MCDA CRITERIA – EFFECTIVELY MANAGES THE RISKS OF COASTAL INUNDATION

Management	Pathway	Pathway Description		Effectively Manages the Risks of Coast		
Unit		Short term	Medium term	Long term	Score	Notes
aikanae Unit 5A	1	Enhance - Dune and/or wetland resilience, community education and emergency management	Soft Engineering - Dune reconstruction	Soft Engineering - Beach renourishment	2	 Pathway is not chosen to address inundation hazard. By raising the dune crest elevation by planting and dune reco and can be added to responsively as a result of storm erosion. However main source of flooding in Waikanae Beach is from I which dune reconstruction and planting will not address. Unlikely to be proportionate to the nature and scale of risk of
	2	Enhance - Dune and/or wetland resilience, community education and emergency management AND Soft Engineering - Dune reconstruction	Enhance - Dune and/or wetland resilience, community education and emergency management AND Soft Engineering - Beach renourishment	Protect - Hard Engineering - Sea wall	2	 Pathway is not chosen to address inundation hazard. A designed crest elevation of an eventual hard structure woul hazard but would not effectively manage the wider inundation
3	3	Enhance - Dune and/or wetland resilience, community education and emergency management AND Soft Engineering - Dune reconstruction	Enhance - Dune and/or wetland resilience, community education and emergency management AND Soft Engineering - Beach renourishment	Protect - Hard Engineering - Detached Breakwater	1	 Pathway is not chosen to address inundation hazard, and would of flooding for Waikanae Beach Depending on design, potential for breakwater to increase water exacerbate inundation
	4	Enhance - Dune and/or wetland resilience, community education and emergency management AND Soft Engineering - Dune reconstruction	Protect - Hard Engineering - Sea wall	Retreat	2	 Pathway is not chosen to address inundation hazard. A designed crest elevation of an eventual hard structure wou hazard, but would not effectively manage the wider inundation Only a small amount of properties retreated from the erosion impacted by inundation hazards.

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onstruction, the risk of overtopping decreases

low lying pathways from the Waikanae River,

inundation.

Ild result in a reduction of the overtopping risks up river and inlet pathways.

uld not effectively manage any relevant source

ater level setup at shoreline which may

Id result in a reduction of the overtopping risks up river and inlet pathways. hazard in the long term may also have been

Unit 5A	5	Enhance - Dune and/or wetland resilience, community education and emergency management AND Soft Engineering - Dune reconstruction	Protect - Hard Engineering - Detached Breakwater	Retreat	1	 Pathway is not chosen to address inundation hazard, and would of flooding for Waikanae Beach Only a small amount of properties retreated from the erosion impacted by inundation hazards. Depending on design, potential for breakwater to increase water accerbate inundation
Waikanae	6	Enhance - Dune and/or wetland resilience, community education and emergency management AND Soft Engineering - Dune reconstruction	Retreat	Retreat	2	 Option is not chosen to address inundation hazard. By raising the dune crest elevation by planting and dune recorrand can be added to responsively as a result of storm erosion. However main source of flooding in Waikanae Beach is from I which dune reconstruction and planting will not address. Unlikely to be proportionate to the nature and scale of risk of Only a small amount of properties retreated from the erosion impacted by inundation hazards.

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low lying pathways from the Waikanae River,

