



### <u>Minutes:</u> CAP Meeting – Northern Adaptation Area: MCDA Scoring of Shortlisted Pathways

Date:Wednesday 24 May 2023Time:1.00pm - 6.25pmLocation:Kāpiti Coast District Council Civic Building, 175 Rimu Road, Paraparaumu<br/>(MS teams- link in invite)

#### Attendees:

Jim Bolger (Chair), Jerry Mateparae, Mark Taratoa, Donald Day, Martin Manning, Susie Mills, John Barrett, Olivia Bird, Dr Aroha Spinks, Stephen Daysh, Tim Hegarty, Jason Holland, Sandhira Naidoo, Ashlyn Gallagher, Yvonna Chrzanowska, Kate MacDonald, Dr Iain Dawe, Doug Simpson, Nicki Williams, Abbey Morris & Alfred Lison

Observers: Cam Butler, Tim Sutton & Sophie Handford

Apologies: Derek Todd, Elspeth McIntyre, Melanie McCormick, Te Rangimārie Williams, Moira Poutama, Kris Pervan, Deanna Rudd

Minutes: Nicki Williams

Agenda Item	Comments						
<b>Opening &amp; Introductions</b>	Welcome by Jim Bolger, Chair;						
	Opening Karakia by Abbey Morris						
	Roundtable introduction from attendees						
	Jim thanked Jerry for Chairing last meeting.						
Confirmation of the Minutes	<ul> <li>Confirmation of the Minutes:</li> <li>Don motioned to move the minutes with minor edits.</li> <li>Olivia seconded the minutes following the changes.</li> </ul>						
De-Brief on Central Adaptation Area	Jerry provided an overview of the CAA Community Engagement Workshop in terms of venue and participants:						
Community Workshop	• 85 participants (including the mayor, several councilors and ward representatives). Jerry considered that it was useful engagement, the feedback was high quality. Jerry thanked Stephen for keeping everyone on track.						
	• The venue was full needing a table set up outside so something to consider for Raumati as the next meetings are likely to be bigger.						
	Stephen Daysh shared his overview of the session:						
	<ul> <li>CAP and Council staff enabled things to flow and there was good community input. The expected comments from the community were received including: the importance of keeping the community together, love the beach, arts &amp; crafts, schools. The community hold these values dearly and they are looking at intergenerational options rather than having only older groups representing future generations and the need for more engagement with younger people. They are aware of the changing environment and storm cycles and involved in solving these issues. Natural solutions were preferred where possible. If work needs to be done to keep community together beyond natural solutions, then they are prepared to look at other options.</li> <li>All information and feedback collated and TAG to write up values feedback as part of the values to objectives step.</li> </ul>						

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Discussion:
• John noted that the commentators were all in the older age group concerned that there is no youth.
<ul> <li>Jim suggested more needs to be done to engage younger people.</li> <li>Abbey outlined that Sophie Hanford has completed a video which has been boosted on Instagram as way of reaching the younger generation. Currently Council is using a range of communication channels such as Have Your Say online surveys and paid Facebook ads – this is showing to reach the younger audience.</li> </ul>
<ul> <li>Dr Aroha Spinks provided an update on Ngā Hapū o Ōtaki's (NHoŌ) Values and Cultural Values Report:</li> <li>NHoŌ cultural values report requires some adjustments – map updates to include new ancestral land.</li> <li>Work has begun on the NAA cultural risk assessment.</li> <li>A mana whenua korero / wānanga to work through pathways and further feedback to be held on 10/11<sup>th</sup> of June. This is where the te ao Māori values will be pre-scored for the Nerthern Anderta.</li> </ul>
<ul> <li>the Northern Adaptation Area.</li> <li>Aroha invited Stephen to the wānanga to facilitate the discussion.</li> <li>John noted that NHoŌ and ĀkW will also be exchanging korero with Ngāti Toa about Takutai Kāpiti as they see them.</li> </ul>
<ul> <li>Abbey Morris, KCDC</li> <li>Abbey noted that an update version of the work programme has been developed. Originally the economic analysis (cost) of the pathways were going to be covered at the same time as the MCDA scoring of the pathways. Instead, now the costing will now be calculated for all adaptation areas later in the project – April 2024. This provides more time to gather locally specific cost estimates and will better ensure consistency in cost estimates for similar pathways in different adaptation areas.</li> <li>Stephen briefly noted that looking at the economic criteria as a district wide project means that solutions can be costed for more than one area.</li> </ul>
<ul> <li>Stephen Daysh, Mitchell Daysh</li> <li>Stephen shared the NAA MCDA presentation and outlined the MCDA process to be undertaken in the workshop.</li> <li>He moved through to the explanatory sheet (Slide 3) noting that the NAA has been divided into four settlements/areas and there are shortlisted pathways for each settlement for both erosion and inundation. He explained how to read each pathway sheet which identifies the number of dwellings at risk over the timeframes increasing as time goes on. Date for short, medium and long term have been removed as sea level rise may occur quicker or slower than predicted. It will be the signals (warning of change) and triggers that will dictate the move from one adaptation option within a pathway to the next. For each pathway adaptation option, there is the number/s associated with it. This indicates which adaptation action/s is being consider for the adaptation option. This information is then captured within the NAA high level menu of pathway options. For example Enhance <sup>3</sup> is the Dune and/or Resilience package of <i>Increasing dune enhancement by building wind trap fences, vegetation planting, and managing access across the dunes through creating walkways and vehicle access. Manage coastal wetlands and riparian planting.</i></li> </ul>
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and triggers that will be covered in the CAP workshop in April 2024.

 Using the MCDA Criteria and Scoring Guide, the CAP worked their way through scoring the pathways for the Unit 1A (erosion) and Unit 1B (inundation) for Otaki Beach.

#### Discussion

- Jim asked where the sand would come from for enhancement adaptation option. Stephen commented that potentially it will be either locally source or long-distance source which affects the cost of this option. Iain noted that on the Kāpiti Coast it has been locally sourced previously.
- Martin noted that understanding groundwater and sea level rise/depth was important and monitoring of such should be a significant part of the CAP's recommendation report. This way there will be a record to show the levels of change and can be used to map a signal and when a threshold has been reached. *Note: A threshold is when conditions become unacceptable conditions based on community values.*
- Kate identified that monitoring in Hurunui for example is undertaken to assist in identifying when they are hitting signals, and this enable time to start planning for adaptation or defence structures.
- John asked whether the Council monitor now. The Council currently monitors 20 sites for coastal erosion, is very sporadic and it was emphasized that more data is required to enable models to be more robust.
- Stephen ran through the slides 5 and 6 to show an example of the Hawke's Bay MCDA and economic analysis scoring. Stephen noted that for Te Awanga (slide 5) that the highest MCDA criteria scored pathway was pathway 3 and this also scored the best for economics. For Westshore however, the pathway that scored the highest for the MCDA criteria, ended up being the most expensive. Given this, Hawke's Bay then chose another pathway, even though it scored lower for MCDA criteria, as it was more affordable.
- Aroha questioned if an enhance pathway option could include wetland restoration. Kate noted yes and an adaption option will be updated accordingly to include.
- Aroha shared that NHoŌ have concerns with all of the soft engineering options as they feel it would negatively impact mahinga kai. Abbey sought clarification on this as previously NHoŌ iwi representatives on CAP (Moira and Mark) with Aroha's support, approved soft engineering options as viable pathway options for the NAA at the 29 March CAP workshop when pathways were being shortlisted. Aroha shared that further korero has happened since then with their hapu their hapu have shared they do not like this option. Aroha shared currently there is no preferred adaptation pathway for NAA and could a new pathway for the NAA be created. Abbey confirmed that the TAG would look at a new pathway that would be viable for the NAA and bring this to the NHoŌ wananga on 10<sup>th</sup>/11<sup>th</sup> July and the additional CAP workshop. Discussions were that a new pathway could be enhance, accommodate, retreat.
- Aroha also noted that some from NHoŌ would prefer a rock revetment wall over a seawall for an action as part of hard engineering.
- Stephen confirmed that these comments should be captured with the commentary to accompany the prescoring of te ao Māori values MCDA criteria that NHoŌ will do at the wananga.
- Jim raised concern regarding existing management of drains and changes in policy relating to clearing out drains. Iain provided a comment that the policy and practices may have changed overtime.
- Abbey noted that majority of the waterways within the District are managed be GWRC instead of Council, then asked if the CAP would appreciate further information on what waterways are looked after by either KCDC or GWRC. CAP confirmed yes.
- John suggested CAP consider a presentation on Whaitua might be helpful. CAP agreed and this will be arranged for an upcoming CAP workshop.



