Takutai Kāpiti.

Kāpiti Coast DISTRICT COUNCIL
Me Huri Whakamuri, Ka Titiro Whakamua

Minutes:
CAP Meeting – Northern Adaptation Area: MCDA Scoring of Shortlisted Pathways

Date: Wednesday 24 May 2023
Time: 1.00pm – 6.25pm
Location: Kāpiti Coast District Council Civic Building, 175 Rimu Road, Paraparaumu (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
Opening & Introductions	**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	**Confirmation of the Minutes:** • Don motioned to move the minutes with minor edits. • Olivia seconded the minutes following the changes.
De-Brief on Central Adaptation Area Community Workshop	**Jerry provided an overview of the CAA Community Engagement Workshop in terms of venue and participants:** • 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:** • 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 & 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. • All information and feedback collated and TAG to write up values feedback as part of the values to objectives step.

	Discussion: • John noted that the commentators were all in the older age group concerned that there is no youth. • Jim suggested more needs to be done to engage younger people. • 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.
Update on: • **Ngā Hapū o Ōtaki's Values** • **Northern Adaptation Area Cultural Risk Assessment** • **Cultural Values Report**	**Dr Aroha Spinks provided an update on Ngā Hapū o Ōtaki's (NHoŌ) Values and Cultural Values Report:** • NHoŌ cultural values report requires some adjustments – map updates to include new ancestral land. • Work has begun on the NAA cultural risk assessment. • A mana whenua korero / wānanga to work through pathways and further feedback to be held on 10/11th of June. This is where the te ao Māori values will be pre-scored for the Northern Adaptation Area. • Aroha invited Stephen to the wānanga to facilitate the discussion. • John noted that NHoŌ and ĀkW will also be exchanging korero with Ngāti Toa about Takutai Kāpiti as they see them.
Tabling Reports and Update	**Abbey Morris, KCDC** • 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. • 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.
Multiple Criteria Decision Analysis (MCDA) Assessment of Shortlisted Pathways for Northern Adaptation Area	**Stephen Daysh, Mitchell Daysh** • Stephen shared the NAA MCDA presentation and outlined the MCDA process to be undertaken in the workshop. • 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 [3] is the Dune and/or Resilience package of *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.* • Stephen noted that the other steps in the decision-making process include the signal

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 Ōtaki 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 10th/11th 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…	**Discussion continued** • 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. • 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.* • 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. • Stephen shared a Hawke's Bay example where a short-term revetment was the best option, consented and built despite the NZCPS policy directives. • Iain commented that both the national policy and RPS recommend those hard structures as a last resort. • 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. • Aroha noted NHoŌ's concerns regarding beach scraping and the need for an alternate. • Ashlyn ran through an overview of the 'ecology' criteria commentary for the pathway options, along the 'landscape' criteria commentary. • Yvonna gave an overview of the commentary for the 'community social and economic wellbeing' and 'public access and recreation' scoring information. • Iain commented that insurance companies will not cover where there is a known risk – they only cover for the unknown. Therefore there is the likelihood of properties not being able to be insured where there is predicted erosion and inundation risk.
	TEA BREAK
Multiple Criteria Decision Analysis (MCDA) Assessment of Shortlisted Pathways for Northern Adaptation Area continued…	**Discussion continued** • 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. • 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. ***Results of the partially completed CAP's decisions for the MCDA scoring for the NAA is captured within Appendix 1 of these minutes.***

