Ngā mahere whakaurutau mō te takutai

Shoreline Adaptation Plan

Waiheke and the inner Gulf Islands

Volume 3: Adaptation Strategies

2025

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Volume 3: Adaptation Strategies

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Auckland Council

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Front Cover

Shoreline Adaptations Plan Unit map for Waiheke Island and inner gulf islands. Prepared for Auckland Council by Florence Canal 2025.

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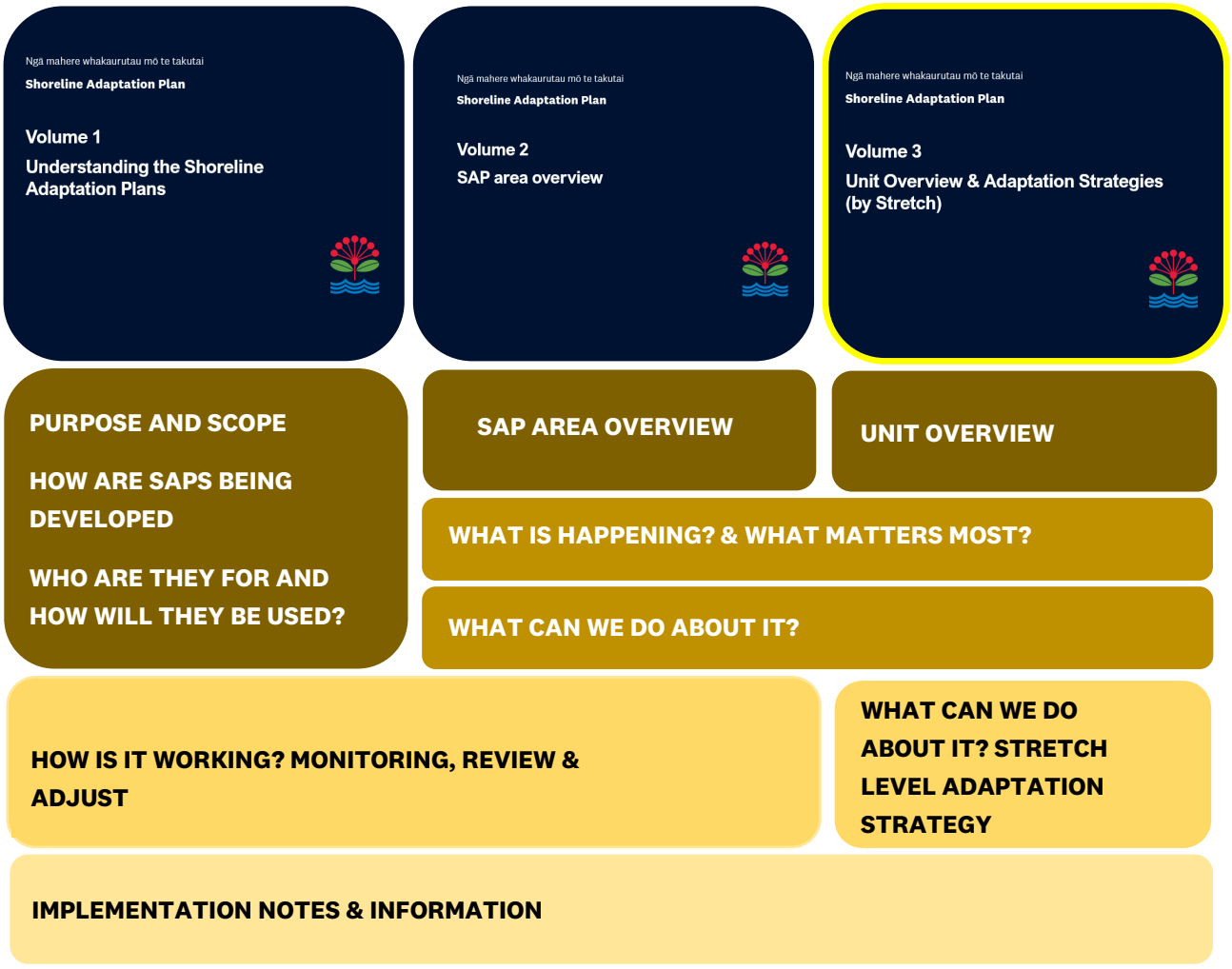
Quick Reference

The Shoreline Adaptation Plan (SAP) programme is presented across three volumes of reporting:

- **Volume 1:** Understanding the Shoreline Adaptation Plans - programme and regional scale context
- **Volume 2:** Shoreline Adaptation Plan area specific overview – subregional scale (across 20 SAP areas)
- **Volume 3:** Unit (and stretch) context and adaptation strategies set for each section of Auckland's 3,200 km of coastline.



Glossary

Key terminology and infographics commonly used within this volume and all of the shoreline adaptation plan documents are outlined below.

