PAA MCDA CRITERIA – COMMUNITY SOCIAL AND ECONOMIC WELLBEING

Management Unit	Pathway	Pathway Description			Community Social and Economic Wellbeing values	
		Short term	Medium term	Long term	Score	Notes
Management Unit 11A: Paekākāriki (Erosion Unit)	1	Status Quo[1] and Community Education and Emergency Management[4]	Sea wall[13] (Protect – Hard Engineering)	Re-establish the line with a setback protection structure[10] (Retreat & Protect)		The mixture of hard engineering options in this pathway generally enhance public health and safety but may decrease social cohesion and have unpredictable impacts for certainty around the future and insurability of personal assets. • At all stages of the pathway, health and safety of the community is likely to improve due to reduced likelihood of erosion-related collapse events and greater understanding of how to stay safe around erosion-prone areas. Since promenades or pathways along seawalls and setback structures may bring larger volumes of people into closer proximity with the water there is a potential risk to public safety especially during winter when other areas are muddy and storms (and associated overtopping) more common. This is likely to be magnified for users who have limited mobility and would be potentially unable to move out of harm's way quickly. Such risks could, however, be controlled through public messaging. • Seawalls are known to be contentious due to the perceived unequal distribution of costs and benefits within communities. Those with beachfront properties are likely to support seawalls since they offer direct benefits including protection of private property and assets into the future, and potentially increased insurability (although this is not guaranteed). Other households living further away from the beachfront do not necessarily directly benefit and may resent having to pay for the construction/enhancement and maintenance of a seawall through rates, especially if they also lose access to a sandy beach (a known long-term implication of seawalls). The PAA Values Engagement Summary Report outlines similar sentiments, drawing attention to potential for conflict over the funding of seawalls due to inequitable benefits/losses amongst the community. Given that between 69-145 properties in management unit 11A are expected to be exposed to erosion in the medium to long term (2070-2130) under both SSP scenarios, direct benefits of the seawall could accrue to a relatively small segment of the community, posing risks for social cohesion. • In the long term, social cohesion may be further affected by re-establishing the line and constructing a setback structure. • The possibility of needing to retreat the first line of homes poses a series of challenges. Displaced households wishing to stay within the community would need to purchase or rent other homes which could increase demand (and competition) for properties considered safe from hazards and potentially lead to divisions between those with the financial resources to buy or rent homes in safe places, and those without the resources to do so. • There is also the issue of compensation for homes that need to be retreated. The potential variability in compensation each household gets could induce tension between neighbours, especially if it dictates the quality of home and location where they are able to then move to. Additionally, if compensation is funded by the entire community (e.g. via rates) this may cause resentment amongst those households (the majority) who are not being retreated and receiving payment. • The setback protection structure itself has potential to reduce social cohesion in similar ways to seawalls. Firstly, there is potential conflict over the reduction of beach area in favour of protecting beachfront properties. Those immediately behind the structure would likely feel they benefit from its presence, however community members living elsewhere may resent the larger footprint of the structure (e.g. Ecoreef) which reduces the beach area available for recreation. Second, there is potential for conflict over the funding of the structure and potential for fracturing of the community. If it is funded through increases to rates, this may put pressure on households with limited financial capacity, and induce frustration, especially if these households feel they do not directly benefit from the additional financial outlay. This can lead to increased stress with flow on consequences for

						wellbeing of these households. Additionally, some households who can afford to pay increased rates may simply feel frustrated that they are expected to pay for adaptation actions they feel offer their household limited tangible benefits. • If there is a breakdown in social cohesion due to tension/conflict in the community surrounding seawalls, people may feel less certain about their willingness to remain living there, even if hard protection structures give the feeling they are protected from hazards to some degree.
	2	Status Quo[1] and Community Education and Emergency Management[4]	Sea wall[13] (Protect – Hard Engineering)	Enhance Sea wall[2] (Protect – Hard Engineering)		This pathway offers a similar set of benefits and costs to pathway 1, however, the substitution of an enhanced seawall for the re-establish the line option in the long term may avoid potential conflict related to retreating properties. On the other hand, the reliance on seawalls in the short, medium, and long term could entrench associated inequities and lead to a doubling down of tension in the community. As the PAA Values Engagement Summary Report demonstrates, a section of the community is opposed to seawalls and similar hard engineering solutions as a long-term adaptation strategy.