Next Steps	**Next Step:** • NHoŌ to host a wananga to prescore the te ao Māori values for the NAA. • 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. • Abbey confirmed that the community feedback session on the CAP's draft pathway recommendations is scheduled for 1 July 2023 in Ōtaki. • 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** • 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. **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																				
					Ecology		Landscape		Te ao Māori values		Community Social and Economic Wellbeing		Public Access and Recreation		Regulatory consenting and policy risk		Effectively manages the risks of coastal erosion		Effectively manages the risks of coastal inundation						
				CAP Weighting	3		2		3		3		3		1		2		3						
					MCDA Scoring																				
Pathways for Otaki Beach																									
Management Unit	Pathways	Pathway Descriptions			Ecology		Landscape		Te ao Māori values		Community Social and Economic Wellbeing		Public Access and Recreation		Regulatory consenting and policy risk		Effectively manages the risks of coastal erosion		Effectively manages the risks of coastal inundation						MCDA Total Score:
		Short term	Medium term	Long term	Score	Notes	Score	Notes	Score	Notes	Score	Notes	Score	Notes	Score	Notes	Score	Notes	Score	Notes					
Otaki Unit 1A	1	Enhance	Enhance	Soft Engineering Protection	4	• Enhancement of exisiting native populations would likely promote ecology and provide greater habitat and resources for flora and fauna. • Retreat favours ecological restoration by providing habitats for species to recolonise neighbouring areas that may become destroyed. • Soft engineering may disrupt bird habitats and shellfish populations but can modify and enhance habitats in the form of enhanced dunes for beach flora and fauna.	4	• Enhancement of dunes with native dune vegetation may likely restore natural character. • Soft engineering may disrupt areas, but otherwise maintain an open dynamic coastline influenced by existing settlement.			4	• The option to increase dune resilience over short and medium term aligns with stated community values. • If community is actively included in implementation of dune resilience, it could promote social and economic wellbeing, as well as enhance social cohesion & health outcomes. • It is uncertain if insurability of personal assets will be maintained.	4	• This option will maintain the natural appeal of the coastal environment and ecosystem protection could enhance community values and foster nature appreciation. • Public access to the coastal environment will be maintained, however recreation that damages dunes may need to be restricted to protect ecosystems & encourage dune stability.	4	• As this option presents the least amount of impact on the existing environment (e.g., no hard engineering structures), there is unlikely to be significant consenting hurdles under the existing system in the short to medium term. • Enhancement not likely to require consent or will be easy to obtain and is in line with current regulatory framework. • Depending on scale, soft engineering protection may increase risk which elevates risk profile.	3	• If designed properly it is likely to effectively manage impacts when erosion risks are lower. Effectiveness is likely to reduce over time trying to hold the shoreline in the same location as present day and thus will require additional space to allow the beach to adjust inland to maintain the dune. • Approach is proportionate to nature and scale of risk, and would avoid exacerbation of risk in other areas. • Design would be informed by best practise.	3	• 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. • Unlikely to be proportionate to the nature and scale of risk of inundation.					63
	2	Enhance	Soft Engineering Protection	Soft Engineering Protection	3	• Enhancement of existing native populations will likely initially promote ecology and provide greater habitat and resources for flora and fauna. *Soft engineering - beach renourishment equally good and bad aka 50/50 - Ashlyn* • Soft engineering may disrupt bird habitats and shellfish populations but can modify and enhance habitats in the form of enhanced dunes for beach flora and fauna.	3	• Initial enhancement of dunes with native dune vegetation may restore natural character. • Soft engineering may disrupt areas of coastal environment but otherwise maintain an open dynamic coastline influenced by existing settlement.			4	• The option to increase dune resilience over short term aligns with stated community values. To ensure support for this option over medium-long term, the community may need assurance (evidence, information & 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 be maintained.	4	• This option will maintain the natural amenity and landscape values of the coastal environment and ecosystem protection could enhance community values and foster nature appreciation. • Public access to the coastal environment will be maintained, however recreation that damages dunes may need to be restricted to protect ecosystems & encourage dune stability.	3	• 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 soft engineering works proposed in this option there 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.	4	• If designed properly it is likely to effectively manage impacts when erosion risks are lower. • Effectiveness is likely to reduce over time trying to hold the shoreline in the same location as present day and thus will probably require increasing soft-engineering intervention or additional space to allow the beach to adjust inland. • Approach is proportionate to nature and scale of risk, and would avoid exacerbation of risk in other areas. • Design would be informed by best practise.	3	• 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 modified responsively as a result of storm erosion. • However does not address inundation hazard from pathways up river and inlets. • Unlikely to be proportionate to the nature and scale of risk of inundation.					59
	3	Enhance	Soft Engineering Protection	Hard Engineering Protection	2	• Enhancement of existing native populations will likely initially encourage positive ecological benefits. • Ongoing engineering protection however has the potential to reduce ecology by damaging beach, dune, and estuary ecology, and overall may support lower biodiversity and prevent the natural migration of habitats.	1	• Initial enhancement may restore natural character. • Ongoing engineering and introduction of hard structures and potential reduction in natural beach profile may further reduce natural character and result in adverse landscape effects. • Structures may remove some existing areas of high natural character encompassing parts of Otaki Dunes.			2	• 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, information & engagement) on suitable soft / hybrid/ hard 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 be maintained.	2	• In short-medium term this option will maintain the natural appeal of the coastal environment and allow public access. • Over time, it is likely that access to foreshore could be lost at high tide and eventually lost completely. Maintaining public access to the coastal environment would need to be integrated into the design of the engineering solution to ensure co-benefits for people and the environment. • If adaptation option also includes ongoing dune maintainaince, then recreation that damages dunes may need to be restricted to protect ecosystems & encourage dune stability.	2	• Hard engineered hazard mitigation methods are discouraged under exisiting 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 resort and the GWRC Natural Resources Plan contains a number of scheduled sites in the area. • Therefore, this pathway may face significant consenting hurdles in its later stages.	4	• Likely to effectively manage shoreline retreat at the time of implementation, but will require ongoing maintenance especially as sea level continues to rise in the long term. • The design of any structure will be proportionate to the nature and scale of the risk, but it may cause end effects erosion and will enhance foreshore scour at its toe. • Design would be informed by best practise to reduce these effects but there will be environmental impacts and changes to the beach associated with this option over the longer term (i.e. beach narrowing and loss of volume).	2	• 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 river and inlet pathways.					36
	4	Enhance	Soft Engineering Protection	Retreat	4	• Initial enhancement of existing native populations would likely improve exisiting ecology and promote greater habitat and resources for flora and fauna • Retreat favours ecological restoration by providing habitats for species to recolonise neighbouring areas that may become destroyed.	5	• Initial enhancement may restore natural character. • Soft engineering may disrupt natural character and result in more limited adverse landscape effects in the context of existing settlement. • Retreat provides opportunities to restore dune planting in the absence of hard engineering and offers opportunity to restore natural character in longer term.			4	• The option to increase dune resilience over short term aligns with stated community values. • To ensure support for soft engineering over medium term, the community may need assurance (evidence, information & engagement) on suitable soft engineering / hybrid responses. • In the long term, the community is more likely to consider retreat if are involved in the decision, and have assurance that suitable land is available to allow the community the choice to stay together and that support is in place to promote social and economic wellbeing, and enhance social cohesion & health outcomes. • It is uncertain if insurability of personal assets will be maintained. *Commentary from the room:* • *Yvonna (TAG) shared that the Insurance Council of New Zealand has not yet made a statement regarding insurance (or of lack of) when it comes to coastal hazard risks.* • *Iain (GWRC) noted that IAG have stated that they cover insurance for unknown risk but not the known.* • *Martin commented that the CAP need to keep in consideration the access to houses too, not just the actual houses.*	4	• This option will maintain the natural amenity and landscape of the coastal environment. • Public access to the coastal environment will be maintained in the short term, and is likely to continue in the medium and long term. Over all time periods, recreation that damages dunes may need to be restricted to protect ecosystems & encourage dune stability. • As managed retreat gets underway consenting may be required to allow some greenfields subdivision but may also provide further opportunities for recreation.	3	• Option of retreat has limited effects on the environment in comparison to hard protection structures. • Currently limited national direction on how to undertake managed retreat, however, this is expected to be addressed within the Climate Change Adaptation Act. • May be difficult to justify soft engineering approaches if the plan is to retreat in the longer term, but smaller scale approaches may be cost effective to 'buy time' to effect a managed retreat. • Retreat may also create additional consenting issues dependent on relocation plan (e.g., subdivision of new land where to find this new land). *While retreat may be a future option, planning should commence now to plan for that eventuality.*	5	• Effectively manages the risks of coastal erosion over time, and takes actions in the short-medium term to reduce risks over that period. • Retreat would result in total removal of risk to individuals from erosion. It would be proportionate to the nature and scale of the risk to those impacted to retreat.	3	• Over the short-medium term the actions will not effectively manage the inundation hazard; however long term retreat will remove the risk to individuals impacted in the area. • However, the properties retreated due to the erosion hazard in Otaki Beach are not the same properties that are at risk from erosion; and therefore both hazards need to be considered for retreat to be effective in reducing risk to both hazards.					68
Otaki Unit 1B	1	Enhance	Accommodate	Additional Hard Protection	3	• Enhancement may improve existing native populations likely encouraging positive ecological benefits. • The introduction of hard protection however may have long term negative adverse effects on ecological sites and species associated with waterways i.e. Ōtaki River and Waitohu Stream.	2	• Initial enhancement may restore natural character and provide landscape benefits. • Eventual introduction of hard structures would reduce natural character and may result in adverse landscape effects over longer term. • Structures may remove existing areas of high natural character at mouth of Waitohu Stream.			4	• Initial short term enhancement option aligns with community values and maintains social cohesion. • Those in higher inundation risk areas may need support to understand options/ costs to proactively protect their dwellings from moisture and mould (floodproofing, relocatable buildings, elevate floors, etc.). • Continue community education re: protecting & hazard, and emergency management to foster resilience. • It is uncertain if insurability of personal assets will be maintained. *CAP commentary: Insurance companies may continue providing insurance if hard protection is done - as it minimises risk.*	3	• In short-medium term, this option will maintain the natural appeal of the coastal environment and ecosystem protection could further enhance community values. • Public access to the coastal environment will be maintained, however recreation that damages dunes may need to be restricted to prevent destruction of dune stability. • Where possible, additional hard protection, should allow for public access and recreation and provide other co-benefits.	2	• Accommodation and additional hard protection on a larger scale will trigger more stringent consenting requirements compared to enhancement and soft-engineering methods. • Hard-engineering approaches are discouraged under the NZCPS and RPS becasue of the adverse effects they can have on the environment. • Furthermore, the GWRC Natural Resources Plan contains a number of scheduled sites in the area with associated consenting rules. • Therefore, this pathway may face regulatory hurdles in its later stages espeically as it will require buy-in from GWRC to approve and undertake flood protection works along the Otaki River and Waitohu Stream.	1	• Pathway is not created to address the erosion hazard. • Pathway will not effectively manage the erosion hazard.	4	• Effectively reduces the risk to individual properties by raising houses above agreed flood levels but the risk remains to roading, access and services. • Also, a residual risk to housing will remain in the short to medium term until this can be reduced by the engineered mitigation options in the longer term.					50
	2	Enhance	Additional Hard Protection	Retreat	3	• Enhancement of existing native populations will likely initially encourage positive ecological benefits. • 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. • Retreat provides opportunity for ecological restoration, however this would occur in an already modified environment. *For enhance adaptation area (when present in adaptation pathway) enhance the wetlands too, not just the existing hard elements.Menu to be change to be dune and wetland enhancement.*	3	• Initial enhancement may restore natural character and provide landscape benefits. • Additional hard protection may reduce natural character and result in adverse landscape effects. • Retreat provides opportunities to restore natural character, however this would occur in the context of increased modification.			3	• Initial short term enhancement option aligns with community values and maintains social cohesion. • The costs of medium term hard protection should be considered alongside cost associated with retreat in long term (floodproofing, relocatable buildings, elevate floors, etc.) • Clear communication & support for those in higher inundation risk areas so they understand costs of captions to protect their dwellings & risks to health vs costs of eventual retreat. Continue community education re: protecting & hazard, and emergency management to foster resilience. • It is uncertain if insurability of personal assets will be maintained.	3	• This option will initially maintain the natural appeal of the coastal environment. Ecosystem protection could further enhance community values and public access to the coastal environment. • In the medium term, additional hard protection may need to be designed to incorporate public access and opportunities for recreation, nature appreciation and other co-benefits. • Long term retreat may offer opportunities for recreation.	1	Coastal restoration and enhancement is encouraged under the present regulatory framework and will not face any major consenting hurdles. However, the hard protection components of this pathway will face consenting hurdles as there are significant sites in the area scheduled in the GWRC Natural Resources Plan and will require buy-in from GWRC to approve and undertake flood protection works along the Otaki River and Waitohu Stream. With a longer term aim to retreat, these works may be harder to justify. As managed retreat gets underway consenting may be required to allow some greenfields subdivision. Retreat may also create additional consenting issues dependent on relocation plan (e.g., subdivision of new land and where to find this new land).	2	• Pathway over the short-medium term will not address erosion risks. • 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.	4	• Short-medium term will help reduce the increasing risk until retreat is undertaken, which is highly likely to effectively manage the risks by removing individuals from the area. • As an incremental approach, it is likely to be proportionate to the nature and scale of the risk over time.					50