Term	Definition
Adaptive planning	• Adaptive planning encompasses the hazard assessments, the values and objectives and the vulnerability and risk assessments that feed into the dynamic adaptive pathways planning approach, and the measures to implement them through the Resource Management Act 1991, Long-Term Plans, asset plans and other Auckland Council plans, along with the monitoring framework for review and adjustment (Ministry for the Environment, 2024).
Annual Exceedance Probability (AEP)	• The probability of an event occurring in any given year. For example, the 1% AEP has a 1% chance of being met or exceeded in any given year.
Biodiversity Focus Area (BFA)	• Prioritised areas of ecological significance that guide a delivery of conservation activity and were identified as they protect a representative range of all indigenous species and ecosystems within the region.
Catchment flooding	• Flooding which occurs when the amount of rainfall exceeds the capacity of an urban stormwater network or the ground to absorb it.
Climate hazard	• The potential occurrence of climate-related physical events or trends that may cause damage and/or loss.
Coastal erosion	• The removal of the material forming the land due to natural processes, resulting in the coastline moving inland over time.
Coastal inundation	• The flooding of low-lying coastal land that is normally dry, due to elevated sea levels.
Council-controlled organisation (CCO)	• Organisations in which Auckland Council has the responsibility to appoint at least 50% of the board of directors or trustees. Auckland Council has four substantive CCOs: Auckland Transport, Tātaki Auckland Unlimited, Eke Panuku Development Auckland, and Watercare.
Council	• Auckland Council
Cultural Heritage Inventory (CHI)	• An Auckland Council database which contains records for archaeological sites, historic buildings, historic botanical sites, shipwrecks, and other places of heritage interest in the Auckland region.
Dynamic Adaptive Pathways Planning (DAPP)	• A decision-making approach to analyse the flexibility of options and pathways under conditions of uncertainty using scenarios for stress testing options and monitoring of signals and triggers for anticipatory planning (MfE).
Exposure	• The nature and degree to which a system is exposed to significant climate variations.
Hazardscape	• The net result of natural and man-made hazards and the risks they pose to an area.
Indigenous biodiversity	• A living organism that occurs naturally in Aotearoa, and the ecological complexes of which they are part of – this includes all forms of indigenous flora, fauna, fungi, and their associated habitats.

Term	Definition
Nature-based solution	• A collection of approaches to address societal issues, including climate change, through the protection, management, and restoration of ecosystems.
SAP	• Shoreline Adaptation Plan
SAP area	• An identified area for the purposes of the SAP development of Shoreline Adaptation Plans. There are 20 SAPs for the Auckland region.
SAP stretch	• Each SAP unit is typically broken down into smaller stretches considering coastal processes, Auckland Council-owned land and asset location, pubic-land boundaries, and infrastructure considerations.
SAP unit	• The SAP area is divided into smaller SAP units to enable a more detailed and comparative view of how risk is attributed across the subject area.
Sea-level rise	• The increase in the level of the ocean, caused by the melting of glaciers and ice sheets and thermal expansion of water as it warms.
Significant Ecological Area	• Significant Ecological Areas (SEAs) have been identified by the Auckland Unitary Plan (AUP: OP) for terrestrial areas, and parts of the coastal marine area. **Marine Significant Ecological Area (SEA-M):** • Identified areas of important indigenous vegetation or habitats of indigenous fauna located in the coastal marine area, and are afforded protection under the AUP:OP. **Terrestrial Significant Ecological Area (SEA-T):** • Identified areas of important indigenous vegetation or habitats of indigenous fauna located on land or in freshwater environments and are afforded protection from the adverse effects of subdivision, use and development.
Site and place of significance to Mana Whenua	• Sites and Places of Significance to Mana Whenua applies to sites and places in the Tāmaki Makaurau/ Auckland region that are protected for their significance to mana whenua. It acknowledges that sites and places have tangible and intangible cultural values in association with historic events, occupation, and cultural activities.
Statutory Acknowledgement Areas (SAA)	• A statutory acknowledgement is an acknowledgement by the Crown that recognises the mana of a tangata whenua group in relation to specified areas - particularly the cultural, spiritual, historical, and traditional associations with an area.
Social Infrastructure	• Facilities and assets that support social activities, interactions, and wellbeing within a community.

Shoreline Adaptation Plan Areas

Tāmaki Makaurau, Auckland, is a coastal city, bounded to the east and west by the South Pacific Ocean and the Tasman Sea. The region has around 3,200 km of dynamic coastline and encompasses three major harbours: the Kaipara, Manukau and Waitemata. Due to its location, much of the city's urban development and supporting infrastructure is concentrated in coastal areas and exposed to coastal processes such as erosion and inundation. These natural processes are considered hazards

when they impact on things or locations of value. Climate change related to greenhouse gas emissions is contributing to rising sea levels, which have a range of impacts including increasing the frequency and magnitude of coastal hazard events. Auckland Council began developing a series of Shoreline Adaptation Plans (SAPs) in 2021. These area-based plans form the first step for the SAP programme in achieving a resilient future for Auckland's coasts. A more detailed discussion on the Shoreline Adaptation Plan Program can be found in Volume 1: Understanding Shoreline Adaptation Plans. Twenty separate SAPs make up Auckland's ~3200 km of coast as follows:

- Aotea Great Barrier and the Hauraki Gulf Islands
- Āwhitu
- Beachlands and East
- Central Auckland
- Highbrook to Whitford
- Kaipara Harbour Moana
- Manukau Harbour East
- Manukau Harbour North
- Manukau Harbour South
- Ōrākei to Tahuna Torea
- Pahurehure Inlet
- Pākiri to Matheson Bay
- Snells Beach to Ōrewa
- Tāmaki Estuary
- Ti Point to Sandspit
- Waiheke Island
- Waimanawa Little Shoal Bay mini SAP
- Waitematā Harbour West
- Weiti Estuary to Devonport Peninsula
- Whangaparāoa
- Whatipu to South Head

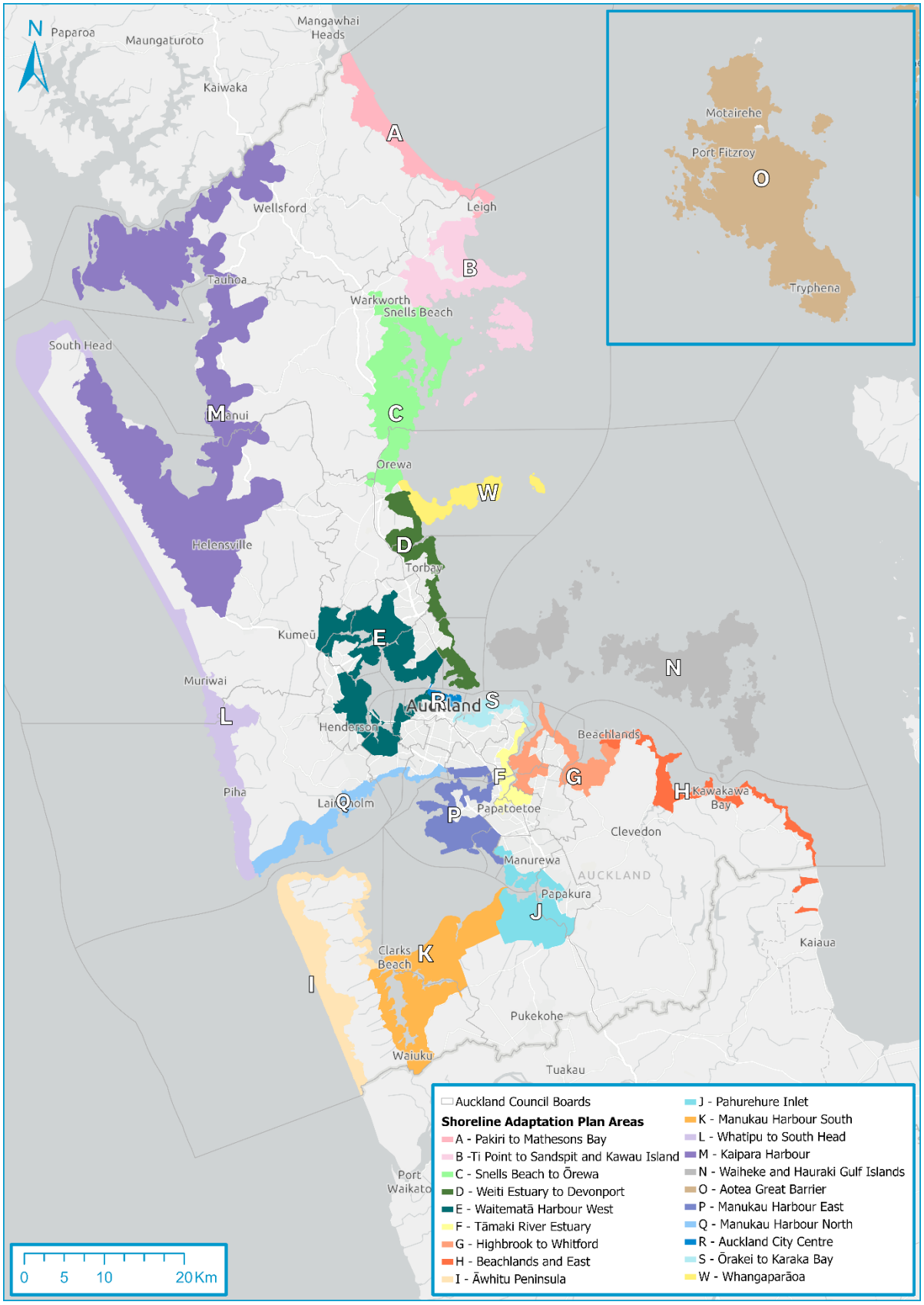
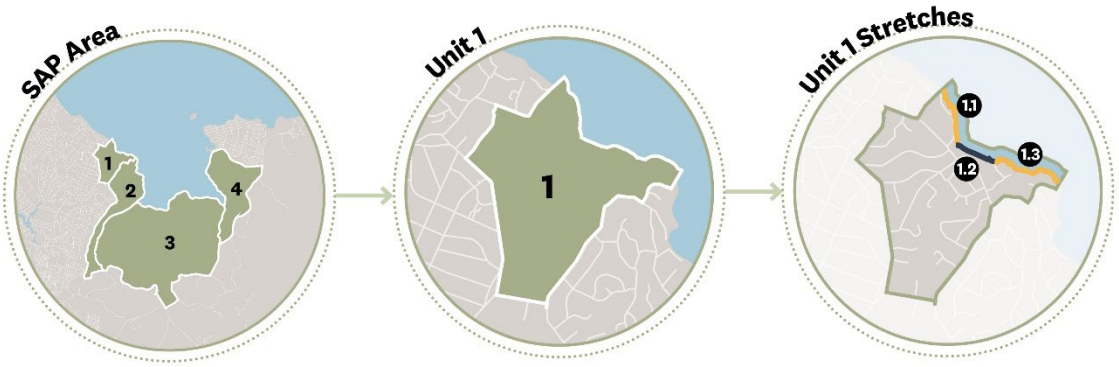


