood levels but the risk remains to roading, access and services.</li> <li>Retreat from the hazard over the long term will reduce risk to those affected.</li> <li>As an incremental approach, it is likely to be proportionate to the nature and scale of the risk over time.</li> </ul>	83		
	4	Accommodate	Additional Hard Protection	Retreat	2	<ul style="list-style-type: none"> <li>Hard engineering protection may reduce ecology by damaging beach, dune, and estuary ecology, and overall may support lower biodiversity and prevent the natural migration of habitats.</li> <li>Retreat provides opportunity for ecological restoration, however this would occur in an already modified environment.</li> </ul>	2	<ul style="list-style-type: none"> <li>Additional hard protection is likely to reduce natural character and may result in adverse landscape effects.</li> <li>Retreat provides opportunities to restore natural character, however this occurs in the context of increased modification.</li> </ul>	2	Refer to: NAA MCDA Pre-scoring Te Ao Māori Values additional document	2	<ul style="list-style-type: none"> <li>Initial short term focus is to identify dwellings at risk and educate on options/costs of floodproofing, relocatable buildings, elevate floors, etc. The community may need support to understand and implement these mitigation efforts.</li> <li>Providing the community with information on the costs of additional hard protection (alongside costs of retreat) may ensure greater acceptance and smoother transition to next pathway. Continue community education re: protecting &amp; hazard, and emergency management to foster resilience.</li> <li>It is uncertain if insurability of personal assets will be maintained.</li> </ul>	3	<ul style="list-style-type: none"> <li>In the short term, public access to the coastline is likely to be maintained.</li> <li>In the medium term, with the consideration of any additional hard protection, the public may need assurance (governance/planning) that public access and opportunities for recreation and other ecology co-benefits will not be negatively impacted.</li> <li>Design of additional hard protection and retreat (long term) should consider continued public access &amp; explore further opportunities for recreation.</li> </ul>	1	<ul style="list-style-type: none"> <li>The hard protection components of this pathway will face consenting hurdles as there are significant sites in the area scheduled in the GWRC Natural Resources Plan and will require buy-in from GWRC to approve and undertake flood protection works along the Okaiki River and Waiohū Stream.</li> <li>With a longer term aim to retreat, these works may be harder to justify.</li> <li>Accommodation also creates additional consenting requirements in comparison to enhancement.</li> <li>As managed retreat gets underway consenting may be required to allow some greenfields subdivision. Retreat may also create additional consenting issues dependent on relocation plan (e.g., subdivision of new land and where to find this new land).</li> </ul>	2	<ul style="list-style-type: none"> <li>Pathway over the short-medium term will not address erosion risks.</li> <li>Properties being retreated from the inundation hazard will be different to the properties being retreated from erosion, and therefore retreating properties due to inundation hazards will only effectively manage the erosion risk for a small amount of properties.</li> </ul>	4	<ul style="list-style-type: none"> <li>Effectively manages the risks to properties only over the short term, and potentially the broader settlement over the medium term.</li> <li>Effectively manages the risks to individuals over a long timeframe.</li> </ul>	48

Pathways for Te Horo Beach

Management	Pathways	Pathway Descriptions			Score	Ecology Notes	Score	Landscape Notes	Score	Te ao Māori values Notes	Score	Community Social and Economic Wellbeing Notes	Score	Public Access and Recreation Notes	Score	Regulatory consenting and policy risk Notes	Score	Effectively manages the risks of coastal erosion Notes	Score	Effectively manages the risks of coastal inundation Notes	MCD Total Score:
		Short term	Medium term	Long term																	
Te Horo Unit ZA	1	Enhance	Enhance	Soft Engineering Protection	4	<ul style="list-style-type: none"> <li>Enhancement of existing native populations would likely promote ecology and provide greater habitat and resources for flora and fauna.</li> <li>Soft engineering may disrupt bird habitats and shellfish populations but can modify and enhance habitats in the form of enhanced dunes for beach flora and fauna.</li> </ul>	4	<ul style="list-style-type: none"> <li>Enhancement of native dune vegetation would likely restore natural character.</li> <li>Soft engineering may disrupt areas, but otherwise maintain an open dynamic coastline influenced by existing settlement.</li> </ul>	2	Refer to: NAA MCDA Pre-scoring Te Ao Māori Values additional document	4	<ul style="list-style-type: none"> <li>The option to increase dune resilience over short and medium term aligns with stated community values.</li> <li>Community is actively included in implementation of dune resilience, as well as enhance social cohesion &amp; health outcomes. It is uncertain if insurability of personal assets will be maintained.</li> </ul>	4	<ul style="list-style-type: none"> <li>This option will maintain the natural amenity (amenity &amp; landscape) of the coastal environment and allow public access.</li> <li>Ecosystem protection could further enhance community values and foster nature appreciation.</li> <li>Public access to the coastal environment will be maintained, however recreation that damages dunes may need to be restricted to protect ecosystems &amp; encourage dune stability.</li> </ul>	4	<ul style="list-style-type: none"> <li>As this option presents the least amount of impact on the existing environment (e.g., no hard engineering structures), there is unlikely to be significant consenting hurdles under the existing system in the short to medium term.</li> <li>Enhancement not likely to require consent or will be easy to obtain and is in line with current regulatory framework.</li> <li>Depending on scale, soft engineering protection may increase risk which elevates risk profile.</li> </ul>	3	<ul style="list-style-type: none"> <li>If designed properly it is likely to effectively manage impacts when erosion risks are lower.</li> <li>Effectiveness is likely to slowly reduce over time trying to hold the shoreline in the same location as present day and thus will require additional space to allow the beach to adjust inland to maintain the dune.</li> <li>Approach is proportionate to nature and scale of risk, and would avoid exacerbation of risk in other areas. Design would be informed by best practise.</li> </ul>	3	<ul style="list-style-type: none"> <li>Option is not chosen to address inundation hazard.</li> <li>By raising the crest elevation by planting and dune reconstruction, the risk of overtopping decreases; however does not address inundation hazard from pathways up the stream.</li> <li>Unlikely to be proportionate to the nature and scale of risk of inundation.</li> </ul>	69
	2	Enhance	Soft Engineering Protection	Soft Engineering Protection	3	<ul style="list-style-type: none"> <li>Enhancement of existing native populations will likely initially promote ecology and provide greater habitat and resources for flora and fauna.</li> <li>Soft engineering may disrupt bird habitats and shellfish populations but can modify and enhance habitats in the form of enhanced dunes for beach flora and fauna.</li> </ul>	3	<ul style="list-style-type: none"> <li>Initial enhancement of dunes with native dune vegetation may restore natural character.</li> <li>Soft engineering may disrupt areas of coastal environment but otherwise maintain an open dynamic coastline influenced by existing settlement.</li> </ul>	1	Refer to: NAA MCDA Pre-scoring Te Ao Māori Values additional document	4	<ul style="list-style-type: none"> <li>The option to increase dune resilience over short term aligns with stated community values.</li> <li>To ensure support for this option over medium-long term, the community may need assurance (evidence, information &amp; engagement) on suitable soft engineering responses.</li> <li>Community is actively included in implementation, it could promote social and economic wellbeing, as well as enhance social cohesion &amp; health outcomes. It is uncertain if insurability of personal assets will be maintained.</li> </ul>	4	<ul style="list-style-type: none"> <li>This option will maintain the natural amenity and landscape values of the coastal environment.</li> <li>Ecosystem protection could further enhance community values and foster nature appreciation.</li> <li>Public access to the coastal environment will be maintained, however recreation that damages dunes may need to be restricted to protect ecosystems &amp; encourage dune stability.</li> </ul>	3	<ul style="list-style-type: none"> <li>Consenting risk increased as a result of additional soft engineering protection.</li> <li>Consents required in the short term, will likely not have a difficult consenting pathway.</li> <li>As there are additional soft engineering works proposed in this option there will be a few additional consenting requirements in comparison to the above. Soft engineering protection presents less consenting hurdles as opposed to hard engineering protection but still may face challenges.</li> </ul>	4	<ul style="list-style-type: none"> <li>If designed properly it is likely to effectively manage impacts when erosion risks are lower.</li> <li>Natural processes are likely to roll back the gravel storm berm, but the shoreline would benefit from beach 'scraping' to build crest height. Effectiveness is likely to slowly reduce over time trying to hold the shoreline in the same location as present day and thus will require additional space to allow the beach to adjust inland to maintain the dune.</li> <li>Approach is proportionate to nature and scale of risk, and would avoid exacerbation of risk in other areas. Design would be informed by best practise.</li> </ul>	3	<ul style="list-style-type: none"> <li>Option is not chosen to address inundation hazard.</li> <li>By raising the crest elevation by planting and dune reconstruction, the risk of overtopping decreases; however does not address inundation hazard from pathways up the stream.</li> <li>Unlikely to be proportionate to the nature and scale of risk of inundation.</li> </ul>	62
	3	Enhance	Soft Engineering Protection	Hard Engineering Protection	2	<ul style="list-style-type: none"> <li>Enhancement of existing native populations will likely initially encourage positive ecological benefits.</li> <li>Ongoing engineering protection however has the potential to reduce ecology by damaging beach, dune, and estuary ecology, and overall may support lower biodiversity and prevent the natural migration of habitats.</li> </ul>	1	<ul style="list-style-type: none"> <li>Initial enhancement of native dune vegetation would restore natural character.</li> <li>Progressive introduction of built structures along an otherwise open coastline is likely to have adverse landscape and natural character impacts in context of existing settlement.</li> <li>Structures may remove some existing areas of high natural character encompassing parts of Te Horo Dunes.</li> </ul>	2	Refer to: NAA MCDA Pre-scoring Te Ao Māori Values additional document	2	<ul style="list-style-type: none"> <li>The option to increase dune resilience over short term aligns with stated community values.</li> <li>To ensure support for engineering options over medium-long term, the community may need assurance (evidence, information &amp; engagement) on suitable soft / hybrid / hard engineering responses.</li> <li>Community is actively included in implementation, it could promote social and economic wellbeing, as well as enhance social cohesion &amp; health outcomes. It is uncertain if insurability of personal assets will be maintained.</li> </ul>	2	<ul style="list-style-type: none"> <li>In short-medium term this option will maintain the natural appeal of the coastal environment and allow public access.</li> <li>Over time, it is likely that access to foreshore could be lost at high tide and may be lost completely. Maintaining public access to the coastal environment would need to be integrated into the design of the engineering solution to ensure co-benefits for people and the environment.</li> <li>If adaptation option also includes ongoing dune maintenance, then recreation that damages dunes may need to be restricted to protect ecosystems &amp; encourage dune stability.</li> </ul>	2	<ul style="list-style-type: none"> <li>Hard engineered hazard mitigation methods are discouraged under existing statutory frameworks because of the adverse effects they can have on the environment.</li> <li>Policy directions in the NZCPS and the Regional Policy Statement state that hard engineering options should only be used as a last resort and the GWRC Natural Resources Plan contains some scheduled sites in the Mangaroa Stream Mouth.</li> <li>Therefore, this pathway may face significant consenting hurdles in its later stages.</li> </ul>	3	<ul style="list-style-type: none"> <li>May manage the risks of coastal erosion in the long term, however the pathway is not likely to be proportionate to the nature and scale of the risks over time.</li> <li>End effects and toe scour may cause localised exacerbation of erosion. Design would be informed by best practise.</li> </ul>	2	<ul style="list-style-type: none"> <li>Option is not chosen to address inundation hazard.</li> <li>A designed crest elevation of an eventual hard structure would result in a reduction of the overtopping hazard, but would not effectively manage the wider inundation risks up Mangaroa stream pathway.</li> </ul>	40
	4	Enhance	Soft Engineering Protection	Retreat	4	<ul style="list-style-type: none"> <li>Initial enhancement of existing native populations would likely improve existing ecology and promote greater habitat and resources for flora and fauna.</li> <li>Retreat favours ecological restoration by providing habitats for species to recolonise neighbouring areas that may become destroyed.</li> </ul>	5	<ul style="list-style-type: none"> <li>Initial enhancement may restore natural character.</li> <li>Soft engineering may disrupt natural character and result in more limited adverse landscape effects in the context of existing settlement.</li> <li>Retreat provides opportunities to restore dune planting in the absence of hard engineering and offers opportunity to restore natural character in longer term.</li> </ul>	2	Refer to: NAA MCDA Pre-scoring Te Ao Māori Values additional document	4	<ul style="list-style-type: none"> <li>The option to increase dune resilience over short term aligns with stated community values.</li> <li>To ensure support for soft engineering over medium term, the community may need assurance (evidence, information &amp; engagement) on suitable soft engineering / hybrid responses.</li> <li>In the long term, the community is more likely to consider retreat if it is involved in the decision, and have assurance that suitable land is available to allow the community the choice to stay together and that support is in place to promote social and economic wellbeing, and enhance social cohesion &amp; health outcomes.</li> <li>It is uncertain if insurability of personal assets will be maintained.</li> </ul>	4	<ul style="list-style-type: none"> <li>This option will maintain the natural amenity and landscape of the coastal environment.</li> <li>Public access to the coastal environment will be maintained in short term, and is likely to continue in the medium and long term.</li> <li>Over all time periods, recreation that damages dunes may need to be restricted to protect ecosystems &amp; encourage dune stability. Retreat may provide further opportunities for recreation.</li> </ul>	3	<ul style="list-style-type: none"> <li>Coastal restoration and enhancement is encouraged under the present regulatory framework and will not face any major consenting hurdles.</li> <li>If managed retreat is done well it should have limited effects on the environment as opposed to hard protection structures.</li> <li>Currently there is limited national direction on how to undertake managed retreat however, this may be addressed within the climate change adaptation act.</li> <li>The scale of the soft engineering works will need to be commensurate with the plan to retreat in the medium to long term.</li> <li>Managed retreat may require consenting to allow some greenfields subdivision. Retreat may also create additional consenting issues dependent on relocation plan (e.g., subdivision of new land and where to find this new land).</li> </ul>	5	<ul style="list-style-type: none"> <li>Effectively manages the risks of coastal erosion over time, and takes actions in the short to medium term that reduce risks over that period.</li> <li>Retreat would result in total removal of risk to individuals from erosion. It would be proportionate to the nature and scale of the risk to those impacted to retreat.</li> </ul>	3	<ul style="list-style-type: none"> <li>By raising the crest elevation by planting and dune reconstruction, the risk of overtopping decreases, but over the short to medium term the actions do not effectively manage the inundation hazard posed by the Mangaroa stream; however long term retreat will remove the risk to individuals impacted in the area.</li> <li>Some of the properties that would be retreated due to erosion would also be impacted by erosion, and therefore long term, retreat could manage some of the risk within the settlement.</li> </ul>	74