Oaki																					
	3	Enhance	Accommodate	Retreat	5	• Initial enhancement would likely improve exisiting ecology and promote greater habitat and resources for flora and fauna. • Retreat favours ecological restoration by providing habitats for species to recolonise neighbouring areas that may become destroyed.	5	• 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. • Retreat offers opportunity to expand areas of restored natural character.			4	• Initial short term enhancement option aligns with community values and maintains social cohesion. • Those in higher inundation risk areas may need support to understand options / costs to proactively protect their dwellings from moisture and mould (floodproofing, relocatable buildings, elevate floors, etc.) in light of future re-location /retreat. • Continue community education re: protecting & hazard, and emergency management to foster 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 assurance (governance/planning) that public access and opportunities for recreation and other ecology co-benefits will not be negatively impacted. • Long term retreat may offer opportunities for recreation.	3	• 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 however, this is expected to be addressed within the Climate Change Adaptation Act. • As managed retreat gets underway consenting may be required to allow some greenfields subdivision. Retreat may also create additional consenting issues dependent on relocation plan (e.g., subdivision of new land and where to find this new land).	2	• Pathway over the short-medium term will not address erosion risks. • 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.	4	• Effectively reduces the risk to individual properties by raising houses above agreed flood levels but the risk remains to roading, access and services. • Retreat from the hazard over the long term will reduce risk to those effected. • As an incremental approach, it is likely to be proportionate to the nature and scale of the risk over time.	**68**
	4	Accommodate	Additional Hard Protection	Retreat	2	• 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. • Retreat provides opportunity for ecological restoration, however this would occur in an already modified environment.	2	• Additional hard protection is likely to reduce natural character and may result in adverse landscape effects. • Retreat provides opportunities to restore natural character, however this occurs in the context of increased modification.			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 retreat) may ensure greater acceptance and smoother transition to next pathway. Continue community education re: protecting & hazard, and emergency management to foster resilience. • It is uncertain if insurability 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 for recreation and other ecology co-benefits will not be negatively impacted. • Design of additional hard protection and retreat (long term) should consider continued public access & explore further opportunities for recreation.	1	• The hard protection components of this pathway will face consenting hurdles as there are significant sites in the area scheduled in the GWRC Natural Resources Plan and will require buy-in from GWRC to approve and undertake flood protection works along the Otaki River and Waitohu Stream. • With a longer term aim to retreat, these works may be harder to justify. • Accommodation also creates additional consenting requirements in comparison to enhancement. • As managed retreat gets underway consenting may be required to allow some greenfields subdivision. Retreat may also create additional consenting issues dependent on relocation plan (e.g., subdivision of new land and where to find this new land).	2	• Pathway over the short-medium term will not address erosion risks. • 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.	4	• Effectively manages the risks to properties only over the short term, and potentially the broader settlement over the medium term. • Effectively manages the risks to individuals over a long timerfame.	**42**