Figure 1: Shoreline Adaptation Plans (regional)

SAP areas, units & stretches

Within each SAP area, the coastline has been broken up into coastal stretches based on coastal processes, Auckland Council-owned land and asset location, public land boundaries, and infrastructure considerations. Coastal stretches have been grouped into broader coastal unit areas. It is important to note here that coastal units and stretches do not strictly reflect the historical cultural boundaries which often extend over multiple units or coastal stretches. The figure below outlines the delineation of scale between each SAP area, its sub-units and stretches:



Climate change scenarios (timeframes for change)

For the SAPs, the following scenarios are used to evaluate how exposure to coastal inundation, erosion and instability and sea-level rise may impact coastal land and assets.

Table 1: Shoreline Adaptation Plan climate change scenarios

	Sea-level Rise	Coastal Inundation	Coastal Erosion	Catchment flooding
Low climate change	• Present day (relative) sea level • Up to 0.5 m	• 1% AEP storm surge event	• Erosion & instability susceptibility line '2050' • (RCP 4.5) • includes consideration of 0.28 m of sea-level rise)	1% AEP rainfall event + climate change projections for rainfall
Moderate climate change	• 0.5 m • Up to 1 m	• 1% AEP storm surge event plus 0.5 m of sea-level rise	• Erosion & instability susceptibility line '2080 RCP 4.5 and 8.5' • Includes consideration of 0.55 m of sea-level rise	
High climate change	• 1.0 m • Up to 2 m	1% AEP storm surge event plus 1.0 m, 1.5 and 2 m of sea-level rise	• ASCIE 2130 (RCP8.5 and 8.5H+) • Includes consideration of 1.18 m and up to 1.52 m of sea-level rise	

Auckland Council's adaptation strategies

High-level adaptation strategies are developed for each coastal stretch under a low, moderate and high climate change scenario (inclusive of sea-level rise projections), with an indication of how these choices reflect the escalating risk, considerations of infrastructure providers, and the values and objectives of local iwi and the local community. Importantly, strategies outlined within each unit and subsequent coastal stretch apply only to the area of Auckland Council-owned land and assets along the coastal margin. These recommended strategies do not apply to offshore activities (such as marine farms) or private property. Each high-level strategy provides flexibility for how it is applied to different assets. The value of the strategic approach is to ensure general continuity across asset management, acknowledging hazard risks and impacts of management of one asset class may impact on or have implications for others. Coastal adaptation strategies applied to each coastal stretch are described in further detail below:

No Action

- There are limited risks identified to Auckland Council land and assets as a result of coastal hazards and climate change.
- Natural coastal processes may be complementary to the natural coastal environment or its values.

Maintain

- Better decision-making today for Auckland Council land and assets.
- Actions manage risk, build resilience and support best practice coastal management outcomes.

Protect

- Uses and assets are maintained in their current location.
- Protection measures (mitigations) are required to manage risk, and nature-based solutions and hard protection may be utilised.

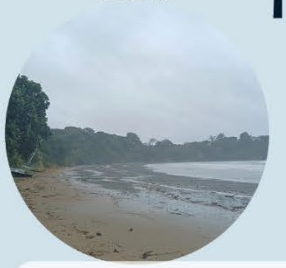
Adaptation Priority Area

- Auckland Council land and assets are exposed to hazard risk including the impacts of climate change.
- The value and importance of assets, complexity of the hazard scape and social, cultural or ecological values are present which requires further adaptation planning to determine a management response.

Unit 1
Waiheke Island

N

Oneroa



Highly valued coastal walk way network Te Ara Hura

Mokemoke Pā - an ancient fortified pā site, is a powerful and important remnant of Ngāti Paoa's cultural association to Maitiatia (Matietie) and the wider surrounding area

W Bay/Fossil Bay

Island Bay

Most visited beach - identified through community feedback

Significant flooding at Matiatia resulting in damage to assets and cultural sites

Owhanake Bay

Korora Rd

Community concern for future adaptation; access to the beach, private properties and amenity of the beach

Key transport hub for Waiheke Island and boat harbour access

Delamore Dr

Oneroa Beach highly valued by locals & visitors

Matiatia Bay Beach

Ocean View Rd

Important water access for range of water craft

Wetland areas, important bird roosting and breeding areas

Oneroa Village

There are a number of archaeological discoveries along the Matiatia (Matietie) Historic Reserve that have been registered and recorded including pits, middens, terraces, pā sites & other artefact. This area is rich in culture and has historical significance for Ngāti Paoa

