

Northern Adaptation Area Risk Assessment Matrices

The following presents two risk matrices prepared for the Northern Adaptation Area Risk Assessment. These matrices have been circulated with an explanatory slide-pack for the Takutai Kapiti CAP workshop on 29th March 2023. The two risk matrices explore the risks to four domains (built environment, human, natural character and ecological) across coastal flooding and coastal erosion hazards. The risks to the cultural domain are still being determined, and will be added to the risk matrices when completed.

Exposure

The presence of people, livelihoods, species or ecosystems, environmental functions, services, and resources, infrastructure, or economic, social, or cultural assets in places and settings that could be adversely affected by a climate hazard. E.g. Do they intersect with the hazards layer.

Exposure Rankings:

Extreme	High	Moderate	Low
---------	------	----------	-----

Sensitivity

Sensitivity refers to the degree to which an element at risk is affected, either adversely or beneficially, by climate variability or change. Sensitivity relates to how the element will fare when exposed to a hazard, which is a function of its properties or characteristics.

Sensitivity Rankings:

Extreme	High	Moderate	Low
---------	------	----------	-----

Adaptive Capacity

Adaptive capacity refers to the ability of systems, institutions, humans, and other organisms to adjust to potential damage, to take advantage of opportunities, or to respond to consequences (IPCC, 2014a). It relates to how easily/efficiently an element at-risk can adapt naturally.

Adaptive Capacity rankings

Very low	Low	Moderate	High
----------	-----	----------	------

Vulnerability

Vulnerability refers to the propensity or predisposition to be adversely affected by a climate hazard. Vulnerability encompasses a variety of concepts, including **sensitivity** to harm, and **lack of capacity to naturally adapt (or adaptive capacity)** (e.g without intervention).

Vulnerability rankings:

Extreme	High	Moderate	Low
---------	------	----------	-----

Risk

The overall risk ranking is based on the equation of Exposure x Vulnerability = Risk

Risk rankings:

Extreme	High	Moderate	Low
---------	------	----------	-----

Draft Northern Adaptation Area Risk Assessment Matrix

Element	Coastal Flood Hazard																																					
	SSP2-4.5												SSP5-8.5																									
	Exposure				Sensitivity				Adaptive Capacity	Vulnerability				Risk				Exposure				Sensitivity				Adaptive Capacity	Vulnerability				Risk							
	Present	2050	2070	2130	Present	2050	2070	2130		Present	2050	2070	2130	Present	2050	2070	2130	Present	2050	2070	2130	Present	2050	2070	2130		Present	2050	2070	2130	Present	2050	2070	2130				
Built Environment																																						
Properties - Whole Adaptation Area	L	L	M	M	M	M	H	H	L	M	M	H	H	L	L	M	M	L	L	M	H	M	M	H	E	L	M	M	H	E	L	L	M	E				
Properties - Ōtaki Beach	L	L	L	M	M	M	H	E	L	M	M	H	E	L	L	L	H	L	L	M	H	M	M	H	E	L	M	M	H	E	L	L	M	E				
Properties - Te Horo Beach	L	L	M	M	L	M	M	H	L	L	M	M	H	L	L	M	M	L	L	M	H	L	M	M	H	L	L	M	M	H	L	L	M	M				
Properties - Peka Peka	L	M	M	H	L	L	L	M	L	L	L	L	M	L	L	L	M	L	M	M	H	L	L	L	M	L	L	L	L	M	L	L	L	M				
Water Supply Infrastructure	L	L	L	L	L	L	L	L	M	L	L	L	L	L	L	L	L	L	L	L	L	M	L	L	L	L	L	L	L	L	L	L	L	L				
Wastewater Infrastructure	M	M	M	M	L	L	L	L	M	L	L	L	L	L	L	L	L	M	L	L	L	L	M	L	L	L	L	L	L	L	L	L	L	L	H			
Stormwater Infrastructure	L	L	L	H	L	L	L	M	M	L	L	L	M	L	L	L	M	L	L	L	H	M	L	L	L	H	L	L	L	H	L	L	L	H				
Roads and Bridges	L	L	L	H	L	M	M	H	L	L	M	M	H	L	L	L	H	L	L	L	H	L	L	M	M	E	L	L	M	M	E	L	L	L	E			
Electrical Transmission and supply infrastructure	L	L	L	L	L	L	M	H	M	L	L	M	M	L	L	L	L	L	L	L	M	M	L	L	H	H	M	L	L	M	M	L	L	L	M			
Natural gas supply mains	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	M	L	L	L	M	L	L	L	M	L	L	L	M					
Ecological																																						
Dunes	L	M	M	H	L	L	M	M	M	L	L	M	M	L	L	M	M	L	M	H	E	L	L	M	M	M	L	L	M	M	L	L	M	H				
Ecological Sites	M	M	H	H	M	M	H	H	M	M	M	M	M	M	M	M	M	M	M	H	E	L	M	M	H	E	L	M	M	H	E	M	M	H	E			
Wetlands	M	M	H	H	L	M	M	M	M	L	M	M	M	L	M	M	M	L	M	H	E	M	L	M	M	H	M	L	M	M	M	L	M	M	H			
Significant Bird Habitat	H	H	E	E	M	M	H	H	M	M	M	M	M	M	M	H	H	M	M	H	E	M	M	M	H	H	M	M	M	M	M	M	M	H	H			
Key Indigenous Trees	L	L	L	L	L	L	L	L	H	L	L	L	L	L	L	L	L	L	L	L	M	L	L	L	L	H	L	L	L	L	L	L	L	L				
Human																																						
Displacement	L	L	L	M	L	L	M	H	M	L	L	M	M	L	L	L	M	L	L	M	H	L	M	H	E	M	L	M	M	H	L	L	M	H				
Inequities	M	M	H	H	M	M	H	H	L	M	M	H	H	M	M	H	H	M	M	H	E	L	M	M	H	E	L	M	M	H	E	M	M	H	E			
Health	M	M	H	E	L	M	H	E	L	L	M	H	E	L	M	H	E	L	M	H	E	M	M	H	E	M	H	H	E	L	M	H	H	E	M	M	H	E
Daily Routines	L	M	M	H	L	L	M	H	M	L	L	M	M	L	L	M	M	L	M	M	H	L	L	L	H	H	M	L	L	M	M	L	L	M	M			
Natural Character																																						
CTA1: Ōtaki (Coastal Terrestrial Area)	M	M	M	H	M	M	H	H	M	M	M	M	M	M	M	M	M	M	M	M	H	M	M	H	H	M	M	M	M	M	M	M	M	M				
Otaki Dunes (High Natural Character)	M	M	M	H	M	M	M	H	M	M	M	M	M	M	M	M	M	M	M	M	H	M	M	H	H	M	M	M	M	M	M	M	M	M				
Te Horo Dunes (High Natural Character)	M	M	M	M	M	M	M	M	H	L	L	L	L	L	L	L	L	M	M	M	M	M	M	M	M	H	L	L	L	L	L	L	L	L				
Part of CTA2: Waikanae and Paraparaumu (Coastal Terrestrial Area)	M	M	M	H	M	M	H	H	M	M	M	M	M	M	M	M	M	M	M	M	H	L	M	M	H	H	L	M	M	H	H	M	M	M	H			
Peka Peka Dunes (High Natural Character)	M	M	M	H	M	M	H	H	M	M	M	M	M	M	M	M	M	M	M	M	H	M	M	H	H	M	M	M	M	M	M	M	M	M				