Pathways for Te Horo Beach

Management	Pathways	Pathway Descriptions			Ecology		Landscape		Te ao Māori values		Community Social and Economic Wellbeing		Public Access and Recreation		Regulatory consenting and policy risk		Effectively manages the risks of coastal erosion		Effectively manages the risks of coastal inundation		MCDA Total Score:
		Short term	Medium term	Long term	Score	Notes	Score	Notes	Score	Notes	Score	Notes	Score	Notes	Score	Notes	Score	Notes	Score	Notes	
Te Horo Unit 2A	1	Enhance	Enhance	Soft Engineering Protection	4	• Enhancement of exisiting native populations would likely promote ecology and provide greater habitat and resources for flora and fauna. • Soft engineering may disrupt bird habitats and shellfish populations but can modify and enhance habitats in the form of enhanced dunes for beach flora and fauna.	4	• Enhancement of native dune vegetation would likely restore natural character. • Soft engineering may disrupt areas, but otherwise maintain an open dynamic coastline influenced by existing settlement.			4	• The option to increase dune resilience over short and medium term aligns with stated community values. • If community is actively included in implementation of dune resilience, it could promote social and economic wellbeing, as well as enhance social cohesion & health outcomes. • It is uncertain if insurability of personal assets will be maintained.	4	• This option will maintain the natural appeal (amenity & landscape) of the coastal environment. • Ecosystem protection could enhance community values and foster nature appreciation. • Public access to the coastal environment will be maintained, however recreation that damages dunes may need to be restricted to protect ecosystems & encourage dune stability.	4	• As this option presents the least amount of impact on the existing environment (e.g., no hard engineering structures), there is unlikely to be significant consenting hurdles under the existing system in the short to medium term. • Enhancement not likely to require consent or will be easy to obtain and is in line with current regulatory framework. • Depending on scale, soft engineering protection may increase risk which elevates risk profile.	3	• If designed properly it is likely to effectively manage impacts when erosion risks are lower. • Effectiveness is likely to slowly reduce over time trying to hold the shoreline in the same location as present day and thus will require additional space to allow the beach to adjust inland to maintain the dune. • Approach is proportionate to nature and scale of risk, and would avoid exacerbation of risk in other areas. Design would be informed by best practise.	3	• Option is not chosen to address inundation hazard. • By raising the crest elevation by planting and dune reconstruction, the risk of overtopping decreases; however does not address inundation hazard from pathways up the stream. • Unlikely to be proportionate to the nature and scale of risk of inundation.	**63**
	2	Enhance	Soft Engineering Protection	Soft Engineering Protection	3	• Enhancement of existing native populations will likely initially promote ecology and provide greater habitat and resources for flora and fauna. • Soft engineering may disrupt bird habitats and shellfish populations but can modify and enhance habitats in the form of enhanced dunes for beach flora and fauna.	3	• Initial enhancement of dunes with native dune vegetation may restore natural character. • Soft engineering may disrupt areas of coastal environment but otherwise maintain an open dynamic coastline influenced by existing settlement.			4	• The option to increase dune resilience over short term aligns with stated community values. • To ensure support for this option over medium-long term, the community may need assurance (evidence, information & 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 be maintained.	4	• This option will maintain the natural amenity and landscape values of the coastal environment. • Ecosystem protection could further enhance community values and foster nature appreciation. • Public access to the coastal environment will be maintained, however recreation that damages dunes may need to be restricted to protect ecosystems & encourage dune stability.	3	• 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 soft engineering works proposed in this option there 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.	4	• If designed properly it is likely to effectively manage impacts when erosion risks are lower. • Natural processes are likely to roll back the gravel storm berm, but the shoreline would benefit from beach 'scraping' to build crest height. Effectiveness is likely to slowly reduce over time trying to hold the shoreline in the same location as present day and thus will require additional space to allow the beach to adjust inland to maintain the dune. • Approach is proportionate to nature and scale of risk, and would avoid exacerbation of risk in other areas. Design would be informed by best practise.	3	• Option is not chosen to address inundation hazard. • By raising the crest elevation by planting and dune reconstruction, the risk of overtopping decreases; however does not address inundation hazard from pathways up the stream. • Unlikely to be proportionate to the nature and scale of risk of inundation.	**59**
	3	Enhance	Soft Engineering Protection	Hard Engineering Protection	2	• Enhancement of existing native populations will likely initially encourage positive ecological benefits. • Ongoing engineering protection however has the potential to reduce ecology by damaging beach, dune, and estuary ecology, and overall may support lower biodiversity and prevent the natural migration of habitats.	1	• Initial enhancement of native dune vegetation would restore natural character. • Progressive introduction of built structures along an otherwise open coastline is likely to have adverse landscape and natural character impacts in context of existing settlement. • Structures may remove some existing areas of high natural character encompassing parts of Te Horo Dunes.			2	• The option to increase dune resilience over short term aligns with stated community values. • To ensure support for engineering options over medium-long term, the community may need assurance (evidence, information & engagement) on suitable soft / hybrid/ hard 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 be maintained.	2	• In short-medium term this option will maintain the natural appeal of the coastal environment and allow public access. • Over time, it is likely that access to foreshore could be lost at high tide and may be lost completely. Maintaining public access to the coastal environment would need to be integrated into the design of the engineering solution to ensure co-benefits for people and the environment. • If adaptation option also includes ongoing dune maintainaince, then recreation that damages dunes may need to be restricted to protect ecosystems & encourage dune stability.	2	• Hard engineered hazard mitigation methods are discouraged under exisiting 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 resort and the GWRC Natural Resources Plan contains some scheduled sites in the Manageone Stream Mouth. • Therefore, this pathway may face significant consenting hurdles in its later stages.	3	• 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. • End effects and toe scour may may cause localised exacerbation of erosion. Design would be informed by best practise.	2	• Option is not chosen to address inundation hazard. • A desiegned 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 stream pathway.	**34**
	4	Enhance	Soft Engineering Protection	Retreat	4	• Initial enhancement of existing native populations would likely improve exisiting ecology and promote greater habitat and resources for flora and fauna • Retreat favours ecological restoration by providing habitats for species to recolonise neighbouring areas that may become destroyed.	5	• Initial enhancement may restore natural character. • Soft engineering may disrupt natural character and result in more limited adverse landscape effects in the context of existing settlement. • Retreat provides opportunities to restore dune planting in the absence of hard engineering and offers opportunity to restore natural character in longer term.			4	• The option to increase dune resilience over short term aligns with stated community values. • To ensure support for soft engineering over medium term, the community may need assurance (evidence, information & engagement) on suitable soft engineering / hybrid responses. • In the long term, the community is more likely to consider retreat if are involved in the decision, and have assurance that suitable land is available to allow the community the choice to stay together and that support is in place to promote social and economic wellbeing, and enhance social cohesion & health outcomes. • It is uncertain if insurability of personal assets will be maintained.	4	• This option will maintain the natural amenity and lansdscape of the coastal environment. • Public access to the coastal environment will be maintained in short term, and is likely to continue in the medium and long term. • Over all time periods, recreation that damages dunes may need to be restricted to protect ecosystems & encourage dune stability. Retreat may provide further opportunities for recreation.	3	• 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 however, this may be addressed within the climate change adaption act. • The scale of the soft engineering works will need to be commesurate with the plan to retreat in the medium to long term. • Managed retreat may require consenting to allow some greenfields subdivision. Retreat may also create additional consenting issues dependent on relocation plan (e.g., subdivision of new land and where to find this new land).	5	• Effectively manages the risks of coastal erosion over time, and takes actions in the short to medium term that reduce risks over that period. • Retreat would result in total removal of risk to individuals from erosion. It would be proportionate to the nature and scale of the risk to those impacted to retreat.	3	• By raising the crest elevation by planting and dune reconstruction, the risk of overtopping decreases, but over the short to medium term the actions do not effectively manage the inundation hazard posed by the Mangaone stream; however long term retreat will remove the risk to individuals impacted in the area. • Some of the properties that would be retreated due to erosion would also be impacted by erosion, and therefore long term, retreat could manage some of the risk within the settlement.	**68**
	1	Enhance	Accommodate	Additional Hard Protection	3	• Enhancement may improve existing native populations likely encouraging positive ecological benefits. • 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.	2	• Initial enhancement may restore natural character and provide landscape benefits. • Eventual introduction of hard structures may reduce natural character and have adverse landscape effects in context of existing settlement and modification.			4	• Initial short term enhancement option aligns with community values and maintains social cohesion. • Those in higher inundation risk areas may need support to understand options/ costs to proactively protect their dwellings from moisture and mould (floodproofing, relocatable buildings, elevate floors, etc.). • Continue community education re: protecting & hazard, and emergency management to foster 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 coastal environment and ecosystem protection could enhance community values. • Public access to the coastal environment will be maintained, however recreation that damages dunes may need to be restricted to prevent destruction of dune stability. • Where possible, additional hard protection, should allow for public access and recreation and provide other co-benefits.	2	• Accommodation and additional hard protection on a larger scale will trigger more stringent consenting requirements compared to enhancement and soft-engineering methods. • Hard-engineering approaches are discouraged under the NZCPS and RPS becasue of the adverse effects they can have on the environment. • Furthermore, the GWRC Natural Reasources Plan has some scheduled sites over the Mangaone Mouth with associated consenting rules. • Therefore, this pathway may face regulatory hurdles in its later stages especially as it will require buy-in from GWRC to approve and undertake flood protection works along the Stream.	2	• This pathway is not specifically designed to address the erosion hazard but the engineered stream works may offer some limited coastal erosion protection on the southern side of the Mangaone Stream. • Will not effectively manage the erosion hazard.	4	• Effectively reduces the risk to individual properties by raising houses above agreed flood levels but the risk remains to roading, access and services. • Also, a residual risk to housing will remain in the short to medium term until this can be reduced by the engineered mitigation options in the longer term.	**52**