	TEA BREAK						
Multiple Criteria Decision Analysis (MCDA) Assessment of Shortlisted Pathways for Northern Adaptation Area continued	<ul> <li>Discussion continued</li> <li>Stephen reminded that in July 2022 CAP decided on the eight MCDA criteria and the descriptions, along with what attributes qualify for a high or low score. For each criterion if you score a 5 that is a desirable score for the pathway if you score a 1 it is highly undesirable.</li> <li>Tim (Jacobs) outlined that he prescored the 'Regulatory consenting and policy risk' criteria by looking at the various pathways and the process to obtain consents in play considering the policy framework and planning requirements and tests through the NZCPS and regional plan. The CAP did not object to Tim's scoring. Note: As outlined on page 28 of the Takutai Kapiti: Coastal hazards adaptation decision-making framework, TAG are to prescore the 'technical' criteria.</li> <li>John questioned the policy directive of the NZCPS and Regional Plan for hard engineering adaptation options in terms of the priorities when an absolute risk is identified. Tim noted that while hard structures are generally to be avoided there may be instances where this is acceptable - 5% of the time. Jason noted that the RMA treats the replacement of existing seawalls as like for like. A new structure is treated differently and that there is often greater grounds to seek a replacement rather than a new wall.</li> <li>Stephen shared a Hawke's Bay example where a short-term revetment was the best option, consented and built despite the NZCPS policy directives.</li> <li>Iain commented that both the national policy and RPS recommend those hard structures as a last resort.</li> <li>Martin questioned whether MfE were giving retreat a priority (no statement of yet has been released) and if this is an option, Jim thought retreat has to have a higher ranking when considering sea level rise, Suzie agreed.</li> <li>Aroha noted NHO<sup>6</sup>'s concerns regarding beach scraping and the need for an alternate.</li> <li>Ashlyn ran through an overview of the 'ecology' criteria commentary for the pathway options, along the 'landscape' criteria co</li></ul>						
	TEA BREAK						
	<ul> <li>Discussion continued</li> <li>Whilst Stephen was leading the CAP through the 1B (inundation for Ōtaki Beach), he noted that there are a significant number of properties/people captured within this area. Yvonna noted that as it is an inundation unit the number of properties is higher.</li> <li>Martin commented on the option of raising floor levels as part of accommodate pathway option, but how is the access to the properties being protected. Stephen suggested that this point be captured.</li> <li>Results of the partially completed CAP's decisions for the MCDA scoring for the NAA is captured within Appendix 1 of these minutes.</li> </ul>						



Next Steps	Next Step:
	<ul> <li>NHoŌ to host a wananga to prescore the te ao Māori values for the NAA.</li> </ul>
	• As the te ao Maori values for the NAA have not yet been prescored/captured, and the CAP were not able to work across all of the pathways for the NAA, another addition CAP workshop will be required. Abbey will be in touch to arrange a date.
	• The CAP agreed that the TAG could carry over their scoring of the pathways that were completed within this workshop across the other settlements (Te Horo and Peka Peka) where the pathways are the same.
	• At the additional CAP workshop, the CAP will score the rural settlement pathways that are different from which were discussed today, and then confirm all the pathway scores for the NAA. This will then determine the CAP's preferred pathways for the NAA.
	<ul> <li>Abbey confirmed that the community feedback session on the CAP's draft pathway recommendations is scheduled for 1 July 2023 in Ōtaki.</li> </ul>
	• As granted approval by the CAP, it was confirmed that the TAG would create a new pathway for inundation for the NAA (enhance, accommodate, retreat) and correlate the information required to support the CAP in making their decision on it regarding MCDA criteria scoring for the wananga and additional CAP workshop.
	Discussion
	<ul> <li>Jim noted that Kelvin Nixon previously withdrew from CAP and has recently made contact regarding returning to CAP. Jim asked each CAP if they would oppose Kelvin's return to the CAP – none did. Abbey to confirm the process to reappoint Kelvin to the CAP.</li> </ul>
	Meeting closed at 6:25 pm.
Closing Karakia	By John Barrett

### ATTACHMENTS

### NAA Adaptation Pathways PowerPoint Presentation – CAP Workshop 24 May 2023

ACTIONS	
Share document outlining waterways for District – what is managed by GWRC vs KCDC	AM
Arrange presentation on Whaitua for CAP	AM/ID