Te Huruhi Bay Reserve

Blackpool Park

Tūrst

Goodwin Ave

Water access at full tide

Surfdale

Te Uri Karaka Reserve

The Esplanade - alternative transport connection east/west

Huruhi Bay

Waiheke Schools Ministry of Education

Esslin Road

Highly valued walking connections damaged by natural hazard events, community wants to see reinstated

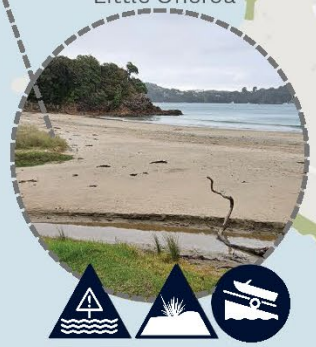
Blackpool Beach

Park Point

Te Wharau Bay

Surfdale Beach

Little Oneroa



Matarahui Bay

The Esplanade and local road network

Surfdale Hall and Reserve

Te Huruhi Bay Reserve

Community observed erosion and concern for loss of access to the coast and amenity of the beach

Piritahi Marae, Taurahere Marae (a living community marae)

Waiheke Island Pony Club

Seagrass beds & bird

Beach & play space

Key access to north eastern areas

Highly valued by the community including walking connections to the marae, Church Bay and Surfdale

Significant community concern identified a need for adaptation to respond to inundation & erosion impacts. Interest in nature based resilience measures & stormwater management

Te Ara Hura Trail

Unit boundary

1.1 1.2 Stretch

Informal recreation park

Mooring management area

Auckland Council owned land

0 1km 2km

Unit 1: Waiheke West (Te Huruhi Bay Oneroa Bay)

Unit 1 covers the western end of Waiheke Island including Huruhi Bay, Te Wharau Bay, Matarahui Bay, Cable Bay, Church Bay, Te Miro Bay, Matiatia Bay, Owhanake Bay, and Oneroa Bay (with Oneroa Beach and Little Oneroa Beach). This includes a key transport link at Matiatia (the Fullers Ferry Terminal), the village of Oneroa (one of the only urbanised communities on Waiheke Island), and the coastal suburbs of Church Bay, Blackpool and Surfdale. The area is a popular place for visitors to stay being the gateway to the rest of Waiheke Island. The unit culminates on the northern coast at the eastern end of Little Oneroa Beach and on the southern coastline at the point adjacent to the end of Esslin Road.

What is happening? Coastal context and hazardscape

The Unit 1 coastline ranges in terms of its wave climate exposure. The north to northeast-facing coastline that includes coastal cliffs and Oneroa Beach is higher energy, being periodically exposed to longer period swell events as well as shorter period, locally generated storm waves. The western to southern-facing coastline that includes coastal cliffs and pocket beaches, is sheltered from longer period swell events but still exposed to low shorter period waves generated across restricted fetch distances.

Coastal inundation

Coastal inundation flooding is predicted to impact low-lying embayments such as Huruhi Bay, Matenga Point, Church Bay, Matiatia Bay, Owhanake Bay, and Oneroa Bay. Coastal inundation impacts in relation to Council land and assets can be identified as follows:

Huruhi Bay

- At Huruhi Bay, fringes of the shoreline and Blackpool Cemetery are exposed to coastal inundation within present day 1% AEP conditions. Low-lying infrastructure is also exposed to wave overtopping during coastal storm events.
- Coastal inundation extents increase in the high change scenario impacting Surfdale Hall Reserve and foreshore and Blackpool.

Matenga Point (western coastline)

- Around Matenga Point, the coastal edge of Park Point Walkway is predicted to be impacted by coastal inundation in the high change scenario.
- Under the moderate climate change scenario, on the northwestern coastline of Waiheke Island, coastal inundation is predicted to impact Church Bay Esplanade, Waiheke Island Reserve at Matiatia (and associated land uses) and Owhanake Reserve in the moderate change scenario. This extent increases landward with ongoing climate change.

North coast (Oneroa and Little Oneroa)

- Inundation at Oneroa and at little Oneroa in a 1% AEP event is generally contained within coastal areas, with some incursion into the stream mouth area at Little Oneroa. With 0.5 to 1m of sea level rise inundation is identified as impacting greater areas of coastal reserve including the narrow beach reserve at Oneroa bay and the grassed reserve with play facilities at Little Oneroa.
- Roading connections such as Ocean View Road (at Matiatia) and Kororoa Road are identified as impacted in the high change scenario.

Coastal storm event at Oneroa Bay (areas located toward the eastern end of Oneroa Main beach) 'Huge waves battered Oneroa Beach during the storm. Oscar Leo Bezzant / Waiheke-Marketplace" accessed from Stuff 2018.

Extent of inundation at Surfdale Beach with sea-level rise, showing coastal storm inundation with 1 m and 2 m of sea-level rise.

Surfdale Beach: Extent of coastal inundation under moderate and high scenarios

Extent of inundation Blackpool in a 1% AEP coastal storm event at Blackpool Beach including 1 m and 2 m of sea-level rise.

Blackpool Beach: Extent of coastal inundation under moderate and high scenarios.