Te Horo Unit 2B	2	Enhance	Additional Hard Protection	Retreat	3	• Enhancement of existing native populations will likely initially encourage positive ecological benefits. • 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. • Retreat provides opportunity for ecological restoration, however this would occur in an already modified environment.	3	• Initial enhancement may restore natural character and provide landscape benefits. • Additional hard protection may reduce natural character and result in adverse landscape effects. • Retreat provides opportunities to restore natural character, however this would occur in the context of increased modification.			3	• Initial short term enhancement option aligns with community values and maintains social cohesion. • The costs of medium term hard protection should be considered alongside cost associated with retreat in long term (floodproofing, relocatable buildings, elevate floors, etc.). • Clear communication & support for those in higher inundation risk areas so they understand costs of options to protect their dwellings & risks to health vs costs of eventual retreat. Continue community education re: protecting& hazard, and emergency management to foster resilience.7 It is uncertain if insurability of personal assets will be maintained.	3	• 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, additional hard protection may need 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.	1	• Coastal restoration and enhancement is encouraged under the present regulatory framework and will not face any major consenting hurdles. • The hard protection components of this pathway will face consenting hurdles as there are significant sites in the Mangaone Mouth scheduled in the GWRC Natural Resources Plan and will require buy-in from GWRC to approve and undertake flood protection works along the Stream. With a longer term aim to retreat, these works may be hard to justify. • Managed retreat may require consenting to allow some greenfields subdivision. Retreat may also create additional consenting issues dependent on relocation plan (e.g., subdivision of new land and where to find this new land).	3	• This pathway is not specifically designed to address the erosion hazard in the short to medium term but, the engineered stream works may offer some limited coastal erosion protection on the southern side of the Mangaone Stream. • 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	• This pathway will help reduce the increasing inundation 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. • As an incremental approach, it is likely to be proportionate to the nature and scale of the risk over time.	52
	3	Enhance	Accommodate	Retreat	5	• Initial enhancement would likely improve exisiting ecology and promote greater habitat and resources for flora and fauna. • Retreat favours ecological restoration by providing habitats for species to recolonise neighbouring areas that may become destroyed.	5	• 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. • Retreat offers opportunity to expand areas of restored natural character.			4	• Initial short term enhancement option aligns with community values and maintains social cohesion. • Those in higher inundation risk areas may need support to understand options / costs to proactively protect their dwellings from moisture and mould (floodproofing, relocatable buildings, elevate floors, etc.) in light of future re-location /retreat. • Continue community education re: protecting & hazard, and emergency management to foster 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 assurance (governance/planning) that public access and opportunities for recreation and other ecology co-benefits will not be negatively impacted. • Long term retreat may offer opportunities for recreation.	3	• Coastal restoration and enhancement is encouraged under the present regulatory framework and will not face any major consenting hurdles in the short term. • Accommodation in the medium 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 national direction on how to undertake managed retreat however, this is expected to be addressed within the Climate Change Adaptation Act. • As managed retreat gets underway consenting may be required to allow some greenfields subdivision.	2	• This pathway is not specifically designed to address the erosion hazard in the short to medium term. • 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	• This pathway will help reduce the increasing inundation 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. • As an incremental approach, it is likely to be proportionate to the nature and scale of the risk over time.	68
	4	Accommodate	Additional Hard Protection	Retreat	2	• 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. • Retreat provides opportunity for ecological restoration, however this would occur in an already modified environment.	2	• Additional hard protection is likely to reduce natural character and may result in adverse landscape effects. • Retreat provides opportunities to restore natural character, however this occurs in the context of increased modification.			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 retreat) may ensure greater acceptance and smoother transition to next pathway. Continue community education re: protecting & hazard, and emergency management to foster resilience. • It is uncertain if insurability 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 for recreation and other ecology co-benefits will not be negatively impacted. • Design of additional hard protection and retreat (long term) should consider continued public access & explore further opportunities for recreation.	1	• The hard protection components of this pathway will face consenting hurdles as there are significant sites in the Mangaone Mouth scheduled in the GWRC Natural Resources Plan and will require buy-in from GWRC to approve and undertake flood protection works along the Stream. • With a longer term aim to retreat, these works may be harder to justify. • Accommodation also creates additional consenting requirements in comparison to enhancement. • As managed retreat gets underway consenting may be required to allow some greenfields subdivision. Retreat may also create additional consenting issues dependent on relocation plan (e.g., subdivision of new land and where to find this new land).	3	• This pathway is not specifically designed to address the erosion hazard in the short to medium term but, the engineered stream works may offer some limited coastal erosion protection on the southern side of the Mangaone Stream. • 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	• This pathway will help reduce the increasing inundation 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. • As an incremental approach, it is likely to be proportionate to the nature and scale of the risk over time.	44