5	Enhance	Enhance	Retreat	3	<ul style="list-style-type: none"> <li>Enhancement may improve existing native populations likely encouraging positive ecological benefits.</li> <li>Retreat provides further opportunities to restore natural character in the longer term.</li> </ul>	<ul style="list-style-type: none"> <li>Enhancement of dune vegetation and habitats provides opportunities to restore natural character.</li> <li>Retreat provides further opportunities to restore natural character in the longer term.</li> </ul>	Refer to: NAA MCDA Pre-scoring Te Ao Māori Values additional document	<ul style="list-style-type: none"> <li>The option to increase dune resilience over short and medium term aligns with stated community values.</li> <li>If community is actively included in implementation of dune resilience, it could promote social and economic wellbeing, as well as enhance social cohesion &amp; health outcomes.</li> <li>The longer term option to retreat allows for time for local government and communities to plan and prepare for the costs for relocation.</li> <li>It is uncertain if insurability of personal assets will be maintained.</li> </ul>	<ul style="list-style-type: none"> <li>This option will maintain the natural appeal of the coastal environment and ecosystem protection could enhance both community and environmental values and foster nature appreciation.</li> <li>Public access to the coastal environment will be maintained, however recreation that damages dunes may need to be restricted to protect ecosystems &amp; encourage dune stability.</li> <li>The long term option for retreat could enable recreation and public access to be planned, developed and maintained prior to the actual relocation of the community.</li> </ul>	<ul style="list-style-type: none"> <li>From a consenting perspective, enhancement across the short and medium term is preferred due to enhancement of existing environment aligning with statutory framework.</li> <li>Option of retreat has limited effects on the environment in comparison to other options such as hard engineering structures.</li> <li>Currently limited national direction on how to undertake managed retreat, however, this is expected to be addressed within the Climate Change Adaptation Act.</li> <li>Retreat may also create additional consenting issues dependent on relocation plan (e.g., subdivision of new land and where to find this new land). While retreat may be a future option, planning should commence now to plan for that eventuality.</li> </ul>	<ul style="list-style-type: none"> <li>Effectively manages the risks of coastal erosion over time, and takes actions in the short-medium term to reduce risks over that period.</li> <li>Enhancement will be proportionate to the scale of risk under the lower SLR scenarios, but under higher SLR scenarios could result in retreat being implemented earlier than pathway 4.</li> <li>Retreat would result in total removal of risk to individuals from erosion. It would be proportionate to the nature and scale of the risk to those impacted by retreat.</li> </ul>	<ul style="list-style-type: none"> <li>By raising the crest elevation by planting and dune reconstruction, the risk of overtopping decreases, but over the short to medium term the actions do not effectively manage the inundation hazard posed by the Mangrove stream; however long term retreat will remove the risk to individuals impacted in the area.</li> <li>Some of the properties that would be retreated due to erosion would also be impacted by erosion, and therefore long term, retreat could manage some of the risk within the settlement.</li> </ul>	87
1	Enhance	Accommodate	Additional Hard Protection	3	<ul style="list-style-type: none"> <li>Enhancement may improve existing native populations likely encouraging positive ecological benefits.</li> <li>The introduction of hard protection however may have long term negative adverse effects on ecological sites and species associated with waterways i.e. Mangrove Stream.</li> </ul>	<ul style="list-style-type: none"> <li>Initial enhancement may restore natural character and provide landscape benefits.</li> <li>Eventual introduction of hard structures may reduce natural character and have adverse landscape effects in context of existing settlement and modification.</li> </ul>	Refer to: NAA MCDA Pre-scoring Te Ao Māori Values additional document	<ul style="list-style-type: none"> <li>Initial short term enhancement option aligns with community values and maintains social cohesion.</li> <li>Those in higher inundation risk areas may need support to understand options/ costs to proactively protect their dwellings from moisture and mould (flooding, relocatable buildings, elevate floors, etc.).</li> <li>Continue community education re: protecting &amp; hazard, and emergency management to foster resilience.</li> <li>It is uncertain if insurability of personal assets will be maintained.</li> </ul>	<ul style="list-style-type: none"> <li>In short-medium term, this option will maintain the natural appeal of the coastal environment and ecosystem protection could enhance community values and public access to the coastal environment.</li> <li>In the medium term, additional hard protection may need to be restricted to prevent destruction of dune stability.</li> <li>Where possible, additional hard protection, should allow for public access and recreation and provide other co-benefits.</li> </ul>	<ul style="list-style-type: none"> <li>Accommodation and additional hard protection on a larger scale will trigger more stringent consenting requirements compared to enhancement and soft-engineering methods.</li> <li>Hard-engineering approaches are discouraged under the NZCPS and RPS because of the adverse effects they can have on the environment.</li> <li>Furthermore, the GWRC Natural Resources Plan has some scheduled sites over the Mangrove Mouth which will face consenting hurdles as there are significant sites in the Mangrove Mouth scheduled in the GWRC Natural Resources Plan and will require buy-in from GWRC to approve and undertake flood protection works along the Stream. With a longer term aim to retreat, these works may be hard to justify.</li> <li>Managed retreat may require consenting to allow some greenfields subdivision. Retreat may also create additional consenting issues dependent on relocation plan (e.g., subdivision of new land and where to find this new land).</li> </ul>	<ul style="list-style-type: none"> <li>This pathway is not specifically designed to address the erosion hazard but the engineered stream works may offer some limited coastal erosion protection on the southern side of the Mangrove Stream.</li> <li>Will not effectively manage the erosion hazard.</li> </ul>	<ul style="list-style-type: none"> <li>Effectively reduces the risk to individual properties by raising houses above agreed flood levels but the risk remains to roading, access and services.</li> <li>Also, a residual risk to housing will remain in the short to medium term until this can be reduced by the engineered mitigation options in the longer term.</li> </ul>	64
2	Enhance	Additional Hard Protection	Retreat	3	<ul style="list-style-type: none"> <li>Enhancement of existing native populations will likely initially encourage positive ecological benefits.</li> <li>Hard engineering protection may reduce ecology by damaging beach, dune, and estuary ecology, and overall may support lower biodiversity and prevent the natural migration of habitats.</li> <li>Retreat provides opportunity for ecological restoration, however this would occur in an already modified environment.</li> </ul>	<ul style="list-style-type: none"> <li>Initial enhancement may restore natural character and provide landscape benefits.</li> <li>Additional hard protection may reduce natural character and result in adverse landscape effects.</li> <li>Eventual introduction of hard structures may reduce natural character, however this would occur in the context of increased modification.</li> </ul>	Refer to: NAA MCDA Pre-scoring Te Ao Māori Values additional document	<ul style="list-style-type: none"> <li>Initial short term enhancement option aligns with community values and maintains social cohesion.</li> <li>Those in higher inundation risk areas may need support to understand options/ costs to proactively protect their dwellings from moisture and mould (flooding, relocatable buildings, elevate floors, etc.).</li> <li>Clear communication &amp; support for those in higher inundation risk areas so they understand costs of options to protect their dwellings &amp; risks to health vs costs of eventual retreat. Continue community education re: protecting &amp; hazard, and emergency management to foster resilience.</li> <li>It is uncertain if insurability of personal assets will be maintained.</li> </ul>	<ul style="list-style-type: none"> <li>This option will initially maintain the natural appeal of the coastal environment and ecosystem protection could enhance community values and public access to the coastal environment.</li> <li>In the medium term, additional hard protection may need to be restricted to prevent destruction of dune stability.</li> <li>Long term retreat may offer opportunities for recreation.</li> </ul>	<ul style="list-style-type: none"> <li>Coastal restoration and enhancement is encouraged under the present regulatory framework and will not face any major consenting hurdles.</li> <li>The hard protection components of this pathway will face consenting hurdles as there are significant sites in the Mangrove Mouth scheduled in the GWRC Natural Resources Plan and will require buy-in from GWRC to approve and undertake flood protection works along the Stream. With a longer term aim to retreat, these works may be hard to justify.</li> <li>Managed retreat may require consenting to allow some greenfields subdivision. Retreat may also create additional consenting issues dependent on relocation plan (e.g., subdivision of new land and where to find this new land).</li> </ul>	<ul style="list-style-type: none"> <li>This pathway is not specifically designed to address the erosion hazard in the short to medium term but, the engineered stream works may offer some limited coastal erosion protection on the southern side of the Mangrove Stream.</li> <li>There will be more extensive retreat required due to the inundation hazard compared to the erosion hazard, however this option will manage the risks for some properties affected by multiple hazards around the mouth of the Mangrove Stream.</li> </ul>	<ul style="list-style-type: none"> <li>This pathway will help reduce the increasing inundation risk in the short to medium term and allow time to effect a managed retreat.</li> <li>Retreat from hazard prone areas will manage the risk by removing people, property and infrastructure from the area.</li> <li>As an incremental approach, it is likely to be proportionate to the nature and scale of the risk over time.</li> </ul>	64
3	Enhance	Accommodate	Retreat	3	<ul style="list-style-type: none"> <li>Initial enhancement would likely improve existing ecology and promote greater habitat and resources for flora and fauna.</li> <li>Retreat provides opportunity for ecological restoration, however this would occur in an already modified environment.</li> </ul>	<ul style="list-style-type: none"> <li>Initial enhancement would likely restore natural character and provide landscape benefits.</li> <li>Retreat provides opportunities to restore natural character, however this occurs in the context of the existing settlement.</li> <li>Retreat offers opportunity to expand areas of restored natural character.</li> </ul>	Refer to: NAA MCDA Pre-scoring Te Ao Māori Values additional document	<ul style="list-style-type: none"> <li>Initial short term enhancement option aligns with community values and maintains social cohesion.</li> <li>Those in higher inundation risk areas may need support to understand options/ costs to proactively protect their dwellings from moisture and mould (flooding, relocatable buildings, elevate floors, etc.).</li> <li>In light of future re-location/ retreat.</li> <li>Continue community education re: protecting &amp; hazard, and emergency management to foster resilience and assist transition to retreat.</li> <li>It is uncertain if insurability of personal assets will be maintained.</li> </ul>	<ul style="list-style-type: none"> <li>This option will initially maintain the natural appeal of the coastal environment and ecosystem protection could enhance community values and public access to the coastal environment.</li> <li>In the medium term, the public may need assurance (governance/planning) that public access and opportunities for recreation and other ecology co-benefits will not be negatively impacted.</li> <li>Currently there is limited national direction on how to undertake managed retreat however, this is expected to be addressed within the Climate Change Adaptation Act.</li> <li>As managed retreat gets underway consenting may be required to allow some greenfields subdivision.</li> </ul>	<ul style="list-style-type: none"> <li>Coastal restoration and enhancement is encouraged under the present regulatory framework and will not face any major consenting hurdles in the short term.</li> <li>Accommodation in the medium term will carry some building consent requirements.</li> <li>If managed retreat is done well it should have limited effects on the environment as opposed to hard protection structures.</li> <li>Currently there is limited national direction on how to undertake managed retreat however, this is expected to be addressed within the Climate Change Adaptation Act.</li> <li>As managed retreat gets underway consenting may be required to allow some greenfields subdivision.</li> </ul>	<ul style="list-style-type: none"> <li>This pathway is not specifically designed to address the erosion hazard in the short to medium term but, the engineered stream works may offer some limited coastal erosion protection on the southern side of the Mangrove Stream.</li> <li>There will be more extensive retreat required due to the inundation hazard compared to the erosion hazard, however this option will manage the risks for some properties affected by multiple hazards around the mouth of the Mangrove Stream.</li> </ul>	<ul style="list-style-type: none"> <li>This pathway will help reduce the increasing inundation risk in the short to medium term and allow time to effect a managed retreat.</li> <li>Retreat from hazard prone areas will manage the risk by removing people, property and infrastructure from the area.</li> <li>As an incremental approach, it is likely to be proportionate to the nature and scale of the risk over time.</li> </ul>	83
4	Accommodate	Additional Hard Protection	Retreat	2	<ul style="list-style-type: none"> <li>Hard engineering protection may reduce ecology by damaging beach, dune, and estuary ecology, and overall may support lower biodiversity and prevent the natural migration of habitats.</li> <li>Retreat provides opportunity for ecological restoration, however this would occur in an already modified environment.</li> </ul>	<ul style="list-style-type: none"> <li>Additional hard protection is likely to reduce natural character and may result in adverse landscape effects.</li> <li>Retreat provides opportunities to restore natural character, however this occurs in the context of increased modification.</li> </ul>	Refer to: NAA MCDA Pre-scoring Te Ao Māori Values additional document	<ul style="list-style-type: none"> <li>Initial short term focus is to identify dwellings at risk and educate on options/costs of floodproofing, relocatable buildings, elevate floors, etc. The community may need support to understand and accept (governance/planning) that public access and opportunities for recreation and other ecology co-benefits will not be negatively impacted.</li> <li>Design of additional hard protection and retreat (long term) should consider continued public access &amp; explore further opportunities for recreation.</li> <li>It is uncertain if insurability of personal assets will be maintained.</li> </ul>	<ul style="list-style-type: none"> <li>In the short term, public access to the coastline is likely to be maintained.</li> <li>In the medium term, with the consideration of any additional hard protection, the public may need assurance (governance/planning) that public access and opportunities for recreation and other ecology co-benefits will not be negatively impacted.</li> <li>Design of additional hard protection and retreat (long term) should consider continued public access &amp; explore further opportunities for recreation.</li> </ul>	<ul style="list-style-type: none"> <li>The hard protection components of this pathway will face consenting hurdles as there are significant sites in the Mangrove Mouth scheduled in the GWRC Natural Resources Plan and will require buy-in from GWRC to approve and undertake flood protection works along the Stream.</li> <li>With a longer term aim to retreat, these works may be hard to justify.</li> <li>Accommodation also creates additional consenting requirements in comparison to enhancement.</li> <li>As managed retreat gets underway consenting may be required to allow some greenfields subdivision. Retreat may also create additional consenting issues dependent on relocation plan (e.g., subdivision of new land and where to find this new land).</li> </ul>	<ul style="list-style-type: none"> <li>This pathway is not specifically designed to address the erosion hazard in the short to medium term but, the engineered stream works may offer some limited coastal erosion protection on the southern side of the Mangrove Stream.</li> <li>There will be more extensive retreat required due to the inundation hazard compared to the erosion hazard, however this option will manage the risks for some properties affected by multiple hazards around the mouth of the Mangrove Stream.</li> </ul>	<ul style="list-style-type: none"> <li>This pathway will help reduce the increasing inundation risk in the short to medium term and allow time to effect a managed retreat.</li> <li>Retreat from hazard prone areas will manage the risk by removing people, property and infrastructure from the area.</li> <li>As an incremental approach, it is likely to be proportionate to the nature and scale of the risk over time.</li> </ul>	50