Draft Northern Adaptation Area Risk Assessment Matrix

Element	Coastal Erosion Hazards																																		
	SSP2-4.5														SSP5-8.5																				
	Exposure				Sensitivity				Adaptive Capacity	Vulnerability				Risk				Exposure				Sensitivity				Adaptive Capacity	Vulnerability				Risk				
	Present	2050	2070	2130	Present	2050	2070	2130		Present	2050	2070	2130	Present	2050	2070	2130	Present	2050	2070	2130	Present	2050	2070	2130		Present	2050	2070	2130	Present	2050	2070	2130	
Built Environment																																			
Properties - Whole Adaptation Area	L	L	L	L	L	M	M	M	L	L	M	M	M	L	L	L	L	L	L	L	L	L	M	M	H	L	L	M	M	H	L	L	L	L	
Properties - Ōtaki Beach	L	L	L	L	L	E	E	E	L	L	E	E	E	L	M	M	M	L	L	L	M	L	E	E	E	L	L	E	E	E	L	M	M	H	
Properties - Te Horo Beach	L	L	L	L	L	E	E	E	L	L	E	E	E	L	M	M	M	L	L	L	M	L	E	E	E	L	L	E	E	E	L	M	M	H	
Properties - Peka Peka	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	M	L	L	L	M	L	L	L	M		
Water Supply Infrastructure	L	L	L	L	L	E	E	E	L	L	E	E	E	L	M	M	M	L	L	L	M	L	E	E	E	L	L	E	E	E	L	M	M	H	
Wastewater Infrastructure	L	L	L	L	L	E	E	E	L	L	E	E	E	L	M	M	M	L	L	L	M	L	E	E	E	L	L	E	E	E	L	M	M	H	
Stormwater Infrastructure	L	L	M	M	L	M	H	H	L	L	M	H	H	L	L	M	M	L	L	M	H	L	M	H	H	L	L	M	H	H	L	L	M	H	
Roads and Bridges	L	L	L	L	L	M	M	H	L	L	M	M	H	L	L	L	L	L	L	L	L	L	M	M	E	L	L	M	E	L	L	L	H		
Electrical Transmission and supply infrastructure	L	L	L	L	L	L	L	E	L	L	L	L	E	L	L	L	M	L	L	L	M	L	L	L	E	L	L	L	E	L	L	L	H		
Natural gas supply mains	Not exposed																	Not exposed																	
Ecological																																			
Dunes	L	L	M	M	L	L	L	M	H	L	L	L	L	L	L	L	L	L	L	M	H	L	L	H	E	M	L	L	M	H	L	L	M	H	
Ecological Sites	L	L	L	L	M	M	M	M	H	L	L	L	L	L	L	L	L	L	L	M	H	M	M	H	E	M	M	M	M	H	L	L	M	H	
Wetlands	L	L	L	L	L	L	L	L	H	L	L	L	L	L	L	L	L	L	L	L	L	M	L	L	L	L	L	L	L	L	L	L	L	L	
Significant Bird Habitat	L	L	L	L	L	L	L	L	M	L	L	L	L	L	L	L	L	L	L	L	L	M	L	L	L	L	L	L	L	L	L	L	L	L	
Key Indigenous Trees	L	L	L	L	L	L	L	L	H	L	L	L	L	L	L	L	L	L	L	L	L	H	L	L	L	L	L	L	L	L	L	L	L	L	
Human																																			
Displacement	L	L	L	L	L	L	L	M	M	L	L	L	M	L	L	L	L	L	L	M	M	M	L	L	M	M	M	L	L	M	M	L	L	L	M
Inequities	L	L	L	M	L	M	M	M	M	L	M	M	M	L	L	L	M	L	L	M	M	M	L	M	M	M	M	L	M	M	M	L	L	M	M
Health	L	L	M	M	L	M	H	H	M	L	M	M	M	L	L	M	M	L	L	M	H	E	M	L	M	M	H	L	L	M	M	L	L	M	M
Daily Routines	L	L	L	L	L	L	L	M	M	L	L	L	M	L	L	L	L	L	L	M	M	M	L	L	M	M	M	L	L	M	M	L	L	M	M
Natural Character																																			
CTA1: Ōtaki (Coastal Terrestrial Area)	M	M	M	H	M	M	H	H	H	L	L	L	L	L	L	L	M	M	M	M	H	M	M	H	H	M	M	M	M	M	M	M	M	M	
Otaki Dunes (High Natural Character)	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	H	M	M	M	H	M	M	M	M	M	M	M	M	M	
Te Horo Dunes (High Natural Character)	M	M	M	M	M	M	M	M	H	L	L	L	L	L	L	L	L	M	M	M	H	M	M	M	M	H	L	L	L	L	L	L	L	M	
Part of CTA2: Waikanae and Paraparaumu (Coastal Terrestrial Area)	M	M	M	H	M	M	M	H	M	M	M	M	M	M	M	M	M	M	M	M	H	L	M	M	H	H	L	M	M	H	H	M	M	M	H
Peka Peka Dunes (High Natural Character)	M	M	M	H	M	M	M	H	M	M	M	M	M	M	M	M	M	M	M	M	H	L	M	M	H	H	L	M	M	H	H	M	M	M	H