Pathways for Peka Peka

Pekа Pekа Unit 3A	Management	Pathways	Pathway Descriptions			Ecology		Landscape		Te ao Māori values		Community Social and Economic Wellbeing		Public Access and Recreation		Regulatory consenting and policy risk		Effectively manages the risks of coastal erosion		Effectively manages the risks of coastal inundation		MCDA Total Score:
			Short term	Medium term	Long term	Score	Notes	Score	Notes	Score	Notes	Score	Notes	Score	Notes	Score	Notes	Score	Notes	Score	Notes	
	1	Enhance	Enhance		Soft Engineering Protection	4	• Enhancement of exisiting native populations would likely promote ecology and provide greater habitat and resources for flora and fauna. • Soft engineering may disrupt bird habitats and shellfish populations but can modify and enhance habitats in the form of enhanced dunes for beach flora and fauna.	4	• Enhancement of native dune vegetation would likely restore natural character. • Soft engineering may disrupt areas, but otherwise maintain an open dynamic coastline influenced by existing settlement.			4	• The option to increase dune resilience over short and medium term aligns with stated community values. • If community is actively included in implementation of dune resilience, it could promote social and economic wellbeing, as well as enhance social cohesion & health outcomes. • It is uncertain if insurability of personal assets will be maintained.	4	• This option will maintain the natural appeal of the coastal environment and ecosystem protection could enhance community values and foster nature appreciation. • Public access to the coastal environment will be maintained, however recreation that damages dunes may need to be restricted to protect ecosystems & encourage dune stabliity.	4	• As this option presents the least amount of impact on the existing environment (e.g., no hard engineering structures), there is unlikely to be significant consenting hurdles under the existing system in the short to medium term. • Enhancement not likely to require consent or will be easy to obtain and is in line with current regulatory framework. • Depending on scale, soft engineering protection may increase risk which elevates risk profile.	3	• If designed properly it is likely to effectively manage impacts when erosion risks are lower. • Effectiveness is likely to reduce over time trying to hold the shoreline in the same location as present day and thus may require additional space to allow the beach to adjust inland. • Approach is proportionate to nature and scale of risk, and would avoid exacerbation of risk in other areas. Design would be informed by best practise.	3	• Option is not chosen to address inundation hazard. • By raising the dune crest elevation by planting and dune reconstruction, the risk of overtopping decreases; however does not address inundation hazard from pathways up the stream and stormwater network. • Unlikely to be proportionate to the nature and scale of risk of inundation.	63
	2	Enhance	Soft Engineering Protection	Soft Engineering Protection		3	• Enhancement of existing native populations will likely initially promote ecology and provide greater habitat and resources for flora and fauna. • Soft engineering may disrupt bird habitats and shellfish populations but can modify and enhance habitats in the form of enhanced dunes for beach flora and fauna.	3	• Initial enhancement of dunes with native dune vegetation may restore natural character. • Soft engineering may further disrupt areas of coastal environment influenced by existing settlement.			4	• The option to increase dune resilience over short term aligns with stated community values. • To ensure support for this option over medium-long term, the community may need assurance (evidence, information & 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 be maintained.	4	• This option will maintain the natural amenity and landscape value of the coastal environment. • Ecosystem protection could further enhance community values and foster nature appreciation. • Public access to the coastal environment will be maintained, however recreation that damages dunes may need to be restricted to protect ecosystems & encourage dune stabliity.	3	• 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 soft engineering works proposed in this option there 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.	4	• If designed properly it is likely to effectively manage impacts when erosion risks are lower. • Effectiveness is likely to reduce over time trying to hold the shoreline in the same location as present day and thus may require additional space to allow the beach to adjust inland. • Approach is proportionate to nature and scale of risk, and would avoid exacerbation of risk in other areas. Design would be informed by best practise.	3	• Option is not chosen to address inundation hazard. • By raising the dune crest elevation by planting and dune reconstruction, the risk of overtopping decreases; however does not address inundation hazard from pathways up the stream. • Unlikely to be proportionate to the nature and scale of risk of inundation.	59
	3	Enhance	Soft Engineering Protection	Hard Engineering Protection		2	• Enhancement of existing native populations will likely initially encourage positive ecological benefits. • Ongoing engineering protection however has the potential to reduce ecology by damaging beach, dune, and estuary ecology, and overall may support lower biodiversity and prevent the natural migration of habitats.	1	• Initial enhancement may restore natural character. • Ongoing engineering and introduction of hard structures and potential reduction in natural beach profile may further reduce natural character and result in adverse landscape effects. • Structures may remove some existing areas of high natural character encompassing parts of Peka Peka Dunes.			2	• The option to increase dune resilience over short term aligns with stated community values. • To ensure support for this option over medium-long term, the community may need assurance (evidence, information & engagement) on suitable soft / hybrid/ hard 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 be maintained.	2	• In short-medium term this option will maintain the natural amenity and landscape of the coastal environment and allow public access. • Over time, it is likely that access to foreshore could be lost at high tide, and eventually lost completely. Maintaining public access to the coastal environment would need to be integrated into the design of the engineering solution to ensure co-benefits for people and the environment. • If adaptation options also includes ongoing dune maintainaince, then recreation that damages dunes may need to be restricted to protect ecosystems & encourage dune stabliity.	2	• Hard engineered hazard mitigation methods are discouraged under exisiting statutory frameworks because 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 resort and the GWRC Natural Resources Plan contains some scheduled sites in the Kowhai Stream Mouth. • Therefore, this pathway may face some consenting hurdles in its later stages.	3	• Will manage risk 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. • End effects and toe scour may may cause localised exacerbation of erosion. Design would be informed by best practise.	2	• 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 degree of reduction would depend on design height. • Would not effectively manage the wider inundation risks up stream pathways and stormwater networks.	34
	4	Enhance	Soft Engineering Protection	Retreat		4	• Initial enhancement of existing native populations would likely improve exisiting ecology and promote greater habitat and resources for flora and fauna • Retreat favours ecological restoration by providing habitats for species to recolonise neighbouring areas that may become destroyed.	5	• Initial enhancement may restore natural character. • Soft engineering may disrupt natural character and result in more limited adverse landscape effects in the context of existing settlement. •Retreat provides opportunities to restore dune planting in the absence of hard engineering and offers opportunity to restore natural character in longer term.			4	• The option to increase dune resilience over short term aligns with stated community values. • To ensure support for soft engineering over medium term, the community may need assurance (evidence, information & engagement) on suitable soft engineering / hybrid responses. • In the long term, the community is more likely to consider retreat if are involved in the decision, and have assurance that suitable land is available to allow the community the choice to stay together and that support is in place to promote social and economic wellbeing, and enhance social cohesion & health outcomes. • It is uncertain if insurability of personal assets will be maintained.	4	• This option will maintain the natural appeal of the coastal environment. •Public access to the coastal environment will be maintained in short term, and is likely to continue in the medium and long term. • Over all time periods, recreation that damages dunes may need to be restricted to protect ecosystems & encourage dune stability. • Retreat may provide further opportunities for recreation.	3	• Coastal restoration and enhancement is encouraged under the present regulatory framework and will not face any major consenting hurdles in the short term. • Soft-engineering in the medium term will have some 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 national direction on how to undertake managed retreat however, this is expected to be addressed within the Climate Change Adaptation Act. As managed retreat gets underway consenting may be required to allow some greenfields subdivision. • Retreat may also create additional consenting issues dependent on relocation plan (e.g., subdivision of new land and where to find this new land).	5	• Effectively manages the risks of coastal erosion over time, and takes actions in the short-medium term to reduce risks over that period. • Retreat would result in total removal of risk to individuals from erosion. It would be proportionate to the nature and scale of the risk to those impacted to retreat.	3	• Over the short-medium term the actions will not effectively manage the inundation hazard as it does not address the inundation up the streams and stormwater pathways; however long term retreat will remove the risk to individuals impacted in the area. • Some of the properties that would be retreated due to erosion would also be impacted by erosion, and therefore long term, retreat could manage some of the risk within the settlement at beachfront properties.	68