- inundation.
- hazard in the long term may also have been

1	Status Quo AND Community Education and Emergency Management	Status Quo AND Community Education and Emergency Management	Enhance - Enhance existing inundation protection, dune and/or wetland resilience, and community education and emergency management	3	 Short-medium term response is proportionate to the scale of the under lower SLR scenarios. Some residual risk over the short-medium term by undertaking Avoids the exacerbation of risk in other areas.
2	Status Quo AND Community Education and Emergency Management	Enhance - Enhance existing inundation protection, dune and/or wetland resilience, and community education and emergency management	Protect - Additional Hard Protection - e,g. stopbanks, Culverts and Pump stations	4	 Short-medium term response is proportionate to the scale of t under lower SLR scenarios. Additional protection in the long term likely to effectively mana Could be some exacerbation of risks in other areas as water m areas with additional structures, however likely to use best pract
3	Enhance - Enhance existing inundation protection, dune and/or wetland resilience, and community education and emergency management	Enhance - Enhance existing inundation protection, dune and/or wetland resilience, and community education and emergency management	Accommodate - Elevate floor levels of buildings and flood proofing buildings and infrastructure	3	 Short-medium term response is proportionate to the scale of the under lower SLR scenarios. Raising floor levels over the long term will reduce the risk to dw the properties. The number of dwellings that will require raising will likely be wworks required may not be proportionate to the hazard.
4	Enhance - Enhance existing inundation protection, dune and/or wetland resilience, and community education and emergency management	Accommodate - Elevate floor levels of buildings and flood proofing buildings and infrastructure	Retreat	3	 Short term response is proportionate to the scale of the risk ov Raising floor levels in the medium term will reduce the risk to caused by flooding. The number of dwellings that will require raising will likely be v works required may not be proportionate to the hazard, especial Retreat will remove all residual risk to impacted private proper
5	Enhance - Enhance existing inundation protection, dune and/or wetland resilience, and community education and emergency management	Protect - Additional Hard Protection - e,g. stopbanks, Culverts and Pump stations	Retreat	4	 Short term response is proportionate to the scale of the risk ov Protection through additional hard protection in the medium te Could be some exacerbation of risks in other areas as water m areas with additional structures, however likely to use best pract Retreat will remove all residual risk to impacted private proper

Waikanae Unit 5B

ng no action.

the risk over these timeframes, especially

nage the inundation risks. may be diverted from Waikanae into other ctise to avoid this impact as best as possible.

the risk over these timeframes, especially

dwellings, but will not resolve access issues to

e very significant; and therefore the scale of

over this timeframe. dwellings, but will not resolve access issues

e very significant; and therefore the scale of ially if retreat is anticipated in the long term. erties.

over this timeframe. term will effectively manage the hazard. may be diverted from Waikanae into other ctise to avoid this impact as best as possible. erties.

Management	Pathway	Pathway Description			Effectively Manages the Risks of Coastal In		
Unit		Short term	Medium term	Long term	Score	Notes	
Waikanae Estuary Unit 6A and B	1	Status Quo AND Community Education and Emergency Management	Enhance - Dune and/or wetland resilience, community education and emergency management	Enhance - Dune and/or wetland resilience, community education and emergency management	3	 Proportionate to the scale of hazard in the wetland. Avoids exacerbation of the flood hazard in other areas. 	
	2	Status Quo AND Community Education and Emergency Management	Enhance - Dune and/or wetland resilience, community education and emergency management	Protect - Bank protection	3	 Over the short-medium term the actions are proportionate to the Bank protection is not provided to deal with the inundation hazar Avoids exacerbation of the flood hazard in other areas. 	
	3	Enhance - Dune and/or wetland resilience, community education and emergency management	Enhance - Dune and/or wetland resilience, community education and emergency management	Protect - Bank protection	3	 Over the short-medium term the actions are proportionate to the Bank protection is not provided to deal with the inundation hazar Avoids exacerbation of the flood hazard in other areas. 	
	4	Enhance - Dune and/or wetland resilience, community education and emergency management	Protect - Bank protection	Protect - Bank protection	3	 Over the short-medium term the actions are proportionate to the Bank protection is not provided to deal with the inundation hazar Avoids exacerbation of the flood hazard in other areas. 	
	5	Enhance - Dune and/or wetland resilience, community education and emergency management	Retreat - Retreat recreational infrastructure to make way for wetland migration	Retreat - Retreat recreational infrastructure to make way for wetland migration	4	 Pathway is proportionate to the scale of hazard in the wetland. Avoids exacerbation of the flood hazard in other areas. 	