Appendix 1 – Partially completed CAP's MCDA Scoring of NAA Pathways

-					MCDA Criteria/Weighting			
	CAP Weighting	Ecology 3	Landscape 2	Te ao Mãori values 3	Community Social and Economic Wellbeing	Public Access and Recreation 3	Regulatory consenting and policy risk	Effectively manages the risks of coastal erosion 2
Pathways I Manag	or Otaki Beach				MCDA Scoring			
ement Pa Unit	thways Pathway Descriptions Short term Medium term Long term	Ecology Score Notes	Landscape Score Notes	Te ao Mãori values Score Notes	Community Social and Economic Wellbeing Score i Notes	Public Access and Recreation Score Notes	Regulatory consenting and policy risk Score Notes	Effectively manages the risks of coastal erosion Score Notes
1	Enhance Enhance Soft Engineering Protection	Course in the second seco	Enhancement of dures with native dure vegetation may likely restore natural character.     Tavitation are open dynamic coastine influenced by existing settlement.		Court - The option to increase dura resilience over short and mean item aligns with stated community Formunity is actively included in implementations of dura realimene, it could promote social and economic wellbeing, a well as enhance social cohesion & health outcomes. • It is uncertain if insurability of personal assets will be maintained.	Course     This option will maintain the natural appeal of the     coastal environment and ecosystem protection could     approclation.     Public access to the coastal environment will be     maintained, however recreation that damage dures     may need to be restricted to protect ecosystems &     encourage dure stability.	As this option presents the least anount of impact on the existing environment (e.g., nutrat on the existing environment (e.g., nutrat isignificate conventing) hurdles under the existing system in the short to medium term Enhancement not likely to require constant of will be easy to obtain and is in line with current regulatory framework. • Depending on scale, sole engineering protection may increase risk which elevates risk profile.	Could I designed property it is likely to effectively     manage impacts when etocian risks are lower.     The designed property is likely to effectively     manage impacts when etocian risks are lower.     The designed property is the same location as present     day and thus will require additional space to allow     the beach to adjust inflated to maintain the dune.     Approach is proportionale to nature and scale of     risk, and would avoid exacerbation of risk in other     areas.     Design would be informed by best practise.     3
2	Enhance Soft Engineering Soft Engineering Protection Protection	Enhancement of existing native populations will likely initially promote ecology and provide greater both any provide services of these and taxas. Soft and tax is 2020 - Astryn pool and bad elsi 2020 - Astryn • Soft engineering may disorup bird habitat and shellfish populations but can modify and enhance habitats in the form of enhanced duries for beach fora and fauna. 3	<ul> <li>Initial enhancement of duries with native dure vegetation may relative natural character.</li> <li>Solit enjareting may discuss of cooled enhancement of the second second second second dynamic coastline influenced by existing settlement.</li> </ul>		The option to increase dune resilience over short term aligns with stated commanity values. To ensure support to this splot one mindue incluing to the programmer of the substate of the substate of the engineering response.     If commanity is actively included in implementation, it could promote social and economic welbeing, as well as enhance social cohesion & health outcomes.     If is uncertain if insurability of personal assets will be maintained.	This option will maintain the natural amenity and landscape values of the coastal environment and coasta and poter for the coastal environment and the second poter second approxision. Thible access to the coastal environment will be maintained, however receisation that damages dunes may need to be restricted to protect ecosystems & encourage dune stability.     4	<ul> <li>Conserting risk increased as a result of additional soft engineering protection. Consents required in the short targ, will likely not have a alfocul consenting and the software and additional soft engineering works proposed in this copton there may be a few additional consenting requirements in comparison to the above.</li> <li>Soft engineering protection presents less consenting lurdles as coposed to hard engineering protection but still may face challenges.</li> </ul>	If designed property it is likely to effectively manage impacts when encount nikes are lower. Hot her steadline in the barne location spread day and thus will probably require increasing sot- engineering intervention to radditional space to allow the beach to adjust inland. Approach is proportional to nature and scale of risk, and would avoid excertation of risk in other areas. Design would be informed by best practise.     3
Otarki Unit 1A	Enhance Soft Engineering Hard Engineering Protection Protection	Enhancement of existing native populations will likely initially encourage positive ecological benefits. Orgoing engineering protection however has the potential to reduce ecology by dimaging baach, dune, and estuary ecology, and overall my support lower biodiversity and prevent the natural migration of habitats.     2	<ul> <li>Initial enhancement may restore natural character.</li> <li>Ongoing engineening and introduction on that districtures and potential reduction in natural banch profile may further reduce natural character and result in devines linkclope effects.</li> <li>Structures may remove some existing areas of high natural character encompassing parts of Otaki Dunes.</li> </ul>		The option to increase dune resilience over short term aligns with stated community values. To ensure support for engineering options over the medium-long term, the community may need assurance (evidence, if formation & engingement) on suitable soft hybrid haid engineering response. P community is advery included in exponentiation of the second state of the second coherence is a submitted and the second coherence is a headh outcomes. It is uncertain if insurability of personal assets will be maintained.	In short-madium term this option will maintain the natural appeal of the costal environment and allow public access.     • Over time, it is likely that access to foreshore could be lost at high bids and eventually lost completely. Maintaining public access to the costal environment would need to be integrated into the benefits for people and the environment. • If adaptation option allow includes orgoing dure maintainaine, then recreation that damages dures may need to be restricted to protect ecosystems & encourage dure stability.	Hard engineered hazard mitigation methods are discouraged under existing statutory frameworks becasue of the adverse effects they can have on the environment.     Policy Statement state that hard engineering options should only ensure as all state that and engineering options should only be used as all state throat and the GVRC by be used as a state that next and engineering options should only be used as a state that next and engineering options should only the used as a state throat and the GVRC by be used as a state throat and the GVRC by the state of the state of the state of the state of the state onserting hurdles in its later stages.	Likely to effectively manage shoreline retreat at the time of implementation, but will require ongoing maintenance especially as as level contrues to rise in the long term.     The design of any structure will be proportionate to the nature and scale of the risk, but it may cause and before the structure will be proportionate to the nature and scale of the risk, but it may cause and before the structure will be proportionate to the structure will enhance forewhore scour enders the 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).
	4 Enhance Soft Engineering Retreat	Initial enhancement of existing native populations would likely improve existing ecology and promote greater habita and reacourses for fram and fishung - Retreet favours ecological restoration by providing habitatis for species to ecoloriae neighborung areas that may become destoyed.	<ul> <li>Inisial enhancement may restore natural character.</li> <li>Soft engineering may disrupt natural character and result in more limited adverse landscape effects in the contrast of existing settlement.</li> <li>Pateraig provides opportunities to restore dura planting in the absence of hard engineering and ofter opportunity to restore natural character in longer term.</li> </ul>	1	<ul> <li>The option to increase dune resilience over short term aligns with stated community values.</li> <li>To ensure support for sol engineering over medium term, the community may reed assurance (evidence, intermation &amp; engineering) on subble soft engineering / hybrid response.</li> <li>ensite retroit are increased in the single ending of allow the community movies of the choice to staty oughther and that support in place to promote social and economic wellbeing, and enhance social and movies and the community and enhance social and movies and the community and enhance social and economic wellbeing, and enhance social cohesion &amp; health outcomes.</li> <li>Is uncertain if insurability of personal assets will be maintained.</li> </ul>	This option will maintain the natural amenity and landscape of the coastal environment.     This option the scores the to-coastal environment will be maintained in the short term, and is likely to continue in the medium and long them. Over all time periods, necession that damages dunes any need to be resultion.     The term of the store term of the scores of the resultion of the term of the scores of the scores of the resultion.     The term of the scores of the scores of the results are resulted as underway consenting my term of the term of the scores of the scores of the opportunities for recreation.     The score of the score of the score of the scores of the scores of the score of the scores of the score of the score of the score of the opportunities for recreation.	<ul> <li>Option of retreat has limited effects on the environment in comparison to hard protection structures.</li> <li>Ourmethy limited national direction on how to undertake managed retreats, however, this is specified to be effect to be an environment of the second structure (and the second structure) and the second structure approaches if the plan is to retreat in the longer term, but smaller scale approaches may be cost effective to buy sime' 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 family abuild commence new in plan for that eventually.</li> </ul>	Effectively manages the risks of coastal erosion over time, and takes actions in the short-medium term to reduce risks over that period.     Refreat would result in bai removal of risk to individuals then resistor. In would be proportionate to the nature and scale of the risk to those impacted to retroat.     S
1	Enhance Accommodate Additional Hard Protection	Enhancement may improve existing native populations likely encouraging positive ecological benefits. The long term negative advectes effects on ecological sites and species associated with waterways i.e. Olaki River and Waitchu Stream. 2	Initial enhancement may restore natural character and provide landscape benefits.     Eventual introduction of host structures would reduce natural character and may may be ended to a structure of the structures of the ended of the structure of the structures of the ended of the structure of the structure of the structures of the structure of the structure of the structure of the natural character at mouth of Waitohu Stream.		Initial short term enhancement option aligns with community values and maintains social cohesion. Toose in higher incudon risk areas may need support to understand optional costs to proachally floodynording, relocatable buildings, elevate foors, etc.). • Continue community education re: protecting & hazard, and emergency management to foster realismon. * It is uncertain if insurability of personal assets will be maintained. <i>CAP commentary: Insurance Companies may</i> continue providing insurance if hard protection is done - as it minimizes risk.	In short-medium term, this option will maintain the natural appeal of the coastal environment and acoxystem protection could further enhance combined by additional states and the states of the maintained, however creation that dramages dunes may need to be restricted to prevent destruction of dune stability. • Where possible, additional hard protection, should allow for public access and recreation and provide other co-benefits.	Accommodation and additional hard protection on a larger scale will trigger more stringert consening requirements compared to enhancement and soft- ergination managements and additional strength and additional under the NZCPS and RPS because of the adverse effects they can have on the environment.     Furthermore, the GVRCA Natural Resources Plan contains a number of scheduled sites in the area with associated consenting rules.     Therefore, this pathway may face regulatory hundles in the later stages explorably at a livel regulatory protection works along the Orbait River and Waitohu Stream.	Pathway is not created to address the erosion hazard.     Pathway will not effectively manage the erosion hazard.
2 Julit 18	Enhance Additional Hard Refreat	Enhancement of design rable populations will Bey initially incorregations (according to the additional - Hard engineering protection may reduce acclogy, and yor damaging basch, durine, and estuary according, and overall may support lower biodiversity and prevent the natural migration of habitats. - Refreat provides opportunity for ecological restoration, however this would occur in an already modified environment. adsplation pathway enhance the welfance too, and just the existing hard elements. Menu to be change to be dune and wetland enhancement.     3	<ul> <li>A field enhancement may readow natural character and provide landscape benefits.</li> <li>Additional hard protection may reduce natural character and result in adversa landscape effects.</li> <li>Retreat provides opportunities to restore natural character, however this would occur in the context of increased modification.</li> </ul>		India abot term enhancement option aligne with orbit abot term enhancement option aligne with rore costs of medium term hard protection should be considered alongside cost associated with retreat in long term (illoodproofing, relocatable buildings, elevate floors, etc.) • Clear communication & support for those in higher inundation risk areas on they understand costs of options to protect their duellings A risks to health vo education re: protecting, b hazerd, and emergency management to loster resilience. • I wurchtain / inunability of personal assets will be maintained.	<ul> <li>This option will initially maintain the natural appeal of the costal environment. Ecosystem protection could further enhance community values and public access to the costal 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-bandits.</li> <li>Long term retreat may offer opportunities for recreation.</li> </ul>	Castal restoration and enhancement is acroaraged under the present regulatory framework and will not lace any major consenting hurdles. However, the hard protection components of this pathway will face consenting hurdles as there are significant sites in the areas scheduled in the OMPKC hatural Resources Plan and will require buy-in from GWRC to approve and undertake flood protection works along the Otaki Rover and Watehu Sersam. With a longer term aim memaged retreat gets underway consening 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).	Pathway one the short-notium term will not active across or nice. Properties being intreated from the inunctation hazard will be different to the properties being retreated from ension; and therefore retreating properties due to inundation hazards will only effectively manage the ension risk for a small amount of properties.     2

ective	ely manages the risks of coastal inundation	
	3	
ective	bly manages the risks of coastal inundation	MCDA
ore	Notes • Option is not chosen to address inundation hazard. • 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. • However does not address inundation hazard from pathways up river and inlets.	Total Score:
	Unlikely to be proportionate to the nature and scale of risk of inundation.     Option is not chosen to address inundation hazard.	63
	<ul> <li>By raising the dune crest elevation by planting and dune reconstruction, the risk of vertopping decreases and can be modified responsively as a result of storm evenion.</li> <li>However close not address numdation hazard from However close not address numdation hazard from Unitary by the propriori of risk of inundation.</li> </ul>	59
	<ul> <li>Option is not chosen to address inundation hazard.</li> <li>A designed createl elevation of an eventual hard structure would result in a reduction of the overlappin phazard, but would not effectively manage the wider inundation risks up river and inlet pathways.</li> </ul>	36
	<ul> <li>Over the short-medium term the actions will not effectively manage the inrundition hazard; however long term neteral will emove the nisk to individuals is to increase the intervention of the same exercision hazard in Oxel 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>	68
	Effectively reduces the risk to individual properties by raising houses above agreed flood levels but the - Abo, a residual risk housing will remain in the short to medium term until this can be reduced by the engineered mitigation options in the longer term.	50
	<ul> <li>Short-medium term will help reduce the increasing risk unit retreat is undertaken, which is highly likely to effectively manage the risks by moving index to the area.</li> <li>Short and the area area area area area area area ar</li></ul>	50