Management		Pathways	Pathway Descriptions			Ecology		Landscape		Te ao Māori values		Community Social and Economic Wellbeing		Public Access and Recreation		Regulatory consenting and policy risk		Effectively manages the risks of coastal erosion		Effectively manages the risks of coastal inundation		MCDA Total Score:
			Short term	Medium term	Long term	Score	Notes	Score	Notes	Score	Notes	Score	Notes	Score	Notes	Score	Notes	Score	Notes	Score	Notes	
Peka Peka Unit 3B		1	Enhance	Accommodate	Additional Hard Protection	3	• Enhancement may improve existing native populations likely encouraging positive ecological benefits. • The introduction of hard protection however may have long term negative adverse effects on ecological sites and species associated with waterways i.e. Te Kowhai stream.	2	• Initial enhancement may improve natural character in short term. • Introduction of built structures may result in adverse landscape and natural character impacts in the longer term. Structures may remove some existing areas of high natural character.			4	• Initial short term enhancement option aligns with community values and maintains social cohesion. • Those in higher inundation risk areas may need support to understand options/ costs to proactively protect their dwellings from moisture and mould (floodproofing, relocatable buildings, elevate floors, etc.). • Continue community education re: protecting & hazard, and emergency management to foster 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 coastal environment and ecosystem protection could enhance community values. • Public access to the coastal environment will be maintained, however recreation that damages dunes may need to be restricted to prevent destruction of dune stability. • Where possible, additional hard protection, should allow for public access and recreation and provide other co-benefits.	2	• Accommodation and additional hard protection on a larger scale will trigger more stringent consenting requirements compared to enhancement and soft-engineering methods. • Hard-engineering approaches are discouraged under the NZCPS and RPS because of the adverse effects they can have on the environment. • Furthermore, the GWRC Natural Resources Plan has some scheduled sites over the Kowhai Stream Mouth with associated consenting rules. • Therefore, this pathway may face regulatory hurdles in its later stages.	2	• This pathway is not specifically designed to address the erosion hazard but, the engineered stream works may offer some limited coastal erosion protection on the southern side of the Te Kowhai Stream. • Will not effectively manage the erosion hazard.	4	• Effectively reduces the risk to individual properties by raising houses above agreed flood levels but the risk remains to roading, access and services. • Also, a residual risk to housing will remain in the short to medium term until this can be reduced by the engineered mitigation options in the longer term.	52
		2	Enhance	Additional Hard Protection	Retreat	3	• Enhancement of existing native populations will likely initially encourage positive ecological benefits. • 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. • Retreat provides opportunity for ecological restoration, however this would occur in an already modified environment.	3	• Initial enhancement may improve natural character in short term. • Introduction of built structures may result in adverse landscape and natural character impacts in the longer term. • Structures may remove some existing areas of high natural character.			3	• Initial short term enhancement option aligns with community values and maintains social cohesion. • The costs of medium term hard protection should be considered alongside cost associated with retreat in long term(floodproofing, relocatable buildings, elevate floors, etc.). • Clear communication & support for those in higher inundation risk areas so they understand costs of options to protect their dwellings & risks to health vs costs of eventual retreat. Continue community education re: protecting & hazard, and emergency management to foster resilience. • It is uncertain if insurability of personal assets will be maintained.	3	• 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, additional hard protection may need 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.	1	• Coastal restoration and enhancement is encouraged under the present regulatory framework and will not face any major consenting hurdles. • The hard protection components of this pathway will face consenting hurdles as there are significant sites in the Kowhai Stream Mouth scheduled in the GWRC Natural Resources Plan. • With a longer term aim to retreat, these works may be hard to justify. • Managed retreat may require consenting to allow some greenfields subdivision. • Retreat may also create additional consenting issues dependent on relocation plan (e.g., subdivision of new land and where to find this new land).	4	• This pathway is not specifically designed to address the erosion hazard in the short to medium term but, the engineered stream works may offer some limited coastal erosion protection on the southern side of Te Kowhai Stream. • Properties at risk of erosion hazards in Peka Peka are mostly impacted (more so) by inundation hazards. • Therefore, retreat from inundation would generally also lower the risk to properties impacted by erosion risks.	4	• This pathway will help reduce the increasing inundation 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 infrasructure from the area. • As an incremental approach, it is likely to be proportionate to the nature and scale of the risk over time.	54
		3	Enhance	Accommodate	Retreat	5	• Initial enhancement would likely improve exisiting ecology and promote greater habitat and resources for flora and fauna. • Retreat favours ecological restoration by providing habitats for species to recolonise neighbouring areas that may become destroyed.	5	• 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. • Retreat offers opportunity to expand areas of restored natural character.			4	• Initial short term enhancement option aligns with community values and maintains social cohesion. • Those in higher inundation risk areas may need support to understand options / costs to proactively protect their dwellings from moisture and mould (floodproofing, relocatable buildings, elevate floors, etc.) in light of future re-location /retreat. • Continue community education re: protecting & hazard, and emergency management to foster 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 assurance (governance/planning) that public access and opportunities for recreation and other ecology co-benefits will not be negatively impacted. • Long term retreat may offer opportunities for recreation.	3	• Coastal restoration and enhancement is encouraged under the present regulatory framework and will not face any major consenting hurdles in the short term. • Accommodation in the medium 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 national direction on how to undertake managed retreat however, this is expected to be addressed within the Climate Change Adaptation Act. • As managed retreat gets underway consenting may be required to allow some greenfields subdivision. • Retreat may also create additional consenting issues dependent on relocation plan (e.g., subdivision of new land and where to find this new land).	3	• This pathway is not specifically designed to address the erosion hazard in the short to medium term. • Properties at risk of erosion hazards in Peka Peka are mostly impacted (more so) by inundation hazards. • Therefore, retreat from inundation would generally also lower the risk to properties impacted by erosion risks in the long term.	4	• This pathway will help reduce the increasing inundation 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 infrasructure from the area. • As an incremental approach, it is likely to be proportionate to the nature and scale of the risk over time. Removal of only some properties could exacerbate the hazard for other properties.	70
		4	Accommodate	Additional Hard Protection	Retreat	2	• 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. • Retreat provides opportunity for ecological restoration, however this would occur in an already modified environment.	2	• Additional hard protection in the will reduce natural character and may result in adverse landscape effects. • Retreat provides opportunities to restore natural character, however this occurs in the context of increased modification.			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 retreat) may ensure greater acceptance and smoother transition to next pathway. Continue community education re: protecting & hazard, and emergency management to foster resilience. • It is uncertain if insurability 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 for recreation and other ecology co-benefits will not be negatively impacted. • Design of additional hard protection and retreat (long term) should consider continued public access & explore further opportunities for recreation.	1	• The hard protection components of this pathway will face consenting hurdles as there are significant sites 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. • As managed retreat gets underway consenting may be required to allow some greenfields subdivision. • Retreat may also create additional consenting issues dependent on relocation plan (e.g., subdivision of new land and where to find this new land).	4	• This pathway is not specifically designed to address the erosion hazard in the short to medium term. • Properties at risk of erosion hazards in Peka Peka are mostly impacted (more so) by inundation hazards. Therefore, retreat from inundation would generally also lower the risk to properties impacted by erosion risks. • Stream works may offer some limited erosion mitigation to properties on the southern side of Te Kowhai Stream in the medium term.	4	• This pathway will help reduce the increasing inundation 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 infrasructure from the area. • As an incremental approach, it is likely to be proportionate to the nature and scale of the risk over time.	46