Pathways for Peke Peke													MCDA Total Score:							
Management Pathway	Pathway Descriptions			Ecology Notes	Score	Landscape Notes	Score	Te ao Māori values Notes	Score	Community Social and Economic Wellbeing Notes	Score	Public Access and Recreation Notes	Score	Regulatory consenting and policy risk Notes	Score	Effectively manages the risks of coastal erosion Notes	Score	Effectively manages the risks of coastal inundation Notes	Score	
	Short term	Medium term	Long term																	
1	Enhance	Enhance	Soft Engineering Protection	<ul style="list-style-type: none"> <li>Enhancement of existing native populations would likely promote ecology and provide greater habitat and resources for flora and fauna.</li> <li>Soft engineering may disrupt bird habitats and shellfish populations but can modify and enhance habitats in the form of enhanced dunes for beach flora and fauna.</li> </ul>	4	<ul style="list-style-type: none"> <li>Enhancement of native dune vegetation would likely restore natural character.</li> <li>Soft engineering may disrupt areas, but otherwise maintain an open dynamic coastline influenced by existing settlement.</li> </ul>	4	Refer to: NAA MCDA Pre-scoring Te Ao Māori Values additional document	2	<ul style="list-style-type: none"> <li>The option to increase dune resilience over short and medium term aligns with stated community values.</li> <li>If community is actively included in implementation of dune resilience, it could promote social and economic wellbeing, as well as enhance social cohesion &amp; health outcomes.</li> <li>It is uncertain if insurability of personal assets will be maintained.</li> </ul>	4	<ul style="list-style-type: none"> <li>This option will maintain the natural amenity and landscape value of the coastal environment.</li> <li>Ecosystem protection could further enhance community values and foster nature appreciation.</li> <li>Public access to the coastal environment will be maintained, however recreation that damages dunes may need to be restricted to protect ecosystems &amp; encourage dune stability.</li> </ul>	4	<ul style="list-style-type: none"> <li>As this option presents the least amount of impact on the existing environment (e.g., no hard engineering structures), there is unlikely to be significant consenting hurdles under the existing system in the short to medium term.</li> <li>Enhancement not likely to require consent or will be easy to obtain and is in line with current regulatory framework.</li> <li>Depending on scale, soft engineering protection may increase risk which elevates risk profile.</li> </ul>	4	<ul style="list-style-type: none"> <li>If designed properly it is likely to effectively manage impacts when erosion risks are lower.</li> <li>Effectiveness is likely to reduce over time trying to hold the shoreline in the same location as present day and thus may require additional space to allow the beach to adjust inland.</li> <li>Approach is proportionate to nature and scale of risk, and would avoid exacerbation of risk in other areas. Design would be informed by best practise.</li> </ul>	3	<ul style="list-style-type: none"> <li>Option is not chosen to address inundation hazard.</li> <li>By raising the dune crest elevation by planting and dune reconstruction, the risk of overtopping decreases; however does not address inundation hazard from pathways up the stream and stormwater network.</li> <li>Unlikely to be proportionate to the nature and scale of risk of inundation.</li> </ul>	3	69
2	Enhance	Soft Engineering Protection	Soft Engineering Protection	<ul style="list-style-type: none"> <li>Enhancement of existing native populations will likely initially promote ecology and provide greater habitat and resources for flora and fauna.</li> <li>Soft engineering may disrupt bird habitats and shellfish populations but can modify and enhance habitats in the form of enhanced dunes for beach flora and fauna.</li> </ul>	3	<ul style="list-style-type: none"> <li>Initial enhancement of dunes with native dune vegetation may restore natural character.</li> <li>Soft engineering may further disrupt areas of coastal environment influenced by existing settlement.</li> </ul>	3	Refer to: NAA MCDA Pre-scoring Te Ao Māori Values additional document	4	<ul style="list-style-type: none"> <li>The option to increase dune resilience over short term aligns with stated community values.</li> <li>To ensure support for this option over medium-long term, the community may need assurance (evidence, information &amp; engagement) on suitable soft engineering responses.</li> <li>If community is actively included in implementation, it could promote social and economic wellbeing, as well as enhance social cohesion &amp; health outcomes.</li> <li>It is uncertain if insurability of personal assets will be maintained.</li> </ul>	4	<ul style="list-style-type: none"> <li>This option will maintain the natural amenity and landscape value of the coastal environment.</li> <li>Ecosystem protection could further enhance community values and foster nature appreciation.</li> <li>Public access to the coastal environment will be maintained, however recreation that damages dunes may need to be restricted to protect ecosystems &amp; encourage dune stability.</li> </ul>	3	<ul style="list-style-type: none"> <li>Consenting risk increased as a result of additional soft engineering protection.</li> <li>Consents required in the short term, will likely not have a difficult consenting pathway.</li> <li>As there are additional soft engineering works proposed in this option there may be a few additional consenting requirements in comparison to the above.</li> <li>Soft engineering protection presents less consenting hurdles as opposed to hard engineering protection but still may face challenges.</li> </ul>	4	<ul style="list-style-type: none"> <li>If designed properly it is likely to effectively manage impacts when erosion risks are lower.</li> <li>Effectiveness is likely to reduce over time trying to hold the shoreline in the same location as present day and thus may require additional space to allow the beach to adjust inland.</li> <li>Approach is proportionate to nature and scale of risk, and would avoid exacerbation of risk in other areas. Design would be informed by best practise.</li> </ul>	4	<ul style="list-style-type: none"> <li>Option is not chosen to address inundation hazard.</li> <li>By raising the dune crest elevation by planting and dune reconstruction, the risk of overtopping decreases; however does not address inundation hazard from pathways up the stream.</li> <li>Unlikely to be proportionate to the nature and scale of risk of inundation.</li> </ul>	3	62