Claik I	Enl	nhance Acco	mmodate	Retreat	5	<ul> <li>Initial enhancement would likely improve exisiting exclogy and promote greater habitat and resources for flora and feana.</li> <li>Reterat favours coological restoration by providing habitats for species to recolonise neighbouring areas that may become destroyed.</li> </ul>	Initial enhancement would likely restore natural character and provide landscape benefits.     Response avoids introduction of built structures within areas contributing to natural character in the context of the existing settlement.     Retract of the existing settlement.     Retract of the schema of the second settlement of the restored natural character.		Initial short term enhancement option aligns with community values and maintains social cohesion.     Those in higher imundation risk areas may need support to understand options / costs to preactively protect their dwellings from moisture and mould (floodynooding, endocatable buildings, elevate floors, etc.) in light of fluture relocation in protection ga a strain and a strain of the strain of the start resilience and any any strain of the start resilience and mountain for protecting a 4 the maintained.     A		This option will initially maintain the natural appeal of the coastal environment and ecceystem protection could enhance community values and public access to the coastal environment.     In the medium term, the public may need assurance (governmenciplanning) that public access and opportunities for recreation and other ecology oo barnefits will not be negatively impacted.     Long term retreat may ofter opportunities for recreation.	Coastal restoration and enhancement is encouraged under the present regulatory framework, and will not face any major consenting hurdles. If managed retreat is done well it should have limited effects on the environment as opposed to hard protection structures. Currently there is limited national direction on how to undertake managed retreat to the however, this is expected to be dodessed within the Climate Change Are managed retreat gets underway consenting may Are managed retreat gets underway consenting issues dependent on relocation plan (e.g., subdivision of new land and where to find this new land).	Pathway over the short-medium term will not address erosion risk.     Properties being retreated from the inundation hazard will be different to the properties being prepareties due to inundation hazards will only effectively manage the erosion risk for a small amount of properties.
4	Acc	ccommodate Addii Prote	ional Hard	Retreat		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. Reteat provides opportunity for ecological restration, however this would occur in an already modified environment.	Additional hard protection is likely to reduce nature character and may result in adverse landscape effects.     Retreat provides opportunities to restore natural character, however this occurs in the context of increased modification.	rai	Initial short term focus is to identify dwellings at reis and educate on optionalizots of floodproofing, relocatable buildings, elevate floors, etc. The community may nead upport to understand and implement these mitigation efforts.     Providing the community with information on the costs of additional hard protection (dinguide costs of reteral) may ensure greater acceptance and samoother transition to neat pathway. Continue community education reprotecting & hazard, and emergency management to bater realitance.     * It is unorthail if muruability of personal assets will be maintained.	3	In the short term, public access to the coastline is likely to be maintained.     In the medium term, with the consideration of any additional hard protection, the public may need assurance (governance)planning) that public access and opportunities to recreation and other ecology co- benefits will not be negatively impacted.     Design of additional hard protection and retreat forg term should consider continued public access & explore further opportunities for recreation.	<ul> <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 plin and will require buy-in from GWRC to approve and undertake flood protection works along the Collek River and Wahhu Sitesam.</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 be enhancement.</li> <li>As managed retreat gets underway consenting may be harder to also creates additional consenting sequerements in comparison be enhancement.</li> <li>As managed retreat gets underway consenting may be require to also creates additional consenting justus expendent on relocation plan (e.g., subdivision of new land and where to find this new land).</li> </ul>	Pathway over the short-medium term will not address erosion risk.     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.
Pathways fo	r Te Horo		thway Descript	ione	-	Ecology	Landscape	Te ao Mãori values	Community Social and Economic Wellbeing		Public Access and Recreation	Regulatory concepting and policy rick	Effectively manages the risks of coastal erosion
mend@Pati ment			Aedium term	Soft Engineering Protection		Note Note Notes Participations of the second seco	Score Notes - Notes - School - Notes - School -	Score Notes	Community social and a continue weighting     Community social and a continue weighting     The option to increase dura realiance over abort     and medium term adjase with staded community     if community is actively included in implementation     of dura realiance, including upmote social and     aconomic wellteing, as well as enhance social     cohesion 6 health actiones.     t is uncertain if insurability of personal assets will     be maintained.	n		Regulatory consenting and policy risk Score Note 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 conset or will be easy to obtain and is in line with current regulatory framework. - Depending on scale, soft engineering protection may increase risk which elevates risk profile.	Score Notes Scores of Notes Scoresta erosion Scorester Control of Score Score Scores (Score Scorester Scor
2	Ent	nhance Soft Prote		Soft Engineering Protection		<ul> <li>Enhancement of existing native populations will likely initially promote ecology and provide greater habitat and resources for flora and tana.</li> <li>Soft engineering may disrupt bird habitats and shellish populations but can modify and enhance habitats in the form of enhanced dunes for beach flora and feuna.</li> </ul>	<ul> <li>Initial enhancement of dunes with native dune vegetation may restore natural character.</li> <li>Soft engineering may discupt areas of coastal environment but otherwise maintain an open dynamic coastiline influenced by existing settlement</li> </ul>	K.	The option to increase dure resilience over short term aligns with stated community values.     To ensure support for this option over medium- long term, the community may need assumate (evidence, information & engagement) on subable out engineering response.     To ensure the engagement of the experimentation, it could promote solial and economic wellbeing, as well as enhance social or being to Anathro the engineering insurability of personal assets will be maintained.	4	This option will maintain the natural amenity and landscape values of the coastal environment. E-cosystem protection could further enhance community values and toter nature appreciation. Public access to the coastal environment will be mantaned, however rescalar that damages durase may need to be exected on protect ecosystems & encourage dure stability.	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.     As there are additional down there may be a there additional proposed in this option there may be a few additional above. Soft engineering protection presents less consenting hurdles as opposed to hard engineering protection but still may face challenges.	If designed property it is likely to effectively manage impacts when erosion risks are lower.         • Natural processes are likely to all back the gravel storm berm, but the shoreline would benefit from beach broanging to bud in cresh neight. Encloweness is likely to slowly reduce over time trying to hold the thus will require additional space to adjust the beach to adjust infland to maintain the dune.         • Approach is proportionate to nature and scale of risk, and would avoid excerbation of risk in other areas. Design would be informed by best practise.         3
Те него Unit 2A с	Enl	nhance Soft Prote	Engineering ction	Hard Engineering Protection		<ul> <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, dure, and estatusy ocology, and overall may support lower biodiversity and prevent the natural migration of habitas.</li> </ul>	<ul> <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 advers landscape and natural character impacts in context of existing settlement.</li> <li>Structure may remove some existing areas of hig natural character encompassing parts of Te Horo Dunes.</li> </ul>	se t	The option to increase dure realience over short term aligns with stated community values.     To ensure support for engineeing options over medium-long term, the community may need assurance (evidence, information & engagement) or suitable soft. hybrid hard engineering response, J community is actively included in more provide the soft of the soft of the periodic version of the soft of the soft of the periodic version of health outcomes. Since social correspondences in the social assets will be maintained.     Soft of the soft of t		In short-medium term this option will maintain the natural appeal of the costal environment and allow public access.     Over time, it is likely that access to foreshore could be lost at thigh the and may be lost completely. Maintaining public access to the costal monorment would need to be impacted into the desided to people and the simulation of the desided to people and the simulation of the desided to people and the simulation of the maintainnice, then recreation that damages dures a encourage dune stability.     2	Hard engineered hazard mitigation methods are discouraged under existing statutory frameworks becasue of the adverse effects they can have on the environment.     Policy directions in the NZCPS and the Regional Policy Statement state that hard engineering options should only be used as a last recort and the CMRC Nates in the Managazone Stream Mouth.     Therefore, this pathway may foce significant consenting hurdles in its later stages.	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.     e I deflects and toe scour may may cause localised exceedation of erosion. Design would be informed by best practise.
4	Enl	nhance Soft Prote	Engineering	Refreat		<ul> <li>Initial enhancement of existing native populations would likely improve existing ecology and promote greater habita and resources for florins and fauna - Retreat florours ecological restoration by providing habitats for species to recolorise endphouring areas that may become destroyed.</li> </ul>	<ul> <li>Initial enhancement may restore natural character</li> <li>Soft engineering may disrupt natural character</li> <li>Soft engineering may disrupt natural character</li> <li>Retreat provides opportunities to restore dura provide provides opportunities to restore dura effects opportunity to restore natural character in longer term.</li> </ul>	nd .	The option to increase dure resilience over short term aligns with stated community values.     To ensure support for sold regimeering over medium term, the community may need assurance (widence, information & sengagement) the state of the state of the sengagement the sengatement of the state of the sengatement the sengatement of the sengatement the s	4	This option will maintain the natural amenity and landscape of the coastal environment.     Public access the invironment will be maintained in short term, and is likely to continue in emedium and long term.     The second strategy of the second strategy of the second strategy of the second strategy of the durate may need to be restricted to portlect coordistens & encourage dura statistify. Retreat any provide further opportunities for recreation.	<ul> <li>Coastal restoration and enhancement is encouraged under the present regulatory framework and will not been any major consenting huridis.</li> <li>If managed retreat is done well it should have limited diffects on the environment as opposed to be compared to the second second second second to understate managed reteres thowever, this may be addressed within the climate change adaption act.</li> <li>The scale of the soft engineering works will need to be commesurate with the plan to retreat in the medium to long term.</li> <li>Managed reteat may require consenting to allow sees greenided avoid/since. Reteat may also relocation plan (e.g., subdivision of new land and where to find this new land).</li> </ul>	Effectively manages the risks of coastal erosion over time, and takes actions in the short to medium member of the short of the short of the short - Retreat would result in Iotal removal of risk to the nature and scale of the risk to those impacted to retreat.
1	Enl	nhance Acco	mmodate	Additional Hard Protection		Enhancement may improve existing native populations likely encouraging positive ecological The introduction of hard protection however may have long term negative adverse effects on ecological sites and species associated with waterways i.e. Mangaone Stream.	<ul> <li>Initial entropy restore netural character and provide unstructure of the set of provide unstructure of the set of the set of the set of the set of the set of the set of the set of the set of the set restore of the set of the set of the set of the set indication.</li> </ul>		Initial short term enhancement option slipns with community indexes and maintains acceleration cohesion support to understand options/ costs to practively upported their dwellings from moisture and mould (floodproofing, relocatable buildings, elevate floors, etc.).     • Continue community education re: pretecting & hazard, and emergency management to toster resilience.     • It is uncertain if insurability of personal assets will be maintained.	3	In short-medium term, this option will maintain the natural appeal of the costal environment and voltation of the costal environment will be maintained, however repraction that dramages durate may need to be restricted to prevent destruction of durate stability. Where possible, additional hard protection, should allow for public access and recreasion and provide other co-benefits.     2	Accommodation and additional hard protection on a larger scale will trigger more stingert contenting regnerating methods. Hard-engineering approaches are discouraged under the XLOPS and RPS because of the adverse effects they can have on the environment. Furthermore, the GWRC hardraft Resources Plan has some scheduled sites over the Manganen Mouth with associated consenting rules. Therefore, this pathway may face regulatory buyin thore GWRC to approve and undertake flood protection works along the Stream.	This pathway is not specifically designed to address the ension hazard but the engineered protection on the southern side of the Mangaone Stream.     Will not effectively manage the ension hazard.