	3	Status Quo[1] and Community Education and Emergency Management[4]	Re-establish the line with a setback protection structure[10] (Retreat & Protect)	Enhance protection structure[2] (Protect – Hard Engineering)		Like the previous two pathways, this pathway offers a mixed suite of benefits and costs to health and safety, certainty around the future of the community, social cohesion, and insurability of assets. • Health and safety is likely to be enhanced (as per description in pathway 1), however the potential for conflict over retreat of homes and associated inequities comes into play sooner (medium term) than in pathway 1. • There may be greater uncertainty over insurability of personal assets overall in this pathway, due to the increased use of setback protection structures and their faster introduction (when compared with pathway 1). Although properties in the vicinity of the setback structure may benefit from enhanced insurability of personal assets with the increased protection this is contingent on how insurance companies regard the setback structure, and if the Ecoreef option is selected, this is not yet clear given its limited use within Aotearoa New Zealand to date. Since seawalls are a more widespread form of hard engineering insurance companies may be more likely to insure homes protected by them when compared with an Ecoreef (however this is highly uncertain, and it is difficult to access data on insurance due to confidentiality).
	4	Status Quo[1] and Community Education and Emergency Management[4]	Re-establish the line with a setback protection structure[10] and Dune reconstruction[11] (Retreat & Protect)	Beach renourishment[10] (Protect – Soft Engineering)		The diverse suite of options pursued in this pathway could introduce new sources of tension that threaten social cohesion and may either reduce or increase certainty around the future and health and safety. • In the short term, health and safety is likely to be enhanced through education and emergency management (as per description in pathway 1) and reduced incidence of erosion-related collapse events due to seawall. In the medium to long term, the persistence of a sandy beach with dune reconstruction and beach renourishment may benefit residents' health due to continued or increased ability to engage in health-promoting activities like walking or running along the beach, or swimming. However, the array of different methods engaged in this pathway could amount to a large increase in rates in order to fund the necessary works. This could result in increased stress for households of limited socio-economic means and cause other flow on impacts for their health (such as sacrificing household necessities in order to pay rates or delaying rates payment and accruing further debt or financial penalties). • In addition to the likely tensions associated with the replacement of the seawall, retreat of houses and installation of a setback protection structure, dune reconstruction and beach renourishment in the medium to long term present a series of challenges for social cohesion. In order to reconstruct dunes and nourish beaches, sand and other material may have to be sourced from elsewhere, which has a series of flow on impacts to the communities in the region that provides the sand. Over time, communities in the contributing region may experience a loss of access to the coastal environment, decreased natural protection from coastal hazards and a sense of insecurity about the future as hazards become more severe and impactful, which could in turn affect social cohesion as the community begins to fracture as people leave and seek out more safe places to live. Some residents of Paekākāriki may feel uncomfortable knowing that they are potentially benefitting (in terms of greater

						beach access, potentially more natural protection from hazards and more certainty about the future) whilst others elsewhere are losing out (due to contributing sand), and this could cause tension and division amongst the Paekākāriki community, with mixed levels of support for soft engineering approaches. • Additionally, with the maintenance of a beach in Paekākāriki, there may be an influx of beach users from other areas where beaches have eroded. This has the potential to cause tension amongst locals and out-of-town visitors and could also cause division within the Paekākāriki community, with some members of the community in favour of welcoming outsiders and others against.