Peka Peka Unit 3A		Peka Peka Unit 3B		Peka Peka Unit 3C	
Pathways	Short term	Medium term	Long term	Score	Notes
3	Enhance	Soft Engineering Protection	Hard Engineering Protection	2	<ul style="list-style-type: none"> <li>Enhancement of existing native populations will likely initially encourage positive ecological benefits.</li> <li>Ongoing engineering protection however has the potential to reduce ecology by damaging beach, dune, and estuary ecology, and overall may support lower biodiversity and prevent the natural migration of habitats.</li> </ul>
4	Enhance	Soft Engineering Protection	Retreat	4	<ul style="list-style-type: none"> <li>Initial enhancement of existing native populations would likely improve existing ecology and promote greater habitat and resources for flora and fauna.</li> <li>Retreat favours ecological restoration by providing habitats for species to recolonise neighbouring areas that may become destroyed.</li> </ul>
5	Enhance	Enhance	Retreat	5	<ul style="list-style-type: none"> <li>Enhancement may improve existing native populations and likely will encourage positive ecological benefits when performed long term and coupled with pest management.</li> <li>Retreat favours ecological restoration by providing habitats for species to recolonise neighbouring areas that may become destroyed.</li> </ul>
1	Enhance	Accommodate	Additional Hard Protection	3	<ul style="list-style-type: none"> <li>Enhancement may improve existing native populations likely encouraging positive ecological benefits.</li> <li>The introduction of hard protection however may have long term negative adverse effects on ecological sites and species associated with waterways i.e. Te Kowhai stream.</li> </ul>
2	Enhance	Additional Hard Protection	Retreat	3	<ul style="list-style-type: none"> <li>Enhancement of existing native populations will likely initially encourage positive ecological benefits.</li> <li>Hard engineering protection may reduce ecology by damaging beach, dune, and estuary ecology, and overall may support lower biodiversity and prevent the natural migration of habitats.</li> <li>Retreat provides opportunity for ecological restoration, however this would occur in an already modified environment.</li> </ul>
3	Enhance	Accommodate	Retreat	5	<ul style="list-style-type: none"> <li>Initial enhancement would likely improve existing ecology and promote greater habitat and resources for flora and fauna.</li> <li>Retreat favours ecological restoration by providing habitats for species to recolonise neighbouring areas that may become destroyed.</li> </ul>
4	Accommodate	Additional Hard Protection	Retreat	2	<ul style="list-style-type: none"> <li>Hard engineering protection may reduce ecology by damaging beach, dune, and estuary ecology, and overall may support lower biodiversity and prevent the natural migration of habitats.</li> <li>Retreat provides opportunity for ecological restoration, however this would occur in an already modified environment.</li> </ul>