not ation aing ating nly nall		<ul> <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 effected.</li> <li>As an incremential approach, it is likely to be proportionate to the nature and scale of the risk over time.</li> </ul>	
	4		68
not ation sing ting nly nall	4	<ul> <li>Effectively manages the risks to properties only over the short term, and potentially the broader settinent over the medium term.</li> <li>Effectively manages the risks to individuals over a long timestame.</li> </ul>	42
			MCDA
	Effocti	wolv manages the risks of coastal inundation	Total
ly wer. er time ation as I space to h the scale of n other iractise.	Score	vely manages the risks of coastal inundation Notes • Option is not chosen to address inundation hazard. • Dip raising the crest elevation to planting and drume reconstruction, the risk of overtopping decreases; however does not address inundation hazard from Hulkikaly to be proportionate to the nature and scale of risk of inundation.	Score: 63
ly wer. te gravel t from		Option is not chosen to address inundation hazard.     Py raising the crest elevation by planting and dune reconstruction, the risk of overtopping decreases; however does not address inundation hazard from	
tiveness hold the lay and he beach scale of n other tractise.		pathways up the stream. I Unikely be percopriorate to the nature and scale of risk of inundation.	59
in the long e risks e localised		Option is not chosen to address inundation hazard.     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 Mangaone	
nformed	2	stream pathway.	34
rosion medium ik to trionate to pacted to		<ul> <li>By raising the exet elevation by planting and dute reconstruction, the risk of contropping decreases, but over the short to medium term the sactions of on out effectively manage the inundation hazard posed by the Managone stream, however long term retreat will remove the risk to individuals impacted in the area.</li> <li>Some of the properties that would be erfereded due to eracision would also be impacted by eracient, and therefore long term, retreat could manage some of the risk within the settlement.</li> </ul>	68
to ered al erosion gaone azard.		<ul> <li>Effectively reduces the risk to individual properties by raising houses above agreed flood levels but the raising access and raising access and remain in the short to medium term until this can be reduced by the engineered mitigation options in the longer term.</li> </ul>	
	4		52