Management Unit 12A: Paekākāriki (Erosion Unit)	1	Status Quo[1] and Community Education and Emergency Management[4]	Enhance existing protection structure[2], Community Education and Emergency Management[4] (Enhance)	Re-establish the line with a setback protection structure[10] (Retreat & Protect)		Whilst this pathway likely elevates health and safety overall, there are likely to be inequities between households in terms of insurability of personal assets and levels of certainty around the future, and a number of sources of potential tension that could decrease social cohesion at all stages. • In the short to medium term, education and emergency management combined with seawalls helps reduce direct risks to health and safety by increasing the likelihood that people know how to respond to erosion hazards and reduces possibilities of collapse events and unstable areas. This assumes a minimum design standard for private seawalls such that public health is not at risk. In the long term, retreat of beachfront properties removes a number of households out of harm's way, away from the hazard. • In the short to medium term, pursuing the status quo approach and enhancing structures is likely to precipitate a range of feelings around certainty within the community. As the PAA Values Engagement Summary Report demonstrates, some residents of Paekākāriki currently feel very concerned about coastal hazards however others (such as owners of beachfront properties who invested in a private seawall) do not share these concerns. In the short to medium term those who feel concerned may feel more certain about their future in the community as they witness attempts to enhance existing protection structures, however those who are not concerned currently may continue to feel certain into the medium term. • However, there is also a possibility that over the short to medium term, the uncoordinated approach to protection structures may cause some people to feel much less certain about their future in the community. For instance, some households in areas where private seawalls are in existence may not have the financial capacity to enhance their structure to the degree needed to afford them protection as climate change becomes more severe. In the longer term the setback protection structure may give community members greater confidence they can continue to reside in the community, however this is contingent on people continuing to value hard engineering solutions to climate change. • It is difficult to predict how insurability of assets will be impacted, however, at all stages of the pathway likely to be groups of people that benefit more than others. In the short, medium and long term, properties protected behind seawalls or structures (both private and public) will probably be able to maintain insurability more than properties that are located along the shoreline but not offered protection (which may be relatively few). Elsewhere in the community, those properties located away from the shoreline may be able to maintain insurability but this is difficult to predict and could be highly variable depending on how exposed a property is to other hazards (often there is a correlation between high exposure to hazards and low value properties/low income inhabitants). • In the short to medium term, there may also be divisions in ability to maintain insurance and the cost of insurance premiums between households protected by privately and publicly maintained structures that could lead to tension. For instance, in areas of privately maintained seawall, owners of some properties may have the financial resources to build more robust walls than others. This could lead to inequities between neighbouring households where some are better able to maintain insurability of assets than others, or some households have higher insurance premiums than others, which could spark tension and conflict, therefore reducing social cohesion. Likewise, there may be differences in premium availability and cost between households protected between private seawalls and those behind council-maintained seawalls or structures. • Over the longer term, it is difficult to know how insurability of personal assets might be affected for properties transitioning from protection by a private seawall to a publicly maintained setback structure. There may be a levelling up of insurance premiums within the community if all properties are protected by the same structure, but it is difficult to know this with certainty. • In addition to possible tensions over insurance this pathway presents a range of further challenges that may impact social cohesion. Since the PAA Values Engagement Summary Report demonstrates a general interest of the community in equity, the social cohesion dimensions of this pathway are important.

						• At all stages of the pathway frustration may arise within the community over payment for adaptation options. If households with privately funded seawalls are expected to also pay for maintenance/enhancement of the public seawall in the short and medium term, this could cause resistance as they would effectively be paying twice for adaptation yet not necessarily receiving double the benefits. Additionally, households in areas with private seawalls may not have the financial capacity to maintain or enhance their seawall in the short to medium term so that it offers equivalent protection to a publicly funded seawall, which could lead to tension. • As in sub-area 11A, some households within the community may also resent having to pay (via rates) for seawalls and/or protection structures they feel benefit only a small portion of the community directly (beachfront homeowners), and other community members may also resent the potential loss of beach area associated with seawalls. • In the long term, re-establishing the line raises many of the same challenges to social cohesion as described for sub-area 11A above (competition over safe land and properties, breaking apart networks of neighbours, conflict over compensation and funding the structure, and the protection of beachfront properties at the expense of losing beach area). There is also the issue that those who have paid to maintain their own seawalls in the short and medium term may resent having to pay for a setback structure or may indeed need to retreat themselves (if they were expected to also pay for their own retreat via rates this could cause tension). • On the other hand, social cohesion could be enhanced in the short to medium term if community members work together (for instance, developing community led emergency management plans or neighbours helping each other maintain private seawalls).