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Management	Pathway	Pathway Description			Effectively Manages the Risks of Coasta		
Unit		Short term	Medium term	Long term	Score	Notes	
Otaihanga Unit 7B	1	Status Quo AND Community Education and Emergency Management	Enhance - Enhance existing inundation protection, dune and/or wetland resilience, and community education and emergency management	Protect - Additional Hard Protection (e.g. stopbanks, culverts and pump stations)	2	 Pathway responses across timeframes are proportionate to the scenarios. Additional protection in the long term likely to effectively mana There is a current flood risk which is not dealt with through this increased protection. Could be some exacerbation of risks in other areas as water ma other areas with additional structures, however likely to use best 	
	2	Enhance - Enhance existing inundation protection, dune and/or wetland resilience, and community education and emergency management	Enhance - Enhance existing inundation protection, dune and/or wetland resilience, and community education and emergency management	Accommodate - Elevate floor levels of buildings and flood proofing buildings and infrastructure	2	 Pathway will address some of the present day flood risk, and in Long term residual risk dealt with through raising floor levels of properties and will still result in access issues to these properties Risks to flooding are very high in the long term, and as a result response to mitigating the risks. Pathways will avoids the exacerbation of risk in other areas. 	
	3	Enhance - Enhance existing inundation protection, dune and/or wetland resilience, and community education and emergency management	Accommodate - Elevate floor levels of buildings and flood proofing buildings and infrastructure	Retreat	2	 Pathway will address some of the present-day flood risk, and ir Long term residual risk is dealt with through retreat, which will Risks to flooding are very high in the long term and as a result r the scale of hazard. Pathways will avoid the exacerbation of risk in other areas. 	
	4	Protect - Additional Hard Protection (e.g. stopbanks, culverts and pump stations)	Enhance - Enhance new inundation protection, dune and/or wetland resilience, and c and community education and emergency management	Retreat	5	 Short term actions to mitigate current risks would reduce the in Maintaining this additional infrastructure over the medium terr effective way of managing the risks over time. Pathway is proportionate to the scale and risk over time. Could be some exacerbation of risks in other areas as water ma other areas with additional structures, however likely to use best 	
	5	Enhance - Enhance existing inundation protection, dune and/or wetland resilience, and community education and emergency management	Protect - Additional Hard Protection (e.g. stopbanks, culverts and pump stations)	Protect - Additional Hard Protection (e.g. stopbanks, culverts and pump stations)	4	 Pathway likely to effectively manage the flood risk over the sho Risk is very high over the long term for flooding, and therefore proportionate to the risks. Could be some exacerbation of risks in other areas as water ma other areas with additional structures, however likely to use best 	

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e scale of the risk, especially under lower SLR

age the increased inundation risks. s pathway, but over time could be alleviated with

ay be diverted from Otaihanga with structures into t practise to avoid this impact as best as possible.

ncreasing risk over the medium term. f dwellings, however this will only protect the

raising houses may not be a proportionate

ncreasing risk over the medium term. I remove all risk to impacted properties. retreat is likely to be a proportionate response to

impact on properties. m, and retreating over the long term would be an

ay be diverted from Otaihanga with structures into t practise to avoid this impact as best as possible.

ort-long term. e significant works may be required that may not be

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Management	Pathway	Pathway Description			Effectively Manages the Risks of Coast		
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Paraparaumu Unit 8A	1	Enhance - Dune and/or wetland resilience, community education and emergency management	Protect - Soft Engineering - Dune Reconstruction	Protect - Soft Engineering - Beach Renourishment	2	 Option is not chosen to address inundation hazard. By raising the dune crest elevation by planting and dune recorcan be added to responsively as a result of storm erosion. However main source of flooding in Paraparaumu Beach is frowhich dune reconstruction and planting will not address. Unlikely to be proportionate to the nature and scale of risk of the store. 	
	2	Enhance - Dune and/or wetland resilience, community education and emergency management AND Protect - Soft Engineering - Dune reconstruction	Enhance - Dune and/or wetland resilience, community education and emergency management AND Protect - Soft Engineering - Beach Renourishment	Protect - Hard Engineering - Sea wall	2	 Option is not chosen to address inundation hazard. A designed crest elevation of an eventual hard structure wou hazard, but would not effectively manage the wider inundation 	
	3	Enhance - Dune and/or wetland resilience, community education and emergency management AND Protect - Soft Engineering - Dune reconstruction	Enhance - Dune and/or wetland resilience, community education and emergency management AND Protect - Soft Engineering - Beach Renourishment	Protect - Hard Engineering - Detached Breakwater	1	 Option is not chosen to address inundation hazard, and woul flooding for Paraparaumu Beach over the long term. Depending on design, potential for breakwater to increase wat inundation 	
	4	Enhance - Dune and/or wetland resilience, community education and emergency management AND Protect - Soft Engineering - Dune reconstruction	Protect - Hard Engineering - Sea wall	Retreat	2	 Option is not chosen to address inundation hazard. A designed crest elevation of an eventual hard structure wou hazard, but would not effectively manage the wider inundation Only a small amount of properties retreated from the erosion impacted by inundation hazards. 	