2 Enhance Additional Hard Retreat	Enhancement of existing native populations will ikely initially encourage positive ecological benefit Hard engineering protection may redue ecology by damaging beach, dune, and estamay ecology, a overall may support lower biodvenity and prevent the natural imgration of habitats. Retreat provides opportunity for ecological restoration, however this would occur in an already modified environment.	Additional hard protection may reduce natural d character and result in adverse landscape effects.     Retreat provides opportunities to restore natural character, however this would occur in the context of increased modification.	з	<ul> <li>Initial short term enhancement option aligns with community values and maintains social cohesion.</li> <li>Community values and maintains social cohesion.</li> <li>Community cohesion alignment of the social social social with retrain in long term (loodproxfing, recleatable buildings, elevate floors, etc.).</li> <li>Clear communication al support for those in higher inundation risk areas to they understand costs of options to protect their divelling. A risks to headth via costs of eventual retrain. Continue community management to foster realisence. It is suncettain if insurability of personal assets will be maintained.</li> </ul>	This option will initially maintain the natural appeal of the coastal environment and acceystem protection to the coastal environment.     In the medium term, additional hard protection may need to be designed to incorporate public access and opportunities for revension, nature appreciation and other co-benefits.     Long term lether may offer opportunities for microation.	<ul> <li>Coastal restoration and enhancement is encouraged under the present regulatory formework- and will not be any major consenting hurdles.</li> <li>The hard protection components of this pathway will face conserving hurdles as there are significant sites in the Manganon 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 transmission between these works may be hard to approximation and these works may be hard to approximation and these mores may be hard to approximation and these mores may be hard to approximation and the consenting to allow create additional consenting issues dependent on relocation plan (e.g. subdivision of new land and where to find this new land).</li> </ul>	This pathway is not specifically designed to address the ension hazard in the short to medium some limited coastal erosion protection on the southern side of the Mangaone Stream. There will be more astensive retreat required due to the iundation hazard compared to the erosion hazard, however this option will manage the risks for some properies addresd by multiple hazards around the mouth of the Mangaone Stream.     3
R Enhance Accommodate Retreat	Initial enhancement would likely improve exisiting ecology and promote greater habitat and resource for from and relaxed. Relatent linvours ecological restoration by providin habitatis for species to recolorations eneighbouring areas that may become destroyed.	<ul> <li>character and provide landscape benefits.</li> <li>Response avoids introduction of built structures</li> </ul>	4	Initial short term enhancement option aligns with community values and maintains social cohesion. Those in higher intrudition in kareas may need support to understand options / costs to proactively (Rocognoting, relocatella invalidance, ada mail (Rocognoting, relocatella invalidance, ada mail (Rocognoting, relocatella invalidance, ada mail to continue community education restratu- to continue community education restratu- to continue adassist transition to retreat. * It is uncertain if insurability of personal assets will be maintained.	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.     The second second second second second second and apportunities for recreation and other ecology co- benefits will not be negatively impacted.     I - Long term refreat may offer opportunities for recreation.	Coastal restoration and enhancement is encouraged under the present regulatory framework, and will not face any major consensing hundles in the encit term.     In the medium term will earry some building consent requirements.     If managed refrait is done well it should have limited effects on the environment as opposed to hand protection structures.     Oursen'th there is limited national direction on how to undertake managed refrait however, this is expected to be addressed within the Climate Change Adaptation Act.     A managed refrait gats underway consenting may be required to allow some greenfields subdivision.	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 Mangaone Stream.
4 Accommodate Additional Hard Retreat	Hard engineering protection may reduce ecology by damaging beach, dure, and estuary ecology, a overall may support lover biodiversity and prevent the natural migration of habitats.     Return provides opportunity for ecological restoration, however this would occur in an already modified environment.	<ul> <li>character and may result in adverse landscape effects.</li> <li>Retreat provides opportunities to restore natural character, however this occurs in the context of</li> </ul>	2	Initial short term focus is to identify dwellings at risk and educate on options/costs of floodproofing, relocable buildings, elevate floods, etc. The community may need support to understand and implement there mitigation afforts.     Prote of a Brienal Head My welline (originate access of restand) may ensuing grades acceptance and smoother transition to next pathway. Continue community education re-protecting & hazard, and emergency management to foster realismone.     It is uncertain if insurability of personal assets will be maintained.	In the short term, public access to the coastline is likely to be maintained.     In the medium term, with the consideration of any additional hard protection, the public may need assurance (governancipatinnis) that public access and opportunities for recreation and defaultion Default access and protection and retreet (ong term) should consider continued public access & explore further opportunities for recreation.     3	The hard protection components of this pathway will face conserting hurdles as there are significant takes in the Manggone Mouth scheduled in the GWRC Natural Resources Plan and will require boy- in trion GWRC to approve and undertake flood protection works along the Stream. Accommodation also creates additional conserting requirements in comparison to enhancement. A managed retrate gets underway conserting may be header to allow some geneficies subdivision of requirement on relocation plan (e.g., subdivision of new land and where to find this new land).	southern side of the Mangaone Stream. <ul> <li>There will be more extensive retreat required due to the inundation hazard compared to the ension hazard, however this option will manage the risks for some properties affected by multiple hazards around the mouth of the Mangaone Stream.</li> </ul>
Pathways for Peka Peka Manage Pathways Pathway Descriptions ment Short term Medium term Long	Ecology	Landscape	Te ao Mãori values	Community Social and Economic Wellbeing	Public Access and Recreation	Regulatory consenting and policy risk	Effectively manages the risks of coastal erosion
1 Enhance Extraco Soft Engine	<ul> <li>Limitationen of containing inter population is working interpretent of the promote ecology and provide greater habitatian dresources for flora and fauna.</li> <li>Soft engineering may disrupt birth habitats and shellish populations but can modify and enhance habitats in the form of enhanced dunes for beach flora and fauna.</li> </ul>	Score Notes - Enhancement of naive dure vegetation would likely restore natural character. - Soft engineering may disrupt areas, but otherwise maintain an open dynamic coastine influenced by extering settlement.	Score Notes Sc	Notes Not	Score Notes • This option will maintain the natural appeal of the coastal environment and ecosystem protection could enhance community autoes and foster nature appreciation. • Public access to the coastal environment will be maintained, however recreation that damages dures may need to be restricted to protect ecosystems & encourage dune stability.	Score Notes • 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 team. • Enhancement and likely to require consent or will requilatory formwork. • Depending on scale, soft engineering protection may increase risk which elevates risk profile.	Score         Notes         Sc           • If designed property it is likely to field/wely manage impacts when erosion risks are lower.         • Effectiveness is likely to rouce 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.         • Approach a proportionale to nature and scale of risk, and would avoid exace thation of risk in other areas. Design would be informed by beet practise.
Protection		4	4		4 4	neg nucesse na miun ternska na pune.	3 3
2 Enhance Soft Engineering Soft Engine	Enhancement of existing native populations will likely initially promote ecology and provide greater habitat and rescurces for floar and fauna.     Soft engineering may disrupt bird habitats and ahelfash populations but can mody and enhance habitats in the form of enhanced dunes for beach flors and tauna.	4 - Initial enhancement of dunes with native dune vegetation may restore natural character. - Soft engineering may further disrupt areas of cosstal environment influenced by existing settlement.	4	The option to increase dune resilience over short term aligns with stated community values. Tog term, the community right red assumance (widence, information & engagement) on suitable soft engineering response. Toommunity is actively included in implementation, it could promote social and economic weltbeing, as well as enhance social contexino A heath outcome. T is uncertain if insurability of personal assets will be maintained.		Consenting risk increased as a result of additional exchangineering protection. Consents required in the short term, will likely not have a difficult consenting pathway. As there are additional soft engineering works proposed in this groot nerve may 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.	Approach is proportionate to nature and scale of risk, and would avoid securchation of risk in other areas. Design would be informed by best practise.
2 Enhance Soft Engineering Soft Engine	Soft exploration of existing native populations will     say initially promote ecology and provide years     - Soft engineering may disrup third habitats and     shelling hopelations but can mody and enhanced     habitats in the form of enhanced dunes for beach     fors and fauna.     - Soft engineering may disrup third habitats and     results in the form of enhanced dunes for beach     fors and fauna.     - Soft engineering may ensure the soft of the	vegetation may restore natural character.     · Soft conjenering may turber disrupt areas of coastal environment influenced by existing settlement.     · Vegetation of the settlement influence of the settlement of the settl	4	term aligns with stated community values. To ensure support for this option over medium- long term, the community may need assurance (evidence, information & engagement) on suitable soft engineering responses. If community is actively included in implementation, it could promote social and economic wellbeing, as well as enhance social cohesion & health outcomes. It is uncertain if insurability of personal assets will a the supersonal means and the second	Iandscape value of the costai environment. • Ecosystem protection could further enhance community values and foster nature appreciation. • Public access to the costal environment will be manifained. Nonverse recreation that damages dures and the statistic of the protect ecosystems & encourage dure stability.	Consenting risk increased as a result of additional soft engineering protection.     Consents required in the short term, will likely not have a difficult of engineering works proposed in this splot there may be a few additional proposed in this splot there may be a few additional proposed in this splot there may be a few additional proposed in this splot there may be a few additional proposed in this splot there may be a few additional addition.     Soft engineering protection presents less consenting hurdes as opposed to hard engineering	manage impacts when encision risks are lower.     • 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.     • Approach is proportionale to nature and scale of risk, and would avoid exocerbation of risk in other areas. Design would be informed by best practice.     • Will manage risk of coastal encoion in the long term, however the pathway is not likely to be proportionate to the nature and scale of risk.     • Will manage risk of coastal encoion in the long term, however the pathway is not likely to be proportionate to the nature and scale of the risks over time.     • The effects and to be score may may cause localised

thway is not specifically designed to he ension hazard in the short to medium the engineered stream works may offer ted coastiel erosion protection on the side of the Mangaone Stream. If it be more extensive retreat required due ndation hazard compared to the erosion however this option will manage the risks		This pathway will help reduce the increasing inundation risk in the short to medium term and allow time to effect a managed retreat.     Patheat form hazard prone areas will manage the risk by removing people, properly and infrastructure from the area.     As an incremental approach, it is likely to be proportionate to the nature and scale of the risk over	
properties affected by multiple hazards e mouth of the Mangaone Stream.	4	time.	52
theay is not specifically designed to the erosion hazard in the short to medium the erosion hazard in the short to medium dillo more electanive retreat required due ndation hazard compared to the erosion owerer this option will manage the risks fore perifies affected by multiple hazards around of the Mangaore Steam.	4		68
theay is not specifically designed to he enciron hazar in the short to medium the engineered stream works may offer the closatal erosion protection on the side of the Mangaone Stream. If be more edensive retreat required due ndation hazard compared to the erosion owere this option will manage the risks for perise affected by multiple hazards around of the Mangaone Stream.	4	<ul> <li>This pathway will help reduce the increasing imundation risk in the short to medium term and allow time to effect a managed retreat.</li> <li>Retreat forn hazard prone areas will manage the risk by removing people, properly and infrastructure from the area.</li> <li>As an incremential approach, it is likely to be proportionate to the nature and scale of the risk over time.</li> </ul>	44
			MCDA
ages the risks of coastal erosion Notes ned properly it is likely to effectively	Effecti Score	vely manages the risks of coastal inundation Notes	Total Score:
mpacts when erosion risks are lower. means is likely to calce over time trying to inhoreline in the same location as present that many require additional space to allow that are proportionate to nature and scale of this proportionate to nature and scale of this proportionate to nature and scale of this proportionate to sature and scale of this proportionate to sature and scale of this proportionate to sature and scale of the proportionate to sature and the proportionate to sature and the proportionate to sature and the sature to sature to sa		<ul> <li>Option is not chosen to address inundation hazard.</li> <li>By raising the dunc crest elevation by planting and dune reconstruction, the risk of overtopping decreases; however does not address inundation hazard from pathways up the stream and stormwetter network.</li> <li>Unlikely to be proportionale to the nature and scale of risk of inundation.</li> </ul>	63
ned property it is likely to effectively macks when erosion risks are lower, eness is likely to reduce over time trying to horizon the effective of the effective of the hus may require additional space to allow to adjust initiand. In its proportionale to nature and scale of the sign would be informed by best practise.	3	<ul> <li>Option is not chosen to address inundation hazard.</li> <li>By raising the dunc 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>Unikely to be proportionate to the nature and scale of risk of inundation.</li> </ul>	59
nage risk of coastal erosion in the long even the pathway is not likely to be hand to the nature and scale of the risks what has the the scale and a scale of the risks what has the scale risks and the scale is the scale and the scale risks and the scale is the ractise.	2	<ul> <li>Option is not chosen to address inundation hazard.</li> <li>A designed crest elevation of an eventual hard structure wold result in a reduction of the overtopping hazard, but degree of reduction would depend on design height.</li> <li>V Would not effectively manage the wider inundation risks up stream pathways and stomwater networks.</li> </ul>	34