	2	Enhance existing protection structure[2], Community Education and Emergency Management[4] (Enhance)	Sea wall[13] (Protect – Hard Engineering)	Re-establish the line with a setback protection structure[10] (Retreat & Protect)		This pathway represents a broadly similar suite of costs and benefits to the community as pathway 1 above. However, the potential tensions related to transitioning from an uncoordinated approach to coordinated approach (seawall) come earlier (in the medium term) than in pathway 1 (whereby this transition happens in the long term with the setback structure). There is therefore a risk that social cohesion may be reduced in the medium term if those protected by a private seawall in the short term resent having to fund the public seawall in the medium term (since they have already invested in their own protection structures). This group could also feel frustrated over a perceived lack of agency whereby they are no longer able to maintain their own structures and the government takes over control of adaptation. Additionally, tension and resentment could arise if private seawalls are demolished in order to make way for a public seawall. On the other hand, there may be a reduction of tension around insurance premiums sooner than in pathway 1, as a more coordinated approach in the medium term (as opposed to long term) could help to level out disparities in insurance availability and cost, with more equal protection offered to households along the shoreline.
	3	Enhance existing protection structure[2], Community Education and Emergency Management[4] (Enhance)	Re-establish the line with a setback protection structure[10] (Retreat & Protect)	Enhance sea wall[2] (Protect – Hard Engineering)		This pathway presents a broadly similar picture to pathway 1 and 2 above, however there is potential that challenges to social cohesion related to retreat and construction of a setback structure will be apparent earlier on (medium term as opposed to long term). It is also difficult to predict how insurability of personal assets would be affected in the medium term with the setback structure. As noted above (pathway 1 and 2) there may be a levelling out of insurance availability and/or premiums with the coordinated approach. Yet it is difficult to predict with certainty how insurance companies will behave, especially given the limited use (and limited proven efficacy) of Ecoreef in Aotearoa New Zealand to date.

	4	Enhance existing protection structure[2], Community Education and Emergency Management[4] (Enhance)	Re-establish the line with a setback protection structure[10] and Dune reconstruction[12] (Retreat & Protect)	Beach renourishment[10] (Protect – Soft Engineering)		This pathway potentially offers greater certainty about the future of the community than do the previous three pathways, although certainty could be offset by reduced social cohesion related to the fracturing of the community around the comparatively large number of different adaptation options pursued in this pathway. In the short term, some residents who are concerned about coastal hazards may feel more certain about their ability to continue living in the community as they witness enhancement of structures and gain greater knowledge of/develop strategies for living with climate change (via education and emergency management). In the medium to long term certainty may also be enhanced through the reconstruction of dunes and beach renourishment which would enable maintenance of a sandy beach/natural character of the community, which many in the area value highly and regard as one of the defining features of living in Paekākāriki. Prolonging access to a beach could also lead to greater health benefits for community members (walking along the beach for example, mental wellbeing), and dune reconstruction may aid natural protection from hazards, and could enhance ability to insure personal assets (although this is highly uncertain). However, as noted above for pathway 4, sub-area 11A, dune reconstruction and beach renourishment may induce tensions that could reduce social cohesion, and lead to less certainty about residing in the community into the future. Some residents may be more inclined to support hard engineering approaches whilst others may favour soft adaptation options such as renourishment and reconstruction, which could cause friction within the community. Some residents may feel uncomfortable about the potential inequities associated with taking sand from other locations in order to benefit their own community, and therefore oppose soft approaches. As noted previously, there will likely be tensions around payment for maintenance/construction of seawalls and setback structures/retreat, especially if these are perceived to directly benefit only a small segment of the community (e.g. beach front property owners). The larger number of different adaptation options pursued in this pathway also creates possibility for friction amongst the community due to differing options on which is most appropriate.

	5	Sea wall[13] (Protect – Hard Engineering)	Enhance Sea wall[2] (Protect – Hard Engineering)	Enhance Sea wall[2] (Protect – Hard Engineering)		The pursuit of seawalls over the short, medium and long term in this pathway could prove contentious in the community, and may impede health and safety in some ways, but could potentially lead to a levelling out of insurability of personal assets in the short-term going forward. • The abrupt shift from a mixed, uncoordinated approach at present to the introduction of a seawall could raise tensions in the community and may be met with opposition from households currently able to maintain their own protection structures. These households, if expected to fund the creation of a new public seawall (via rates), could feel resentment from having to pay again, when they have already invested significant amounts into a private structure. They may also resent the loss of agency that comes with a coordinated approach, and no longer having the ability to secure their own futures through a private seawall. On the other hand, some households in the area where private seawalls are currently maintained could support the move to a coordinated approach if they feel it benefits them in terms of offering more protection from coastal hazards than the structure they maintained privately. • As noted above, seawalls can also introduce other tensions. Those favouring nature-based solutions or soft engineering approaches may oppose the reliance on seawalls in this pathway. Additionally, some households in the community may oppose seawalls due to potential for the loss of a sandy beach over time, and because they may perceive direct benefits accruing only to a small section of the community. • As stated previously, it is very difficult to predict how insurance companies will react to different proposed adaptation options, however the immediate move to a coordinated approach could see more uniformity between (beachfront) households in terms of their ability to gain/maintain insurance • The potential for loss of the beach could adversely affect residents' health and wellbeing, and lead to less certainty over time as to whether they would like to continue residing in the community. A hard protection structure may offer a measure of security, yet the absence of the beach could act as a "push" factor that causes people to leave the community, and this in turn could give rise to a loss of social cohesion, as shops, services are withdrawn, and social networks erode.