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uld result in a reduction of the overtopping n risks up river and inlet pathways. n hazard in the long term may also have been

Paraparaumu Unit 8A	5	Protect - Hard Engineering - Sea wall	Protect - Hard Engineering - Sea wall	Retreat	2	 Option is not chosen to address inundation hazard. A designed crest elevation of an eventual hard structure wou hazard, but would not effectively manage the wider inundation Only a small amount of properties retreated from the erosion impacted by inundation hazards.
	6	Enhance - Dune and/or wetland resilience, community education and emergency management AND Protect - Soft Engineering - Dune reconstruction	Retreat	Retreat	2	 Option is not chosen to address inundation hazard. By raising the dune crest elevation by planting and dune recorcan be added to responsively as a result of storm erosion. However main source of flooding is from low lying pathways for reconstruction and planting will not address. Unlikely to be proportionate to the nature and scale of risk of Only a small amount of properties retreated from the erosion impacted by inundation hazards.

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1	Status Quo AND Community Education and Emergency Management	Status Quo AND Community Education and Emergency Management	Enhance - Enhance existing inundation protection, dune and/or wetland resilience, and community education and emergency management	3	 Short-medium term response is proportionate to the scale of lower SLR scenarios. Some residual risk over the short-medium term by undertaki Avoids the exacerbation of risk in other areas.
2	Status Quo AND Community Education and Emergency Management	Enhance - Enhance existing inundation protection, dune and/or wetland resilience, and community education and emergency management	Protect - Additional Hard Protection (e.g. stopbanks, culverts and pump stations)	4	 Short-medium term response is proportionate to the scale of lower SLR scenarios. Additional protection in the long term likely to effectively material of the some exacerbation of risks in other areas as water areas with additional structures, however likely to use best practices with additional structures.
3	Enhance - Enhance existing inundation protection, dune and/or wetland resilience, and community education and emergency management	Enhance - Enhance existing inundation protection, dune and/or wetland resilience, and community education and emergency management	Accommodate - Elevate floor levels of buildings and flood proofing buildings and infrastructure	3	 Short-medium term response is proportionate to the scale of lower SLR scenarios. Raising floor levels over the long term will reduce the risk to The number of dwellings that will require raising will likely be works required may not be proportionate to the hazard.
4	Enhance - Enhance existing inundation protection, dune and/or wetland resilience, and community education and emergency management	Accommodate - Elevate floor levels of buildings and flood proofing buildings and infrastructure	Retreat	4	 Short term response is proportionate to the scale of the risk Raising floor levels in the medium term will reduce the risk t caused by flooding. The number of dwellings that will require raising will likely be works required may not be proportionate to the hazard, espec Retreat will remove all risk to private properties.
5	Enhance - Enhance existing inundation protection, dune and/or wetland resilience, and community education and emergency management	Protect - Additional Hard Protection (e.g. stopbanks, culverts and pump stations)	Retreat	4	 Short term response is proportionate to the scale of the risk Protection through additional hard protection in the medium Could be some exacerbation of risks in other areas as water of areas with additional structures, however likely to use best prain Retreat will remove all risk to private properties.

Paraparaumu Unit 8B

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