Coastal erosion and instability

Oneroa Beach is dynamic in response to coastal process. During large storm events, erosion of the beach can occur. With no seawalls or dune buffer present, erosion of the reserve edge can also occur when such events combine with elevated water levels.

While only exposed to shorter period depth and fetch-restricted wave energies, during strong winds from the southwest and elevated water levels, overtopping of the seawalls and reserve edge occurs at Blackpool and Surfdale beaches resulting in scour.

Coastal management along this unit include seawalls along The Esplanade at Blackpool, around Matiatia ferry terminal, and Surfdale Hall Reserve and foreshore, including rock masonry and rock revetment structures. Much of this coastline, however, is not armoured with coastal protection structures.

Armouring around Matiatia ferry terminal.

Rock revetment armouring at Surfdale Beach.

Catchment flooding

Catchment flooding for this unit area can be seen in the figure below. The 1% flood plain is identified for catchments within Surfdale and Blackpool areas and the Matiatia Bay area. Catchment improvement works included increasing capacity of open channels along Tui Street, Nikau Road and Moa Avenue where documented concerns regarding flooding have previously been raised.

Low-lying areas including Tui Street, Moa Ave and Mako Street have a contributing upper catchment and rely on existing piped assets and overland flows to discharge water to the coast. Flooding is exacerbated when storms coincide with high tides due to the flat topography.

At Matiatia occasional flooding of the carpark has been documented, with issues identified involving blockages of outfalls to the coast. In storm events more widespread flooding of roading/ wharf access areas has been experienced, as identified in the photo below.

Catchment flooding at Matiatia during storm events. (Source: photo provided through community engagement)

Tui Street outfall: A stormwater outlet that discharges onto Blackpool Beach, adjacent Tui Street, occasionally becomes blocked or restricted by beach sediment. This can create a potential flooding issue for residential properties. As an operational response, the Healthy Waters Unit assesses the requirement for channel opening or realignment works as required.