	6	Status Quo[1] and Community Education and Emergency Management[4]	Enhance existing protection structure[2], Community Education and Emergency Management[4] (Enhance)	Sea wall[13] (Protect – Hard Engineering)		• This pathway offers a similar profile of benefits and costs to pathway 1. As opposed to pathway 5 and 6, potential inequities and sources of tension (varied insurability and safety of homes) related to an uncoordinated approach are allowed to persist into the medium term and could lead to challenges to social cohesion. • Challenges to social cohesion related to seawalls will remain in the long term.
	7	Status Quo[1] and Community Education and Emergency Management[4]	Sea wall[13] (Protect – Hard Engineering)	Enhance Sea wall[2] (Protect – Hard Engineering)		This pathway takes a coordinated approach earlier than pathway 6, which may reduce tension over differing levels of protection, safety, and insurability between households in privately maintained and public seawall areas. Many of the same tensions around seawalls described for the pathways above are likely to persist into the long term as the seawall is enhanced.

Management Unit	Pathway	Pathway Description			Community Social and Economic Wellbeing values	
		Short term	Medium term	Long term	Score	Notes
Management Unit 11B: Paekākāriki (Inundation Unit)	1	Status Quo[1] and Community Education and Emergency Management[4]	Enhance Existing Inundation Protection[3] and Community Education and Emergency Management[4] (Enhance)	Additional Hard Protection (e.g. Stopbanks[13], Culverts[14], Pumpstations[15]) (Protect)		This pathway generally enhances health and safety, may have a negligible effect on insurance and certainty, and could potentially introduce challenges for social cohesion. • In the short and medium term community education and emergency management help to reduce the number of people in harms' way and aid people in knowing how to respond to an inundation event. In the long term, additional hard protection could help to reduce potential inundation of homes and other areas where people may be present. However, due to the levee effect, some people may not heed hazard warnings and may feel they are safe in the presence of engineered flood protections, even if the actual situation they are in is risky (e.g. recreating in a location known to flood during bad weather). • In the medium and long term the enhancement and addition of inundation protection and control could help some residents to maintain insurability of personal assets, however this is likely to only apply to those households that are directly at risk of inundation hazards rather than the community as a whole. Since relatively few households in Paekākāriki are at risk of inundation this benefit is likely to only apply to a small number of people. • Likewise, since the main issue for the community is erosion rather than inundation, certainty is unlikely to be affected much by the planned works. Some members of the community may feel more certain they can continue living in an area with increased knowledge of how to keep themselves safe during inundation events, and hard protection may increase certainty of (the relatively small number of) households which are directly at risk of inundation. • Social cohesion may be reduced if tensions arise in the community over the funding of hard engineering structures like stopbanks and pump stations. If all residents are expected to pay for maintenance/construction through rates, and only a small number of households directly benefit, this could present similar tensions to the seawalls proposed in sub-areas 11A and 12A.