Pathways for Rural NAA												MCDCA Total Score:
Management	Pathways	Pathway Descriptions			Ecology	Landscape	Te ao Māori values	Community Social and Economic Wellbeing	Public Access and Recreation	Regulatory consenting and policy risk	Effectively manages the risks of coastal erosion	
		Short term	Medium term	Long term	Score	Notes	Score	Notes	Score	Notes	Score	Notes



Rural NAA Unit 4A	1	Status Quo	Enhance	Enhance	4	4	5	3	3	5	4	2	72
	2	Status Quo	Enhance	Soft Engineering Protection	2	2	1	3	3	4	3	3	50
	3	Enhance	Enhance	Soft Engineering Protection	3	3	2	3	3	4	3	3	60
Rural NAA Unit 4B	1	Status Quo	Enhance	Accommodate	4	4	5	2	3	4	3	3	69
	2	Accommodate	Accommodate	Retreat	3	3	4	3	3	3	2	4	64

**Takutai  
Kāpiti.**



## Appendix 2: NAA MCDA Pre-scoring Te Ao Māori Values

Management Unit	Pathway	Pathway Description			Te ao Māori values	
		Short term	Medium term	Long term	Score	Notes
<b>Otaki Unit 1A</b>						
Otaki Unit 1A	1	Enhance <sup>3,4</sup>	Enhance <sup>3,4</sup>	Soft Engineering Protection <sup>9</sup>	2	<ul style="list-style-type: none"> <li>• <b>Rated low because of Soft Engineering Protection pathway.</b></li> <li>• Soft Engineering Protection is a pathway that concerns NHoŌ as machinery is required to bring in or/and move sand – this would be harmful to the mahinga kai and mauri, as well as a contamination risk. Heavy machinery would cause disturbance and additional sand could cause suffocation of the shellfish.</li> <li>• Even the option to bring in sand via boat for Soft Engineering Protection is also not desirable as this creates the potential for contamination, our coastline is too shallow for vessel approach and the dumping could cause suffocation of shellfish – inshore species such as pipi, tuatua, cockle and tohemanga (toheroa), as well as surf clam species in the deeper shellfish beds.</li> <li>• This whole beach area has significant shellfish beds that move constantly and has sustained mana whenua for centuries– it is seen as really important mahinga kai. Kai sources are a source of identity, they are also important for manaakitanga as the local hapu when hosting events, they desire to serve the best of the best mahinga kai - flounder, inanga (whitebait), eel, pipi, tohemanga (toheroa), and snapper.</li> <li>• Tohemanga spawn amongst the pingau and spinifex roots (at base of foreshore dunes) and the babies and adults travel just underneath the sand. They are severely threatened and are nearly all gone on our coastline therefore we need to protect this habitat – refer to <i>Kaimoana on beaches from Hōkio to Ōtaki</i> 2014 Report.</li> <li>• Connection to mahinga kai goes beyond a food source – it is part of the mana and manaaki of our region too.</li> <li>• Bringing in sand (Soft Engineering Protection) does not maintain the mauri of the area.</li> </ul>
	2	Enhance <sup>3,4</sup>	Soft Engineering Protection <sup>9</sup>	Soft Engineering Protection <sup>9</sup>	1	<ul style="list-style-type: none"> <li>• <b>Rated low because of Soft Engineering Protection pathway.</b></li> <li>• Soft Engineering Protection is a pathway that concerns NHoŌ as machinery is required to bring in or/and move sand – this would be harmful to the mahinga kai and mauri, as well as a contamination risk. Heavy machinery would cause disturbance and additional sand could cause suffocation of the shellfish.</li> <li>• Even the option to bring in sand via boat for Soft Engineering Protection is also not desirable as this creates the potential for contamination, our coastline is too shallow for vessel approach and the dumping could cause suffocation of shellfish – inshore species such as pipi, tuatua, cockle and tohemanga (toheroa), as well as surf clam species in the deeper shellfish beds.</li> <li>• This whole beach area has significant shellfish beds that move constantly and has sustained mana whenua for centuries– it is seen as really important mahinga kai. Kai sources are a source of identity, they are also important for manaakitanga as the local hapu when hosting events, they desire to serve the best of the best mahinga kai - flounder, inanga (whitebait), eel, pipi, tohemanga (toheroa), and snapper.</li> <li>• Tohemanga spawn amongst the pingau and spinifex roots (at base of foreshore dunes) and the babies and adults travel just underneath the sand. They are severely threatened and are nearly all gone on our coastline therefore we need to protect this habitat – refer to <i>Kaimoana on beaches from Hōkio to Ōtaki</i> 2014 Report.</li> <li>• Connection to mahinga kai goes beyond a food source – it is part of the mana and manaaki of our region too.</li> <li>• Bringing in sand (Soft Engineering Protection) does not maintain the mauri of the area.</li> </ul>
	3	Enhance <sup>3,4</sup>	Soft Engineering Protection <sup>9</sup>	Hard Engineering Protection <sup>11</sup>	2	<ul style="list-style-type: none"> <li>• <b>Rated low because of Soft Engineering Protection pathway.</b></li> <li>• Soft Engineering Protection is a pathway that concerns NHoŌ as machinery is required to bring in or/and move sand – this would be harmful to the mahinga kai and mauri, as well as a contamination risk. Heavy machinery would cause disturbance and additional sand could cause suffocation of the shellfish.</li> <li>• Even the option to bring in sand via boat for Soft Engineering Protection is also not desirable as this creates the potential for contamination, our coastline is too shallow for vessel approach and the dumping could cause suffocation of shellfish – inshore species such as pipi, tuatua, cockle and tohemanga (toheroa), as well as surf clam species in the deeper shellfish beds.</li> <li>• This whole beach area has significant shellfish beds that move constantly and has sustained mana whenua for centuries– it is seen as really important mahinga kai. Kai sources are a source of identity, they are also important for manaakitanga as the local hapu when hosting events, they desire to serve the best of the best mahinga kai - flounder, inanga (whitebait), eel, pipi, tohemanga (toheroa), and snapper.</li> <li>• Tohemanga spawn amongst the pingau and spinifex roots (at base of foreshore dunes) and the babies and adults travel just underneath the sand. They are severely threatened and are nearly all gone on our coastline therefore we need to protect this habitat – refer to <i>Kaimoana on beaches from Hōkio to Ōtaki</i> 2014 Report.</li> <li>• Connection to mahinga kai goes beyond a food source – it is part of the mana and manaaki of our region too.</li> <li>• Bringing in sand (Soft Engineering Protection) does not maintain the mauri of the area.</li> <li>• Boulders for Hard Engineering Protection would be preferred over wooden seawalls.</li> <li>• The potential of developing an offshore reef as a Hard Engineering Protection action would be desirable.</li> </ul>