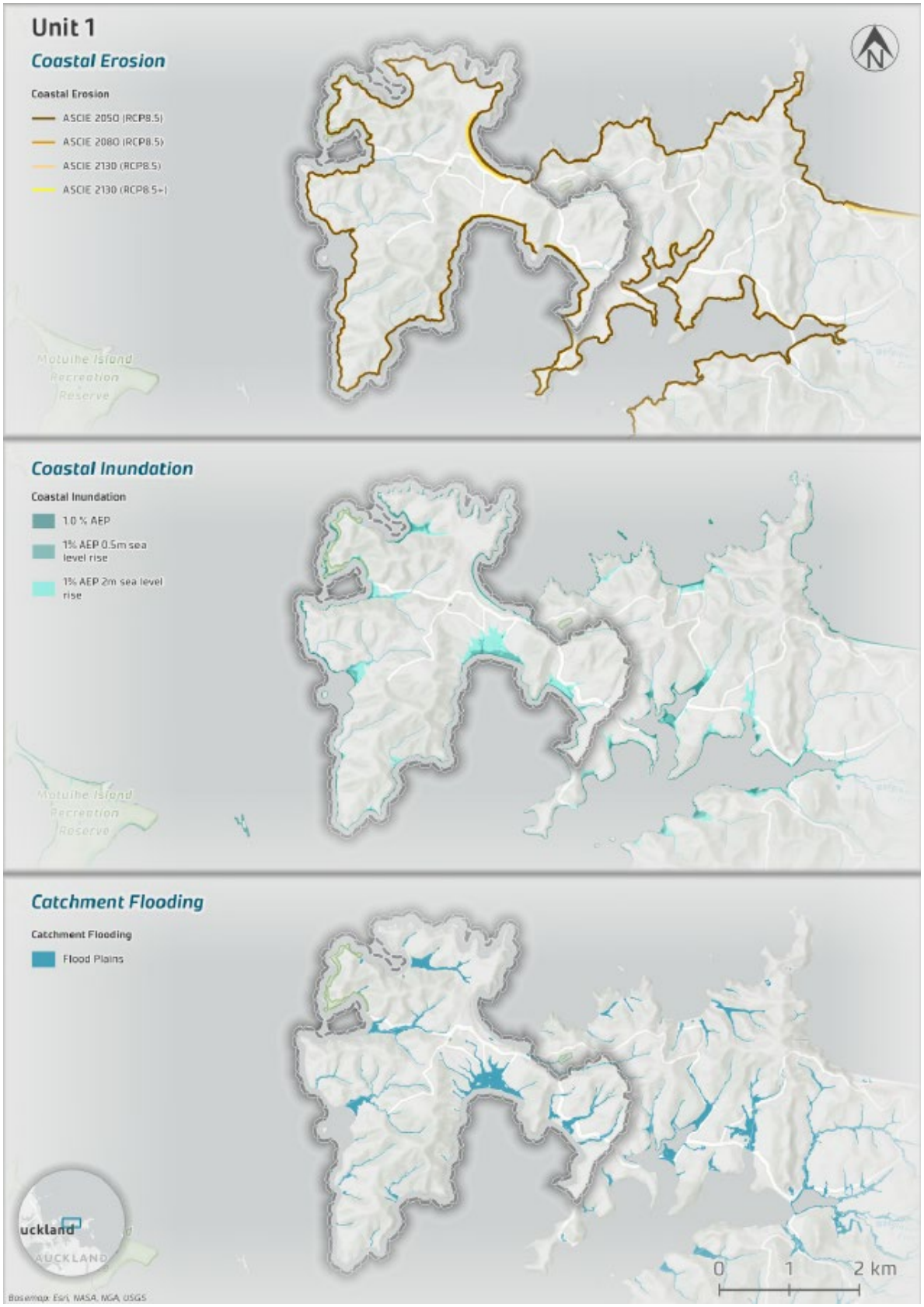


Figure 2: Coastal hazardscape for the Waiheke West (Te Huruhi Bay Oneroa Bay) unit reflecting coastal erosion susceptibility for 2050, 2080 and 2130 considering RCP4.5 and RCP8.5 emission scenarios, coastal inundation for 1%AEP storm surge for present day and with 0.5 m, 1 m and 2 m sea-level rise and the identification of flood plains.

Risk assessment

The risk table represents key groups of assets (e.g. Auckland Council-owned land, buildings, road extents) which are supported by the regionally consistent data set. The risk assessment provides a regionally consistent method for comparing risk to Auckland Council-owned land and assets allowing for identification of areas with highest risk for potential future assessment (e.g. Volume 2).

The table below summarises the risk levels for Auckland Council asset types in the short, medium, and long-term and which map to the use of the low, moderate and high climate scenarios.

Council-owned land			Council Community facilities			Transport infrastructure			Water infrastructure		
Park and reserve land (102.6 ha)			Park amenity structures, carparks (0.7 ha) Buildings, wharves (39 No.)			AT roads (39.6 km) Bridges (48.9 m^2)			Water pipes (8.4 km)		
Short	Medium	Long	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Coastal erosion and susceptibility											
High	High	Very High	High	High	High	High	High	High	High	High	Very High
Coastal inundation											
Moderate	High	High	High	High	Very High	Very High	Very High	Very High	Moderate	High	Very High
Key											
Very Low		Low		Moderate		High		Very High			

What matters most

Auckland Council land and assets: This section identifies key Auckland Council-owned land and assets within this unit that may be impacted by coastal hazards (inclusive of catchment flooding) over changing climate scenarios.

- Auckland Council assets and reserves in proximity to the coast are spread around the coastline.
- **Notable reserves include but not limited to:** Blackpool Cemetery Reserve, Blackpool Park, Surfdale Hall Reserve & Foreshore, Waiheke Island Reserve, Oneroa Beach Reserve, Owhanake Recreation Reserve, Little Oneroa Reserve, Mitchell Reserve, Newton Reserve and Te Huruhi Bay Reserve.

- **Park amenities and facilities:** Toilet blocks, playground and basketball courts on Council reserves, Piritahi Marae, Citizens Advice Bureau, Blackpool School Community Hall, Ocean View Road Harbourmasters, Waiheke Library, Waiheke Island Artworks, Surfdale Community Hall.

- **Wastewater:** Oneroa Waiheke wastewater treatment facility and associated piped network.
- **Stormwater:** Stormwater network located in numerous areas of this unit, including coastal outfalls.

- **Key road networks:** Ocean View Road, Korora Road, Goodwin Avenue, The Esplanade, Beach Parade and local road network around Blackpool and Surfdale areas.
- **Key walking tracks:** Te Ara Hura Trail, Fishermans Rock Path, Matiatia Headland Path, Matiatia Owhanake Pathways, Park Point Walkway, Three Beaches Path.

- **Harbour access:** Waiheke Matiatia Ferry Terminal.
- **Boat ramp:** All-tide boat ramp at Matiatia.
- Matiatia small boat access north of the main wharf area, Surfdale Beach, Moa Avenue, Little Oneroa Beach (Goodwin Ave), Kiwi Street, Korora Road Reserve.

Social, cultural and ecological context: This section identifies key social, cultural and ecological matters, identified through the development of the SAP reports, that may be impacted by coastal hazards (inclusive of catchment flooding) over changing climate scenarios.

- Identification of Māori heritage within this unit area includes several sites at Matiatia: Matiatia Bay foreshore and surrounds including Ahipao, and Matiatia, Matiatia Bay foreshore and surrounds, Ocean View Road Waiheke Island, Ahipao, Matietie Historic Reserve, Mokemoke.
- Piritahi Marae is a community marae located on the edge of Te Huruhi Bay within the rohe of Ngāti Paoa and Pare Hauraki. The complex includes a whare whakairo as well as a medical and childcare centres.
- Blackpool cemetery / urupā is located within this unit.
- Note: Specific cultural values and outcomes for this unit will be developed through ongoing engagement with local iwi.