1 Enhance Accommodate Additional Hard Protection	Enhancement may improve existing native oppulations likely encouraging positive ecological benefits. The introduction of hard protection however may have long term negative solutions effects on ecological sites and species associated with waterways Le. Te Kowha stream.     2		Initial short term enhancement option aligns with community values and maintains social cohesion.     Those in higher innolation risk areas may need support to understand optional costs to pracedvely protect that delings from motivate and moud (the) continue community deutability of the state floors.     Confinue community deutability of hazard, and emergency management to foster resilience.     It is uncertain if insurability of personal assets will be maintained.	<ul> <li>In short-medium term, this option will maintain the natural appeal of the coastal environment and accessite protection could enhance community values.</li> <li>Public access to the coastal environment will be may need to be resulted to prevent destruction of due statistic, additional hard protection, should allow for public access and recreasion and provide other co-benefits.</li> </ul>	Accommodation and additional hard protection on a larger scale will trigger more stringert consenting requirements compared to shahancement and soft- engineering methods.     Hard-engineering approximations are discouraged official they can have on the environment.     Furthermore, the GWRC Natural Resources Plan has some scheduled sites over the Kowhai Stream Mouth with associated contenting nules.     Therefore, this pathway may face regulatory hundles in its later stages.	This pathway is not specifically designed to address the erosion hazard but, the engineered steam works may dire arone limited coastal erosion protection on the southern side of the Te Konhal Steam, • Will not effectively manage the erosion hazard.
2 Enhance Additional Hard Retreat	Enhancement of existing native populations will likely initially anounage positive ecological benefits. Had enpaneming protection may nature each of the state of th	,	Initial short term enhancement option aligns with community values and maintains social cohesion.     The costs of modulum term had protection showed in long term(floodproting, relocatable buildings, elevate floors, ret.).     Cear communication & support for those in higher imundation risk areas so they understand costs of options to protect thair dwellings & risks to health vis costs of eventual retrate. Contribute community education re: protecting & hazard, and emergency management to toster realience.     * It is uncertain if insurability of personal assets will be maintained.	This option will initially maintain the natural appeal of the coastal environment and ecosystem protection could enhance community values and public access the second second second second second second the second second second second second second read to be designed to incorporate public access and opportunities for recreation, nature appreciation and other co-benefits.     Long term retreat may offer opportunities for recreation.	Coastal restoration and enhancement is encouraged under the present regulatory transevork and will not loss any major consenting hundles, the second second second second second second tacks in the Kowha Stream Mouth scheduled in the GWRC Natural Resources Plan. With a longer term aim to retreat, these works may be hard to justify. Managed retered may require consenting to allow some greenfields subdivision. Reteat may also create additional consenting issue dependent on relocation plan (e.g., subdivision of new land and where to find this new land).	This pathway is not specifically designed to address the ensisten hazard in the factor to making term built the engineed statem works may offer assummer side of Te Konthal Sheam • Properties at risk of ensists hazards in Teke Pelas are morsty impacted (more so) by inundation hazards.     Therefore, referse from inundation would generally also lower the risk to properties impacted by erosion risks.     4
3 Enhance Accommodate Retreat	Initial enhancement woold likely improve exisiting the second secon	4	Initial short term enhancement option aligns with community values and maintains social ophesio. Toose in higher inundation risk areas may need support to understand option? (costs to proactively protect their divellings from moisture and mouid (floodproofing, relocatable building, elevate floors, etc.) in light of future relocation /retreat. • Continue community deutability resilience and assist transition to retreat. • It is uncertain if insurability of personal assets will be maintained.     4	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     In the medium term, the public may need     associate of the publi	Constal relovation and enhancement is encouraged under the present regulatory transcork, and will not face any major consenting hurdles in the short term.     Cocommodation in the madum term will carry some building consent requirements.     If managed retreat is done well it should have limited effects on the environment as opposed to hard protection structures.     Currently there is limited anatomal direction on how to undertake managed retreat however, this is expected to be devisioned within the Climate Change devision of the allow some greenleds subdivision.     Petreat may also create additional consenting issues dependent on relocation plan (e.g., subdivision of new land and where to find this new land).	This pathway is not specifically designed to address the erosion hazard in the short to medium term. Proporties at risk of erosion hazards in Pela Pelas are mostly impacted (more so) by inundation hazards. Therefore, retreat from inundation would generally also lower the risk to propries impacted by erosion risks in the long term.     3
4 Accommodate Additional Hard Retreat	Hard engineering protection may reduce acategy     by damaging beach, duna, and estuary ecology, and     the natural migration that blasts.     • Retrast provides opportunities for ecological     restricts and may result in adverse landscape     affects     restricts.     Partice provides opportunities for ecological     modified environment.     2	2	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. Providing the community with information on the costs of additional hard protection (alongside costs of retrieal) may ensure greater acceptance and smoother transition to next pathway. Continue community education re: protecting 6 hazard, and emergency management to foster resilience. Is uncreating in finanziability of personal assets will be maintained.	In the short term, public access to the occasiline is likely to be maintained.     In the medium term, with the consideration of any additional hard protection, the public may need assurance (governance)staming) that public access and opportunities for recreation and other ecology or benefits will not be negatively impacted.     Design of additional hard protection and referat (long term) should consider continued public access a explore further opportunities for recreation.	The hard protection components of this pathway will face consenting hundles as there are significant sites in the Konha Stream Mouth scheduled in the GWRC Natural Resources Plan.     With a longer term aim to retreat, these works may be harder to justify.     Accommodation also creates additional consenting requirements in comparison to enhancement.     A an managed retreat gets underway consenting may be required to allow some greenited is subdivision.     Retreat may also creates additional consenting audition of new land and where to find this new land).	This pathway is not specifically designed to address the erosion hazard in the short to medium term.     Proporties at risk of erosion hazards in Peka Peka are mostly impacted (more so) by imundation hazards. Therefore, refrest from imundation would generally also lover the risk to properties impacted by erosion risks.     - Sheam works may offer some limited erosion mitigation to properties on the southern side of Te Kowhai Sheam in the medium term.     4
Pathways for Rural NAA Manage Pathway Descriptions	Ecology Landscape	Te ao Mãori values	Community Social and Economic Wellbeing	Public Access and Recreation	Regulatory consenting and policy risk	Effectively manages the risks of coastal erosion
Manage Pathways Short term Medium term Long term 1 Status Quo Enhance Enhance	Score         Notes           - The enhancement of duras with native dune provides many co-benefits to ecology in addition to coastal communities at all times.         • Ventual enhancement of duras with native dune vegetation would likely restore natural character with output of the state of the stat	Score Notes Scon	Notes     The cpton bi orrease dure resilience over medum tem aligns with stated community values. Involvement with landowners is important for buy- in and for ongoing access to dure areas to supportdure resilience efforts. • Landuse may need to be modified to ensure ongoing protection to saleguard benefits from dure restoration. This could impact economic wellbeing. • Is uncefaint insurability of personal assets will be maintained.	Increase         Notes         S c           • This option begins in next in 0-50 years, and will maintain and protect the coastal environment from that time forward. It aligns with community values and further ecosystem protection could enhance appreciation of nature. As this part of the coastal environment is accessed by less people, the remote field of the coastine will be enhantaned.         • Recreation that damages dunes may need to be restricted to protect ecosystems & encourage dune stability.	Notes     Status quo will require no additional resource     consenting so from a consenting perspective is the     most desireable option.     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 consering hundles under the existing     system.     Enhancement not likely to require consent or will     be easy to obtain and is in line with current     regulatory framework.	Score         Notes         S           • Likely to manage the exoton hazard over the short- medium term, however (ang term erosion is still likely to occur.         • However pathway is proportionate to the nature and scale of risk over time in the rural areas, and would avoid the excerbation of risk to other areas.           4         2
2 Status Quo Enhance Soft Engineering Protection	The enhancement of existing pattine populations resources for fits and large when this context of some resources for fits and large when this context of some resources for fits and large when the context of some resources are also and the some resources of the source of the sources of the sources of the disrupt habitats and shelfsh populations but can disrupt habitats and shelfsh populations but can enhanced dunes for beach flora and fauna.     Soft engineering may have some temporary charge which remains in context of open coastal environment.		Over the medium term, afforts to increase dura resilence align with stated community values. Involvement with landowners is important for buy-in and for ongoing access to dure areas to support dure realinece efforts. I canduse may need to be modified to ensure ongoing protection to safeguard benefits from dure restoration. This could impact economic wellbeing. In longer term any costs' benefits of ant engineering protection will need to be understood in advance. I is uncertain if insurability of personal assets will be maintained.	This option begins in next in 30-50 years, and will marker in any protect the costal environment flow mak time forward. It aligns with community values and ecosystem protection could enhance appreciation of nature. As this part of the coastal environment is accessed by less people, the remote lef of the coastine will be environmentation. - In the longer term, the impact & public apatite for soft engineering options in relation to public access / recreation will need to be understood prior to being implemented. - Recreation that damages dunes may need to be resticated to protect ecosystems & encourage dune stability.	<ul> <li>Status que will regulare no additional resource most desirvative que a construction de la securita most desirvative que no constructive si the existing environment (e.g., no hard engineering structures), there is unikely to be significant consenting fundles under the existing system in the short to medium term.</li> <li>Enhancement hat likely to require consent ar will be easy to obtain and is in line with current regulatory transmoots.</li> <li>Depending on scale, soft engineering protection may increase risk which elevates risk profile.</li> </ul>	Likely to manage the excision hadract over the short- excision term, and extend the parked of time that excision term, and extend to park of the short- excision term of the short of the short of the -Long term pathway will need to be proportionate to the nature and scale of the risk in these neural areas. -This pathway would avoid the exacerbation of risk to other areas.
3 Enhance Enhance Soft Engineering Protection	Enhancement of existing native populations would likely promote ecology and provide greater habitat and resources for flora and fauna.     Soft engineering may disrupt areas, but otherwise helitath populations but can modify and enhance helitath populations but can modify and enhance helitath populations but can modify and enhance her and fauna.     Soft engineering may disrupt areas, but otherwise institution and fauna.     Soft engineering may disrupt areas, but otherwise institution and fauna.     Soft engineering may disrupt areas, but otherwise institution and fauna.     Soft engineering may disrupt areas, but otherwise institution and fauna.	n	<ul> <li>In the short term dure resilience is likely to support other adaptation efforts along the entire NAA coastina.</li> <li>In and for onging access to dure areas to support dure resilience efforts.</li> <li>Landuse may need to be modified to ensure ongoing protection to safeguard benefits from dure restoration. This oudil impact domestits of soft engineering protection will need to be understood in advance.</li> <li>Is undure that insurability of personal assets will be maintained.</li> </ul>	Commencing dure resilience in the short term is likely to support other adaptation efforts along the NAA costilline. It aligns with community values and duration protection could enhance appreciation of the state of the protect coostill enhance appreciation of the state of the protect coostill environment is paceased by less people, the remote feel of the coastille will be maintained. I have the longer term, the impact & public apaths for soft engineering options (& costs) in relation to public access / recoration will need to be understood prior to being implemented.	As this option presents the limited impact on the existing environment (e.g., no hard engineering structures), there is unlikely to be significant cover to egit dam term. Enhancement not likely to require consent or will be easy to obtain and is in the with current regulatory framework. Depending on scale, soft engineering protection may increase risk which elevates risk profile.	Likely to manage the ension hazard over the short- medium term, and extend the period of time that enhancement and restoration is effective for. Long term pathway will need to be propositionale to the pathway would and the executation of tisk to other areas and is more proactive in the short term.