Managmt Unit		Short Term	Medium Term	Long Term	Score	Te ao Māori values
Otaki Unit 1A	4	Enhance <sup>3,4</sup>	Soft Engineering Protection <sup>9</sup>	Retreat <sup>8</sup>	2	<ul style="list-style-type: none"> <li>• <b>Rated low because of Soft Engineering Protection pathway.</b></li> <li>• Soft Engineering Protection is a pathway that concerns NHOŌ as machinery is required to bring in or/and move sand – this would be harmful to the mahinga kai and mauri, as well as a contamination risk. Heavy machinery would cause disturbance and additional sand could cause suffocation of the shellfish.</li> <li>• Even the option to bring in sand via boat for Soft Engineering Protection is also not desirable as this creates the potential for contamination, our coastline is too shallow for vessel approach and the dumping could cause suffocation of shellfish – inshore species such as pipi, tuatua, cockle and tohemanga (toheroa), as well as surf clam species in the deeper shellfish beds.</li> <li>• This whole beach area has significant shellfish beds that move constantly and has sustained mana whenua for centuries– it is seen as really important mahinga kai. Kai sources are a source of identity, they are also important for manaakitanga as the local hapu when hosting events, they desire to serve the best of the best mahinga kai - flounder, inanga (whitebait), eel, pipi, tohemanga (toheroa), and snapper.</li> <li>• Tohemanga spawn amongst the pingau and spinifex roots (at base of foreshore dunes) and the babies and adults travel just underneath the sand. They are severely threatened and are nearly all gone on our coastline therefore we need to protect this habitat – refer to <i>Kaimoana on beaches from Hōkio to Ōtaki</i> 2014 Report.</li> <li>• Connection to mahinga kai goes beyond a food source – it is part of the mana and manaaki of our region too.</li> <li>• Bringing in sand (Soft Engineering Protection) does not maintain the mauri of the area.</li> </ul>
	5 (new)	Enhance <sup>3,4</sup>	Enhance <sup>3,4</sup>	Retreat <sup>8</sup>	5	<ul style="list-style-type: none"> <li>• <b>Rated high as there is no Soft Engineering Protection option – would be the best for mahinga kai.</b></li> <li>• Retreat as self-determined by the residents to be affected or hapū members (in the case of marae) was desired for long-term options. Not necessarily popular – but preference for last resort as follows traditional practices.</li> <li>• Building up the sand dunes using native plants between the beach and the road slowly over time is a desirable adaptation option. There has been proven results in the Hawkes Bay where the dunes have been enhanced. In parts there are now houses, sand dune, flat area, another sand dune, and then the beach. Twenty years ago that action started thus urgent action is recommended for this coastline.</li> <li>• There was a large storm surge and rain event in June 2022. Seawater came up on the beach and up the river mouths. The sand redistributed back up again, however questions were raised if the NAA could withstand further storm surge events. Therefore retreat seems like a reality that the community needs to consider.</li> </ul>
<b>Otaki Unit 1B (Inundation)</b>						
Otaki Unit 1B	1	Enhance <sup>2,3</sup>	Accommodate <sup>7</sup>	Additional Hard Protection <sup>12, 13, 15</sup>	4	<ul style="list-style-type: none"> <li>• The opportunity to use Enhance has previously shown positive results when working with nature. This has been demonstrated with the work within part of the Porirua Trust Board land. Dairying was ceased in 2021 and the farm is still operational. This land however was made available for a restoration wetland project back in 2021 – initiated mainly by GWRC along with Caleb Royal from NHOŌ. This allows for an area for excess water to safely gather and be soaked up by wetlands and native plants.</li> <li>• Accommodate gives people the option to stay and creates safety.</li> <li>• Already there are houses in low lying land that are being established on poles. This is demonstrating that an accommodate option is working as the water is going under the homes during rain events yet not impacting the homes.</li> <li>• Additional Hard Protection options are favourable options for adaptation –building on structures that already exist. Reinforce what is already in situ.</li> </ul>
	2	Enhance <sup>2,3</sup>	Additional Hard Protection <sup>12, 13, 15</sup>	Retreat <sup>8</sup>	4	<ul style="list-style-type: none"> <li>• Enhance brings the benefit of incorporating growing sand dunes and riparian planting.</li> <li>• Retreat will need to be considered as a possibility as a last resort. As large area could be impacted – it is the best option to keep the community together.</li> <li>• Retreat was most desired long-term option with hapu during conversations. Not necessarily popular – but preference for last resort as follows traditional practices.</li> <li>• There was a large storm surge and rain event in June 2022. Seawater came up on the beach and up the river mouths. Questions were raised if the NAA could withstand further storm surge events. Therefore retreat seems like the reality that the community needs to consider.</li> <li>• Hard protection elements could become overwhelmed with both river flood and threats to flooding from the sea and the floodgates/stop banks not being able to cope.</li> </ul>
	3	Enhance <sup>2,3</sup>	Accommodate <sup>7</sup>	Retreat <sup>8</sup>	5	<ul style="list-style-type: none"> <li>• Enhance brings the benefit of incorporating growing sand dunes and riparian planting.</li> <li>• The opportunity to use Enhance has previously shown positive results when working with nature. This has been demonstrated with the work within part of the Porirua Trust Board land. Dairying was ceased in 2021 and the farm is still operational. This land however was made available for a restoration wetland project back in 2021 – initiated mainly by GWRC along with Caleb Royal from NHOŌ. This allows for an area for excess water to safely gather.</li> <li>• Working with nature for a positive impact.</li> <li>• Retreat will need to be considered as a possibility as a last resort. As large area could be impacted – it is the best option to keep the community together.</li> <li>• Retreat was most desired long-term option with hapu during conversations. Not necessarily popular – but preference for last resort as follows traditional practices.</li> <li>• There was a large storm surge and rain event in June 2022. Seawater came up on the beach and up the river mouths. Questions were raised if the NAA could withstand further</li> </ul>

						<p>storm surge events. Therefore Retreat seems like the reality that the community needs to consider.</p> <ul style="list-style-type: none"> <li>• Accommodate gives people the option to stay.</li> <li>• Already there are houses in low lying land that are being established on poles. This is demonstrating that an accommodate option is working as the water is going under the homes yet not impacting the homes.</li> </ul>
	4	Accommodate <sup>7</sup>	Additional Hard Protection <sup>12, 13, 15</sup>	Retreat <sup>8</sup>	2	<ul style="list-style-type: none"> <li>• Hard Protection elements could become overwhelmed with both river flood and threats to flooding from the sea and the floodgates/stop banks not being able to cope.</li> <li>• There is no Enhance option so less desirable.</li> </ul>

Mgmt Unit	Pathway	Pathway Description			Te ao Māori values	
		Short term	Medium term	Long term	Score	Notes
Te Horo Unit 2A	1	Enhance <sup>3,4</sup>	Enhance <sup>3,4</sup>	Soft Engineering Protection <sup>9</sup>	2	<ul style="list-style-type: none"> <li>• <b>Rated low because of Soft Engineering Protection pathway.</b></li> <li>• Soft Engineering Protection is a pathway that concerns NHoŌ as machinery is required to bring in or/and move sand – this would be harmful to the mahinga kai. Heavy machinery would cause disturbance and additional sand could cause suffocation of the shellfish.</li> <li>• Even the option to bring in sand via boat for Soft Engineering Protection is also not desirable as this creates the potential for contamination.</li> <li>• This whole beach area has significant shellfish beds that has sustained mana whenua – it is seen as really important mahinga kai. Kai sources become a source of identity for the local hapu when hosting an event, they desire to serve the best of the best mahinga kai - flounder, kina, eel, pipis, tohemanga.</li> <li>• Tohemanga spawn amongst the pingau and spinifex roots (at base of the dune) and the babies and adults travel just underneath the sand. They are nearly extinct – refer to <i>Kaimoana on beaches from Hōkio to Ōtaki</i> 2014 Report.</li> <li>• Connection to mahinga kai goes beyond a food source – it is part of the mana and manaaki too.</li> <li>• Bringing in sand (Soft Engineering Protection) does not maintain the mauri of the area.</li> </ul>
	2	Enhance <sup>3,4</sup>	Soft Engineering Protection <sup>9</sup>	Soft Engineering Protection <sup>9</sup>	1	<ul style="list-style-type: none"> <li>• <b>Rated low because of Soft Engineering Protection pathway.</b></li> <li>• Soft Engineering Protection is a pathway that concerns NHoŌ as machinery is required to bring in or/and move sand – this would be harmful to the mahinga kai. Heavy machinery would cause disturbance and additional sand could cause suffocation of the shellfish.</li> <li>• Even the option to bring in sand via boat for Soft Engineering Protection is also not desirable as this creates the potential for contamination.</li> <li>• This whole beach area has significant shellfish beds that has sustained mana whenua – it is seen as really important mahinga kai. Kai sources become a source of identity for the local hapu when hosting an event, they desire to serve the best of the best mahinga kai - flounder, kina, eel, pipis, tohemanga.</li> <li>• Tohemanga spawn amongst the pingau and spinifex roots (at base of the dune) and the babies and adults travel just underneath the sand. They are nearly extinct – refer to <i>Kaimoana on beaches from Hōkio to Ōtaki</i> 2014 Report.</li> <li>• Connection to mahinga kai goes beyond a food source – it is part of the mana and manaaki too.</li> <li>• Bringing in sand (Soft Engineering Protection) does not maintain the mauri of the area.</li> </ul>
	3	Enhance <sup>3,4</sup>	Soft Engineering Protection <sup>9</sup>	Hard Engineering Protection <sup>11</sup>	2	<ul style="list-style-type: none"> <li>• <b>Rated low because of Soft Engineering Protection pathway.</b></li> <li>• Soft Engineering Protection is a pathway that concerns NHoŌ as machinery is required to bring in or/and move sand – this would be harmful to the mahinga kai. Heavy machinery would cause disturbance and additional sand could cause suffocation of the shellfish.</li> <li>• Even the option to bring in sand via boat for Soft Engineering Protection is also not desirable as this creates the potential for contamination.</li> <li>• This whole beach area has significant shellfish beds that has sustained mana whenua – it is seen as really important mahinga kai. Kai sources become a source of identity for the local hapu when hosting an event, they desire to serve the best of the best mahinga kai - flounder, kina, eel, pipis, tohemanga.</li> <li>• Tohemanga spawn amongst the pingau and spinifex roots (at base of the dune) and the babies and adults travel just underneath the sand. They are nearly extinct – refer to <i>Kaimoana on beaches from Hōkio to Ōtaki</i> 2014 Report.</li> <li>• Connection to mahinga kai goes beyond a food source – it is part of the mana and manaaki too.</li> <li>• Bringing in sand (Soft Engineering Protection) does not maintain the mauri of the area. Boulders for Hard Engineering Protection would be preferred over wooden seawalls.</li> <li>• The potential of developing an offshore reed as a Hard Engineering Protection action would be desirable.</li> </ul>
	4	Enhance <sup>3,4</sup>	Soft Engineering Protection <sup>9</sup>	Retreat <sup>8</sup>	2	<ul style="list-style-type: none"> <li>• <b>Rated low because of Soft Engineering Protection pathway.</b></li> <li>• Soft Engineering Protection is a pathway that concerns NHoŌ as machinery is required to bring in or/and move sand – this would be harmful to the mahinga kai. Heavy machinery would cause disturbance and additional sand could cause suffocation of the shellfish.</li> <li>• Even the option to bring in sand via boat for Soft Engineering Protection is also not desirable as this creates the potential for contamination.</li> <li>• This whole beach area has significant shellfish beds that has sustained mana whenua – it is seen as really important mahinga kai. Kai sources become a source of identity for the local hapu when hosting an event, they desire to serve the best of the best mahinga kai - flounder, kina, eel, pipis, tohemanga.</li> <li>• Tohemanga spawn amongst the pingau and spinifex roots (at base of the dune) and the babies and adults travel just underneath the sand. They are nearly extinct – refer to <i>Kaimoana on beaches from Hōkio to Ōtaki</i> 2014 Report.</li> <li>• Connection to mahinga kai goes beyond a food source – it is part of the mana and manaaki too.</li> <li>• Bringing in sand (Soft Engineering Protection) does not maintain the mauri of the area.</li> </ul>
	5	Enhance <sup>3,4</sup>	Enhance <sup>3,4</sup>	Retreat <sup>8</sup>	5	<ul style="list-style-type: none"> <li>• <b>Rated high as there is no Soft Engineering Protection option – would be the best for mahinga kai.</b></li> <li>• Retreat was most desired long-term option with hapu during conversations. Not necessarily popular – but preference for last resort as follows traditional practices.</li> <li>• Building up the sand dunes and plants between the beach and the road slowly over time is a desirable adaptation option.</li> <li>• There has been proven results in the Hawkes Bay where the dunes have been enhanced. In parts there are now houses, sand dune, flat area, another sand dune, and then the beach.</li> <li>• There was a large storm surge and rain event in June 2022. Seawater came up on the beach and up the river mouths. Questions were raised if the NAA could withstand further storm surge events. Therefore retreat seems like the reality that the community needs to consider.</li> <li>• Retreat was most desired long-term option with hapu during conversations. Not necessarily popular – but preference for last resort as follows traditional practices.</li> </ul>