	2	Status Quo[1] and Community Education and Emergency Management[4]	Enhance Existing Inundation Protection[3] and Community Education and Emergency Management[4] (Enhance)	Elevate floor levels of buildings[8] or Flood proofing buildings and infrastructure[6] (Accommodate)		This pathway offers a similar suite of benefits/costs over the short and medium term to pathway 1. • In the long term, the addition of elevation and flood proofing of buildings and infrastructure could introduce inequities and tensions within the community with consequences for health and safety, insurability and social cohesion. • If residents of flood prone buildings are expected to take sole (financial) responsibility for flood proofing or elevating floor levels this could lead to inequities in the degree to which properties are protected. Some households may not have the financial resources to carry out the necessary works or to complete them to a high standard. Consequently, some households may choose to leave the community (which could affect social cohesion amongst neighbours, albeit on a small scale), whilst others may remain, but have difficulty obtaining/maintaining insurance for their homes/assets, and/or be more exposed to flood damage (which flow on risks to health and safety of occupants). This could set up disparities in the level of insurability and degree of safety from flooding amongst neighbours and lead to tension within areas of the community that are at risk of coastal flooding. • On the other hand, if the work is publicly funded (through rates or similar), this could induce more widespread tension in a similar way to funding of seawalls. Given the small number of homes at risk of coastal flooding in the area, some residents of Paekākāriki may object to funding elevation of floors/flood proofing of buildings for private properties, since they may feel they would not benefit directly. This is likely to be less of an issue if public funding is used to carry out flood proofing or elevation of buildings that are used by the community (e.g. community halls, essential services, etc) or key infrastructure.

	3	Status Quo[1] and Community Education and Emergency Management[4]	Additional Hard Protection (e.g. Stopbanks[14], Pumpstations[15]) (Protect)	Enhance Existing Inundation Protection[3] (Enhance)		Over the short term health and safety may improve through community education (helping people to understand how to stay safe during hazardous conditions/in hazardous locations) • When compared with pathway 1, potential benefits to insurability of personal assets, and potential tensions related to funding of hard protection come into play sooner (medium term). • Enhancing the new inundation protection over the long term could improve health and safety by reducing the extent/magnitude of coastal flooding and therefore the number of homes/people exposed. It may also enhance the ability of residents whose properties are at risk flood to maintain insurance and therefore improve their ability to feel certain about the future of the community. However, the funding of these works could prove contentious (given the small number of households that would benefit) especially if rates are used to fund their continual enhancement, maintenance and running costs (e.g. electricity for pumps).
	4	Enhance Existing Inundation Protection[3] and Community Education and Emergency Management[4] (Enhance)	Additional Hard Protection (e.g. Stopbanks[14], Pumpstations[15]) (Protect)	Enhance Existing Inundation Protection[3] (Enhance)		This pathway is similar to pathway 3, however given that enhancement of existing inundation protection is introduced in the short term, those households at risk of coastal flooding and people who frequently use or move through flood prone areas near the coast may feel more certain about the future of the community, as they witness efforts to control flooding. • Insurance of personal assets may be maintained for the small number of homes that directly benefit from additional flood protection measures and their enhancement over the medium to long term, however it is unclear how insurability of the wider community would be affected by these measures. • There is still the possibility of tension within the community over the funding of enhancement of existing flood control, and building and enhancing new protection. This could lead to frustration over time and reduce social cohesion, especially as coastal flooding is not the main issue within the community.
	5	Enhance Existing Inundation Protection[3] and Community Education and Emergency Management[4] (Enhance)	Elevate floor levels of buildings[8] or Flood proofing buildings and infrastructure[6] (Accommodate)	Additional Hard Protection (e.g. Stopbanks[14], Pumpstations[15]) (Protect)		The variety of different adaptation options pursued in this pathway could have mixed results for health and safety, insurability, certainty and social cohesion. • Although health and safety may be enhanced through education (short term) and additional hard protection (long term), there is also the issue in the medium term of potential for disparities in levels of flood proofing/elevation of private properties which could pose safety/health risks for occupants if floors are not raised high enough/flood proofing is not carried out to a high enough degree. As noted above, these risks are likely to be more prevalent for households with limited financial capacity, and could adversely affect groups like asthmatics, children and the elderly who are especially sensitive to damp, cold, and respiratory conditions linked to mould/mildew after flooding. Similarly, insurability of homes not flood proofed/elevated to a high enough level could be limited, and the effects on insurability elsewhere in the community are unpredictable at all stages of this pathway. • Funding of enhancement, construction, maintenance, and running of inundation protection (and potentially elevation/flood proofing of buildings) through rates could also drive tension within the community given the small area and limited number of properties that are at risk of coastal flooding at all timestamps in the area.