Management		Pathways	Pathway Descriptions			Ecology		Landscape		Te ao Māori values		Community Social and Economic Wellbeing		Public Access and Recreation		Regulatory consenting and policy risk		Effectively manages the risks of coastal erosion		Effectively manages the risks of coastal inundation		MCDA Total Score:
			Short term	Medium term	Long term	Score	Notes	Score	Notes	Score	Notes	Score	Notes	Score	Notes	Score	Notes	Score	Notes	Score	Notes	
Rural NAA Unit 4A		1	Status Quo	Enhance	Enhance		• The enhancement of existing native populations provides many co-benefits to ecology in addition to coastal protection and can provide overall benefits to coastal communities at all times.		• Eventual enhancement of dunes with native dune vegetation would likely restore natural character with wholly beneficial landscape outcomes.				• The option to increase dune resilience over medium term aligns with stated community values. • Involvement with landowners is important for buy-in and for ongoing access to dune areas to supportdune resilience efforts. • Landuse may need to be modified to ensure ongoing protection to safeguard benefits from dune restoration. This could impact economic wellbeing. • It is uncertain if insurability of personal assets will be maintained.		• This option begins in next in 30-50 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 feel of the coastline will be maintained. • Recreation that damages dunes may need to be restricted to protect ecosystems & encourage dune stability.	5	• 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 consenting hurdles under the existing system. • Enhancement not likely to require consent or will be easy to obtain and is in line with current regulatory framework.	4	• Likely to manage the erosion hazard over the short-medium term, however long 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 exacerbation of risk to other areas.	2	• Option is not chosen to address inundation hazard, however by raising the crest elevation by planting, the risk of overtopping decreases; • however does not address inundation hazard from pathways up the stream/rivers and stormwater network.	19
		2	Status Quo	Enhance	Soft Engineering Protection		• The enhancement of existing native populations can promote ecology and provide greater habita and resources for flora and fauna when this occurs. • The introduction of soft engineering may then disrupt habitats and shellfish populations but can modify and enhance habitats in the form of enhanced dunes for beach flora and fauna.		• Eventual enhancement of dunes with native dune vegetation may restore natural character in some areas. • Soft engineering may have some temporary change which remains in context of open coastal environment.				• Over the medium term, efforts to increase dune resilience align with stated community values. Involvement with landowners is important for buy-in and for ongoing access to dune areas to support dune resilience efforts. • Landuse may need to be modified to ensure ongoing protection to safeguard benefits from dune restoration. This could impact economic wellbeing. • In longer term any costs/ benefits of soft engineering protection will need to be understood in advance. • It is uncertain if insurability of personal assets will be maintained.		• This option begins in next in 30-50 years, and will maintain and protect the coastal environment from that 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 feel of the coastline will be maintained. • In the longer term, the impact & public apetite 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 restricted to protect ecosystems & encourage dune stability.	4	• Status quo will require no additional resource consenting so from a consenting perspective is the most desireable option. • As this option presents the limited impact on the existing environment (e.g., no hard engineering structures), there is unlikely to be significant consenting hurdles under the existing system in the short to medium term. • Enhancement not likely to require consent or will be easy to obtain and is in line with current regulatory framework. • Depending on scale, soft engineering protection may increase risk which elevates risk profile.	3	• Likely to manage the erosion 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 propotionate to the nature and scale of the risk in these rural areas. • This pathway would avoid the exacerbation of risk to other areas.	3	• Option is not chosen to address inundation hazard, however by raising the crest elevation by planting, the risk of overtopping decreases; • however does not address inundation hazard from pathways up the stream/rivers and stormwater network.	19
		3	Enhance	Enhance	Soft Engineering Protection		• Enhancement of exisiting native populations would likely promote ecology and provide greater habitat and resources for flora and fauna. • Soft engineering may disrupt bird habitats and shellfish populations but can modify and enhance habitats in the form of enhanced dunes for beach flora and fauna.		• Enhancement of dunes with native dune vegetation may likely restore natural character. • Soft engineering may disrupt areas, but otherwise maintain an open dynamic coastline influenced by existing settlement.				• In the short term dune resilience is likely to support other adaptation efforts along the entire NAA coastline. • Involvement with landowners is important for buy-in and for ongoing access to dune areas to support dune resilience efforts. • Landuse may need to be modified to ensure ongoing protection to safeguard benefits from dune restoration. This could impact economic wellbeing. • In longer term any costs / benefits of soft engineering protection will need to be understood in advance. • It is uncertain if insurability of personal assets will be maintained.		• Commencing dune resilience in the short term is likely to support other adaptation efforts along the NAA coastline. It aligns with community values and ecosystem protection could enhance appreciation of nature. • Recreation that damages dunes may need to be restricted to protect ecosystems & encourage dune stability. As this part of the coastal environment is accessed by less people, the remote feel of the coastline will be maintained. • In the longer term, the impact & public apetite for soft engineering options (& costs) in relation to public access / recreation will need to be understood prior to being implemented.	4	• As this option presents the limited impact on the existing environment (e.g., no hard engineering structures), there is unlikely to be significant consenting hurdles under the existing system in the short to medium term. • Enhancement not likely to require consent or will be easy to obtain and is in line with current regulatory framework. • Depending on scale, soft engineering protection may increase risk which elevates risk profile.	4	• Likely to manage the erosion 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 propotionate to the nature and scale of the risk in these rural areas. • This pathway would avoid the exacerbation of risk to other areas and is more proactive in the short term.	3	• Option is not chosen to address inundation hazard, however by raising the crest elevation by planting, the risk of overtopping decreases; • however does not address inundation hazard from pathways up the stream/rivers and stormwater network.	21

Rural NAA Unit 4B	1	Status Quo	Enhance	Accommodate		• The enhancement of existing native populations can promote ecology and provide greater habitat and resources for flora and fauna when this occurs. • The introduction of accommodating for hazards is likely to neither positively or negatively impact flora and fauna if best practice is followed which can allow for natural migration of existing species.		• Eventual expansion of coastal wetlands and riparian vegetation would likely restore natural character with beneficial landscape outcomes. •The identified coastal environment would likely extend inland.			• In the short and medium term, maintaining current structures and strengthening existing stopbanks is proportionate to a lower populated rural area. • Landowners may need to be supported to identify dwellings at risk from inundation and to undertake proactive efforts on dwellings to accomodate risks to health and safety. Like to be made on a case-by-case basis. • It is uncertain if insurability of personal assets will be maintained.	• 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 ongoing. • To maintain goodwill and support for adaptation options, the community will need to be informed on changes to public access and why.	4	• 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. • Any consents required in the short to medium term will likely not have a difficult consenting pathway. • Accommodation in the long term will carry some building consent requirements.	3	• 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	• Over the short-medium term, the risks from inundation will only be minimally addressed, however the risks to dwellings is low over this time. • Accomodating 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.	**19**
	2	Accommodate	Accommodate	Retreat		• 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. • Retreat would likely allow for migration of species by providing habitats for coastal species to recolonise areas that may have already been destroyed, but in an already modified rural environment which may slow natural recovery.		• Accomodating adpatation would have little change on the existing natural character or landscape values. • Retreat would have little anticipated change in the context of the more modified rural environment. • The identified coastal environment would likely extend inland.			• In the short term, landowners may need to be supported to identify dwellings at risk from inundation and undertake proactive 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. • Over time, landowners may need to consider landuse changes in response to ongoing inundation events. • Continued community education re: protecting & hazard, and emergency management to foster resilience. • 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. This part of the coastal environment is accessed by less people, and the remote feel of the coastline is likely to be maintained. • However in the medium term, recreation that damages dunes or flood protection efforts may need to be restricted to protect ecosystems, encourage dune stability, etc. • In the long term, the public may need assurance (governance/planning) that public access and opportunities for recreation and other ecology co-benefits will be maintained. • Retreat may provide an opportunity for further recreational and ecological co-benefits.	3	• Option of retreat has limited effects on the environment in comparison to hard protection structures. • Currently limited national direction on how to undertake managed retreat, however, this is expected to be addressed within the Climate Change Adaptation Act. • Accommodation likely to require consent. Retreat may also create additional consenting issues dependent on relocation plan (e.g., subdivision of new land and where to find this new land). • Retreat may face slighthy less barriers in rural zones due to the decrease in people moving.	2	• 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. • Properties retreated from the inundation hazard are inland 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 risks of access or damage to farmland over this timeframe. • Retreat on an as required basis is a proportionate response to the nature and scale of risk over time. This would avoid exacerbation of risks on other areas.	**19**