Te Horo 2B (Inundation)						
Mgmt Unit	Pathway	Short term	Medium term	Long term	Score	Notes
Te Horo 2B	1	Enhance <sup>2,3</sup>	Accommodate <sup>7</sup>	Additional Hard Protection <sup>12, 13, 15</sup>	4	<ul style="list-style-type: none"> <li>The opportunity to use Enhance has previously shown positive results when working with nature. This has been demonstrated with the work within part of the Porirua Trust Board land. Dairying was ceased in 2021 and the farm is still operational. This land however was made available for a restoration wetland project back in 2021 – initiated mainly by GWRC along with Caleb Royal from NHoŌ. This allows for an area for excess water to safely gather.</li> <li>Accommodate gives people the option to stay.</li> <li>Already there are houses in low lying land that are being established on poles. This is demonstrating that an accommodate option is working as the water is going under the homes yet not impacting the homes.</li> <li>Additional Hard Protection options are favourable options for adaptation –building on structures that already exist. Reinforce what is already in situ.</li> </ul>
	2	Enhance <sup>2,3</sup>	Additional Hard Protection <sup>12, 13, 15</sup>	Retreat <sup>8</sup>	4	<ul style="list-style-type: none"> <li>Enhance brings the benefit of incorporating growing sand dunes and riparian planting.</li> <li>Retreat will need to be considered as a possibility as a last resort. As large area could be impacted – it is the best option to keep the community together.</li> <li>Retreat was most desired long-term option with hapu during conversations. Not necessarily popular – but preference for last resort as follows traditional practices.</li> <li>There was a large storm surge and rain event in June 2022. Seawater came up on the beach and up the river mouths. Questions were raised if the NAA could withstand further storm surge events. Therefore retreat seems like the reality that the community needs to consider.</li> <li>Hard protection elements could become overwhelmed with both river flood and threats to flooding from the sea and the floodgates/stop banks not being able to cope.</li> </ul>
	3	Enhance <sup>2,3</sup>	Accommodate <sup>7</sup>	Retreat <sup>8</sup>	5	<ul style="list-style-type: none"> <li>Enhance brings the benefit of incorporating growing sand dunes and riparian planting.</li> <li>The opportunity to use Enhance has previously shown positive results when working with nature. This has been demonstrated with the work within part of the Porirua Trust Board land. Dairying was ceased in 2021 and the farm is still operational. This land however was made available for a restoration wetland project back in 2021 – initiated mainly by GWRC along with Caleb Royal from NHoŌ. This allows for an area for excess water to safely gather.</li> <li>Retreat will need to be considered as a possibility as a last resort. As large area could be impacted – it is the best option to keep the community together.</li> <li>Retreat was most desired long-term option with hapu during conversations. Not necessarily popular – but preference for last resort as follows traditional practices.</li> <li>There was a large storm surge and rain event in June 2022. Seawater came up on the beach and up the river mouths. Questions were raised if the NAA could withstand further storm surge events. Therefore Retreat seems like the reality that the community needs to consider.</li> <li>Accommodate gives people the option to stay.</li> <li>Already there are houses in low lying land that are being established on poles. This is demonstrating that an accommodate option is working as the water is going under the homes yet not impacting the homes.</li> </ul>
	4	Accommodate <sup>7</sup>	Additional Hard Protection <sup>12, 13, 15</sup>	Retreat <sup>8</sup>	2	<ul style="list-style-type: none"> <li>Hard Protection Elements could become overwhelmed with both river flood and threats to flooding from the sea and the floodgates/stop banks not being able to cope.</li> <li>There is no Enhance option so less desirable.</li> </ul>

Managemt Unit	Pathway	Pathway Description			Te ao Māori values	
		Short term	Medium term	Long term	Score	Notes
Peka Peka 3A	1	Enhance <sup>3,4</sup>	Enhance <sup>3,4</sup>	Soft Engineering Protection <sup>9</sup>	2	<ul style="list-style-type: none"> <li>• <b>Rated low because of Soft Engineering Protection pathway.</b></li> <li>• Soft Engineering Protection is a pathway that concerns NHoŌ as machinery is required to bring in or/and move sand – this would be harmful to the mahinga kai. Heavy machinery would cause disturbance and additional sand could cause suffocation of the shellfish.</li> <li>• Even the option to bring in sand via boat for Soft Engineering Protection is also not desirable as this creates the potential for contamination.</li> <li>• This whole beach area has significant shellfish beds that has sustained mana whenua – it is seen as really important mahinga kai. Kai sources become a source of identity for the local hapu when hosting an event, they desire to serve the best of the best mahinga kai - flounder, kina, eel, pipis, tohemanga.</li> <li>• Tohemanga spawn amongst the pingau and spinifex roots (at base of the dune) and the babies and adults travel just underneath the sand. They are nearly extinct – refer to <i>Kaimoana on beaches from Hōkio to Ōtaki</i> 2014 Report.</li> <li>• Connection to mahinga kai goes beyond a food source – it is part of the mana and manaaki too.</li> <li>• Bringing in sand (Soft Engineering Protection) does not maintain the mauri of the area.</li> </ul>
	2	Enhance <sup>3,4</sup>	Soft Engineering Protection <sup>9</sup>	Soft Engineering Protection <sup>9</sup>	1	<ul style="list-style-type: none"> <li>• <b>Rated low because of Soft Engineering Protection pathway.</b></li> <li>• Soft Engineering Protection is a pathway that concerns NHoŌ as machinery is required to bring in or/and move sand – this would be harmful to the mahinga kai. Heavy machinery would cause disturbance and additional sand could cause suffocation of the shellfish.</li> <li>• Even the option to bring in sand via boat for Soft Engineering Protection is also not desirable as this creates the potential for contamination.</li> <li>• This whole beach area has significant shellfish beds that has sustained mana whenua – it is seen as really important mahinga kai. Kai sources become a source of identity for the local hapu when hosting an event, they desire to serve the best of the best mahinga kai - flounder, kina, eel, pipis, tohemanga.</li> <li>• Tohemanga spawn amongst the pingau and spinifex roots (at base of the dune) and the babies and adults travel just underneath the sand. They are nearly extinct – refer to <i>Kaimoana on beaches from Hōkio to Ōtaki</i> 2014 Report.</li> <li>• Connection to mahinga kai goes beyond a food source – it is part of the mana and manaaki too.</li> <li>• Bringing in sand (Soft Engineering Protection) does not maintain the mauri of the area.</li> </ul>
	3	Enhance <sup>3,4</sup>	Soft Engineering Protection <sup>9</sup>	Hard Engineering Protection <sup>11</sup>	2	<ul style="list-style-type: none"> <li>• <b>Rated low because of Soft Engineering Protection pathway.</b></li> <li>• Soft Engineering Protection is a pathway that concerns NHoŌ as machinery is required to bring in or/and move sand – this would be harmful to the mahinga kai. Heavy machinery would cause disturbance and additional sand could cause suffocation of the shellfish.</li> <li>• Even the option to bring in sand via boat for Soft Engineering Protection is also not desirable as this creates the potential for contamination.</li> <li>• This whole beach area has significant shellfish beds that has sustained mana whenua – it is seen as really important mahinga kai. Kai sources become a source of identity for the local hapu when hosting an event, they desire to serve the best of the best mahinga kai - flounder, kina, eel, pipis, tohemanga.</li> <li>• Tohemanga spawn amongst the pingau and spinifex roots (at base of the dune) and the babies and adults travel just underneath the sand. They are nearly extinct – refer to <i>Kaimoana on beaches from Hōkio to Ōtaki</i> 2014 Report.</li> <li>• Connection to mahinga kai goes beyond a food source – it is part of the mana and manaaki too.</li> <li>• Bringing in sand (Soft Engineering Protection) does not maintain the mauri of the area. Boulders for Hard Engineering Protection would be preferred over wooden seawalls.</li> <li>• The potential of developing an offshore reed as a Hard Engineering Protection action would be desirable.</li> </ul>
	4	Enhance <sup>3,4</sup>	Soft Engineering Protection <sup>9</sup>	Retreat <sup>8</sup>	2	<ul style="list-style-type: none"> <li>• <b>Rated low because of Soft Engineering Protection pathway.</b></li> <li>• Soft Engineering Protection is a pathway that concerns NHoŌ as machinery is required to bring in or/and move sand – this would be harmful to the mahinga kai. Heavy machinery would cause disturbance and additional sand could cause suffocation of the shellfish.</li> <li>• Even the option to bring in sand via boat for Soft Engineering Protection is also not desirable as this creates the potential for contamination.</li> <li>• This whole beach area has significant shellfish beds that has sustained mana whenua – it is seen as really important mahinga kai. Kai sources become a source of identity for the local hapu when hosting an event, they desire to serve the best of the best mahinga kai - flounder, kina, eel, pipis, tohemanga.</li> <li>• Tohemanga spawn amongst the pingau and spinifex roots (at base of the dune) and the babies and adults travel just underneath the sand. They are nearly extinct – refer to <i>Kaimoana on beaches from Hōkio to Ōtaki</i> 2014 Report.</li> <li>• Connection to mahinga kai goes beyond a food source – it is part of the mana and manaaki too.</li> <li>• Bringing in sand (Soft Engineering Protection) does not maintain the mauri of the area.</li> </ul>