	Effectively reduces the risk to individual properties by raising houses above agreed food levels but the risk remains to roading, access and services. Alex, a residual risk housing will remain in the short to medium term until this can be reduced by the engineered mitigation options in the longer term.     This pathway will help reduce the increasing	52
	inundation risk in the short to medium term and allow time to effect a managed retreat. • Retrest from hazard prone areas will manage the risk by renoving people, properly and intrasructure from the area. manufacture and approach, it is likely to be proportionate to the nature and scale of the risk over time.	54
	• This pathway will help reduce the increasing imundation risk in the short to medium term and allow time to effect a managed retreat. • Retreat from hazard prone areas will manage the risk by removing people, property and infrastructure from the area. • A per increasing approach, it is fixely to be the medium and people and the short of the risk over time. Removal of only some properies could exacerbate the hazard for other properties.	70
	<ul> <li>This pathway will help reduce the increasing imutation risk in the short to medium term and allow time to effect a managed retreat.</li> <li>Retreat from hazard proce areas will imange the risk by removing people, properly and infrastructure from the area.</li> <li>As an incremential approach, it is likely to be proportionate to the nature and scale of the risk over time.</li> </ul>	46
Effecti	vely manages the risks of coastal inundation	MCDA Total
Score	Note  Option is not chosen to address inundation hazard. however by raising the creat elevation by planting, the risk of overlopping decreases; * however does not address inundation hazard from pathways up the stream/rivers and stormwater network.	Score: 19
	<ul> <li>Option is not chosen to address inundation hazard, however by raising the creat elevation by planting, the risk of overlapping decreases;</li> <li>however does not address inundation hazard from pathways up the stream/ivers and stormwater network.</li> </ul>	19

Status Quo Enhance Accommodate	<ul> <li>The enhancement of solding native populations can premide accept and provide possible habits and resources for then and them a when this occurs.</li> <li>The introduction of accommodating for hazards is likely to native positively or negatively impact fora and fauna if best practice is followed which can allow for natural migration of existing species.</li> </ul>	Eventual expansion of coastal wellands and rightim vegetation would likely reatore natural character with beneficial landscape outcomes. "The identified coastal environment would likely extend inland.	<ul> <li>In the short and medium term, maintaining current structures and strengthening existing stopbanks is proportionate to a lower populated rural area.</li> <li>Landowners may need to be supported to identify dwellings at risk from inundation and to undertake proactive efforts on dwellings to accomodate insist to health and sative). Keits ho e made on a case-by- case basis.</li> <li>It is uncertain if insurability of personal assets will be maintained.</li> </ul>	<ul> <li>In the short term, public access to stopbank areas are likely to be maintained. However, if strengthening work is required public access may need to be restricted for safety reasons while work is organize,</li> <li>To maintain goodwill and support for adaptation options, the community will need to be informed on changes to public access and why.</li> </ul>	<ul> <li>As this option presents the test amount of impact on the existing environment (e.g., no hard engineeing structures), here is unlikely to be significant consenting hurdles under the existing system.</li> <li>Any consents required in the short to medium term will kely no have a diffuct consenting pathway.</li> <li>Accommodation in the long term will carry some building consent requirements.</li> </ul>	Pathway is not specifically created to address or manage the erosion hazard, and is unlikely to over the long term timeframe. However, due to the risks being low this is proportionate to the nature of the erosion risks in these areas and enhancement will offer some resilience in the medium term.     3	<ul> <li>Over the short-medium term, the risks from inundation will only be minimally addressed, however the risks to devilage is low over this time.</li> <li>Accomodating the hazard over the long term on a case-by-case basis is a propriorinate response to the risk and isolated dwellings at risks in these areas.</li> </ul>
Accommodate Accommodate Retreat	<ul> <li>Accommodating through floodproofing, adaptable, or relocatable buildings is likely to have no positive or negative influence on surrounding ecological values when done to best practice.</li> <li>Retrat audol likely allow for origination of species by providing habitat for coastal species to necolonies areas that may have already beat environment which may slow natural recovery.</li> </ul>	Accomodating adplatation would have little change on the existing natural character or landscape values.     - Retenat would have little anticipated change in the context of the more modified rule environment.     - The identified coasial environment would likely extend infand.	<ul> <li>In the short term, landowners may need to be supported to identify dwellings at risk from inundation and undertake procedive efforts to accommodate or retreat. These decisions are likely to be made on a case-by-case basis due to the lower population and land ownership in the rural areas.</li> <li>Involving investigation and land owners to regord due to the lower and the shares in response to regord provided and the shares in response to regord provided in events.</li> <li>Continued community doutdator reprotecting &amp; hazard, and emergency management to foster resilience.</li> <li>It is uncertain if insurability of personal assets will be maintained.</li> </ul>	<ul> <li>In the short term, public access to the coastline is likely to be maintained. This part of the coastli environment is accessed by likely to be maintained.</li> <li>However in the medium term, necreation that damages duras or flood protection efforts may need be set statistication of the public may need by the damages duras or flood protection efforts may need be set statistication of the public may need access of the public maintained by the access and opportunities for recreastion and other exology oc- benefits will be maintained.</li> <li>Retreat may provide an opportunity for further recreastional and ecological co-benefits.</li> </ul>	Option of retreat has limited effects on the environment in comparison to hard protection structures.     Ournerfly limited national direction on how to undertake managed retreat, however, this is expected to be expected to be compared to the second structure of the second expected to be compared to be the second structure of the second expected to be compared to be the second structure of the second expected to be compared to be the second structure of the second expected to retectation projects conserts. Retreat expected to retectation projects be structure in rural zones due to the discresse in people moving.     Defended the second structure of the second structure of the second expected of the discresse in people moving.	Pathway is not specifically created to address or manage the erosion hazard, and is unlikely to over the long term imetimane. However, due to the risks being low this is proportionate to the nature of the erosion risks in these areas.     Properties reheated from the inundation hazard are inited and unlikely to also by impacted by erosion hazards.     4	Effectively manages the impact on individual dwellings directly impacted over the short-medium term, does not reduce the firsts of access or dumage to farmland over this timeframe. Petereter dans are required basis is a proportionale response to the nature and scale of risk over time. This would avoid exceedation of risks on other areas.

<ul> <li>Over the short-medium term, the risks from innotation will only be minimally addressed, however the risks to dwellings is low over this time.</li> <li>Accomdating the hazard over the long term on a case-by-case basis is a proportionate response to the risk and isolated dwellings at risks in these areas.</li> </ul>	19
Effectively manages the impact on individual dealings directly impacted over the short-medium term, does not reduce the risks of access or damage to farmited over this timeframe. Retneat on an an required basis is a proportionate Retneat on an an required basis is a proportionate This would avoid exacerbation of risks on other areas.	19