Managemt Unit	Pathway	Pathway Description			Te ao Māori values	
3A		Short term	Medium term	Long term	Score	Notes
Peka Peka 3A	5	Enhance <sup>3,4</sup>	Enhance <sup>3,4</sup>	Retreat <sup>8</sup>	5	<ul style="list-style-type: none"> <li>Rated high as there is no Soft Engineering Protection option – would be the best for mahinga kai.</li> <li>Retreat was most desired long-term option with hapu during conversations. Not necessarily popular – but preference for last resort as follows traditional practices.</li> <li>Building up the sand dunes and plants between the beach and the road slowly over time is a desirable adaptation option.</li> <li>There has been proven results in the Hawkes Bay where the dunes have been enhanced. In parts there are now houses, sand dune, flat area, another sand dune, and then the beach.</li> <li>There was a large storm surge and rain event in June 2022. Seawater came up on the beach and up the river mouths. Questions were raised if the NAA could withstand further storm surge events. Therefore retreat seems like the reality that the community needs to consider.</li> <li>Retreat was most desired long-term option with hapu during conversations. Not necessarily popular – but preference for last resort as follows traditional practices.</li> </ul>
<b>Peka Peka 3B</b>						
Peka Peka 3B	1	Enhance <sup>2,3</sup>	Accommodate <sup>7</sup>	Additional Hard Protection <sup>12, 13, 15</sup>	4	<ul style="list-style-type: none"> <li>The opportunity to use Enhance has previously shown positive results when working with nature. This has been demonstrated with the work within part of the Porirua Trust Board land. Dairying was ceased in 2021 and the farm is still operational. This land however was made available for a restoration wetland project back in 2021 – initiated mainly by GWRC along with Caleb Royal from NHoŌ. This allows for an area for excess water to safely gather.</li> <li>Accommodate gives people the option to stay.</li> <li>Already there are houses in low lying land that are being established on poles. This is demonstrating that an accommodate option is working as the water is going under the homes yet not impacting the homes.</li> <li>Additional Hard Protection options are favourable options for adaptation – building on structures that already exist. Reinforce what is already in situ.</li> </ul>
	2	Enhance <sup>2,3</sup>	Additional Hard Protection <sup>12, 13, 15</sup>	Retreat <sup>8</sup>	4	<ul style="list-style-type: none"> <li>Enhance brings the benefit of incorporating growing sand dunes and riparian planting.</li> <li>Retreat will need to be considered as a possibility as a last resort. As large area could be impacted – it is the best option to keep the community together.</li> <li>Retreat was most desired long-term option with hapu during conversations. Not necessarily popular – but preference for last resort as follows traditional practices.</li> <li>There was a large storm surge and rain event in June 2022. Seawater came up on the beach and up the river mouths. Questions were raised if the NAA could withstand further storm surge events. Therefore retreat seems like the reality that the community needs to consider.</li> <li>Hard protection elements could become overwhelmed with both river flood and threats to flooding from the sea and the floodgates/stop banks not being able to cope.</li> </ul>
	3	Enhance <sup>2,3</sup>	Accommodate <sup>7</sup>	Retreat <sup>8</sup>	5	<ul style="list-style-type: none"> <li>Enhance brings the benefit of incorporating growing sand dunes and riparian planting.</li> <li>The opportunity to use Enhance has previously shown positive results when working with nature. This has been demonstrated with the work within part of the Porirua Trust Board land. Dairying was ceased in 2021 and the farm is still operational. This land however was made available for a restoration wetland project back in 2021 – initiated mainly by GWRC along with Caleb Royal from NHoŌ. This allows for an area for excess water to safely gather.</li> <li>Retreat will need to be considered as a possibility as a last resort. As large area could be impacted – it is the best option to keep the community together.</li> <li>Retreat was most desired long-term option with hapu during conversations. Not necessarily popular – but preference for last resort as follows traditional practices.</li> <li>There was a large storm surge and rain event in June 2022. Seawater came up on the beach and up the river mouths. Questions were raised if the NAA could withstand further storm surge events. Therefore Retreat seems like the reality that the community needs to consider.</li> <li>Accommodate gives people the option to stay.</li> <li>Already there are houses in low lying land that are being established on poles. This is demonstrating that an accommodate option is working as the water is going under the homes yet not impacting the homes.</li> </ul>
	4	Accommodate <sup>7</sup>	Additional Hard Protection <sup>12, 13, 15</sup>	Retreat <sup>8</sup>	2	<ul style="list-style-type: none"> <li>Hard Protection Elements could become overwhelmed with both river flood and threats to flooding from the sea and the floodgates/stop banks not being able to cope.</li> <li>There is no Enhance option so less desirable.</li> </ul>

Management Unit	Pathway	Pathway Description			Te ao Māori values	
		Short term	Medium term	Long term	Score	Notes
Rural 4A	1	Status Quo <sup>1</sup>	Enhance <sup>3,4</sup>	Enhance <sup>3,4</sup>	5	<ul style="list-style-type: none"> <li>Scored high due to no Soft Engineering Protection - would be the best option for mahinga kai.</li> </ul>
	2	Status Quo <sup>1</sup>	Enhance <sup>3,4</sup>	Soft Engineering Protection <sup>9,10</sup>	1	<ul style="list-style-type: none"> <li>Scored low due to having Soft Engineering Protection.</li> </ul>
	3	Enhance <sup>3,4</sup>	Enhance <sup>3,4</sup>	Soft Engineering Protection <sup>9,10</sup>	2	<ul style="list-style-type: none"> <li>Scored slightly higher due to have Enhance option, however still not desirable due having to Soft Engineering Protection option.</li> </ul>
<b>Rural 4B</b>						
Rural 4B	1	Status Quo <sup>1</sup>	Enhance <sup>2,3</sup>	Accommodate <sup>7</sup>	5	<ul style="list-style-type: none"> <li>Enhance option desired due to incorporating growing sand dunes, enhancing flood gates &amp; stop banks and riparian planting in front of seaward side of Katihiku Marae. There ultimately would need to be some adaptation for along the Ōtaki River to offset whatever is done on the northern side of the Ōtaki River.</li> <li>This marae has significant cultural values, along with the land surrounding it. Note sensitivity as the urupā for this hapū was washed out to sea when the first lot of stop banks were put in.</li> <li>Enhancement around the marae and the back dune area will benefit the te ao Māori values associated with this area.</li> </ul>
	2	Accommodate <sup>7</sup>	Accommodate <sup>7</sup>	Retreat <sup>8</sup>	4	<ul style="list-style-type: none"> <li>Katihiku Marae is situated on south of Ōtaki River and west of the coastline - just inland from the coast. Within this rural unit, any additional hard engineering associated with the north of the Ōtaki River likely will have a direct impact this land area on the south side of the Ōtaki River. The marae is on a bit of sand dune but slightly flat, and it is the only marae that is close to the coast.</li> <li>Most houses are already up high (so already adopting 'Accommodate' to some degree).</li> <li>Marae are often built in places where land was iwi/hapu owned. Iwi/hapu may be open to relocating Katihiku Marae as part of Retreat.</li> </ul>