- Settlements and communities in Unit 1 include Surfdale, Blackpool, and Oneroa (one of the primary urbanised areas on Waiheke Island).
- Matiatia Wharf is Auckland's second busiest wharf (Auckland Transport, 2025). It is a key connection point for both visitors and locals, being a critical lifeline for the community.
- Matiatia walkways accommodate the Sculpture on the Gulf exhibition.
- This unit contains one historic heritage site identified as part of the Auckland Unitary Plan; the remains of the Scow Rahiri at Blackpool Beach (Unit 1) Building (UID 1051): Blackpool (Surfdale) School.
- Geological features: sites of geological significance, Island Bay submarine volcanics and Double U Bay fossils (stretch 1.14/1.15)

- Unit 1 is characterised by pockets of regenerating coastal forest, sheltered coves and several freshwater and/or brackish wetlands. Several of these wetland areas are being actively restored by a community-led group (Waiheke Resources Trust, 2024).
- Pōhutukawa-dominated coastal forest can be found upon the cliffs of this unit, with larger areas to the south of the Matiatia Ferry Terminal and to the south of Owhanake Bay.
- Large areas of regenerating native scrub/forest dominated by kānuka and other broadleaf species are scattered across the entire unit.
- Several patches of kauri, podocarp, broadleaved forest – a large area can be found to the northwest of Te Wharau Bay.

- Raupō reedland wetlands are found across the unit – there is a large wetland area adjacent to Oneroa Reserve. A Machaerina sedgeland has been identified near the Owhanake Recreation Reserve.
- A small area of oioi restiad rushland transitions into shore bindweed, knobby clubrush gravelfield/stonefield near the end of Dolphin Lane.
- Many coastal avifauna have been recorded at Matiatia Bay Beach and the ferry terminal, including fluttering shearwater and white-fronted tern (New Zealand Ebird, n.d.).
- Marine mammals, including New Zealand fur seal and subantarctic fur seal, have also been recorded resting near the ferry terminal (iNaturalist, n.d.).
- Motukaha Island is located offshore from Church Bay and is an important breeding site for coastal birds, including white-fronted tern, reef heron, and little penguin.
- There are records of seagrass in the marine areas of Blackpool Beach and Surfdale Beach (Department of Conservation, 2011).

Who have we heard from?

Feedback was received via Social Pinpoint and 'AK Have You Say' survey and through community engagement events.

Key themes in community submissions/responses included but not limited to:

- Concerns of inundation, erosion and storm events along the coastal margin impacting safe use of Council assets and facilities. Specific locations included Blackpool Cemetery pathway.
- Landslides /instability and erosion have also been reported. Locations include the Park Point walkway areas, sections of the Te Ara Hura trail south of Church Bay, walking connections east of Island Bay, Fossil Bay, Oneroa Bay (private landholdings), impacting The Esplanade, Oceanview Road and coastal walking connections between Oneroa Beach and Little Oneroa Bay and northeast of Little Oneroa Bay.
- Advocacy for the protection and preservation of transport assets (primarily roading connections) including critical road links between Matiatia and eastern areas of the island, utilising Oceanview Road and The Esplanade. Also Goodwin Road and low-lying areas of the Blackpool Road network.
- Hazard impacts including landslides (which are not specifically considered in the selection of adaptation strategies) as well as catchment flooding and coastal erosion and instability.
- The need to maintain ongoing public access to and along the coast via walkways and local road connections. Feedback identified sections of the Te Ara Hura walking tracks and road networks including access along coastal areas to the Piritahi Marae complex.
- Concerns with terminology and intent of 'managed retreat' identified in consultation documents, particularly in relation to Oneroa Bay. Note: This terminology has been replaced by 'adaptation priority', which identifies where identified coastal hazard impacts and the presence of land and assets in these areas signals the need for proactive engagement to consider options to manage risk.

What is happening?

- Respondents were primarily concerned about the impacts of coastal erosion, inundation, and storm events. Erosion has been observed in several locations impacting reserve areas and access.
- Use and behaviour (including people driving or parking on coastal edges) was seen as potentially contributing to coastal erosion and instability of coastal areas, particularly for Surfdale foreshore, Blackpool (adjacent to Tui Street) and Oneroa Beach front areas.
- Blocked/unmaintained drains contribute to inundation flooding (including from private homes).
- Concerns regarding the management of stormwater networks and pollution of stormwater catchments draining to the coast, impacting on coastal water quality.

What matters most? Community values and outcomes

- Unit 1 includes a significant area of urban settlement on the island and as a result, respondents enjoy utilising the unit area for walking/running, passive water-based activities and nature watching.
- Piritahi Hauora was identified as 'important lifeline' assets for the community.
- The Little Oneroa intersection (roading connection) was identified as a 'important lifeline' asset for the community.
- The walking tracks at Surfdale were valued.

What can we do about it? Community feedback and aspirations

Some people called for a 'balanced and nature-driven' approach which involves minimal intervention in natural processes. Several recommendations were also captured within feedback, including:

- Removal of coastal carparks and replacement with new vegetation.
- Restoration of natural flow paths.
- Maintenance and extension of existing hard protection structures.
- Focus on pest eradication.
- Increased Council monitoring.
- Identification and setting aside of land for key assets to relocate to in the case of adaptation.

Local Board feedback also identified the need to consider the resilience of road connections between the ferry at Matiatia and the eastern areas of the island. With recent storm impacts limiting access along Oceanview Road. Long-term resilience of this connection was highlighted as a key matter of interest for the board.

What can we do about it? Adaptation strategy summary for Unit 1

1.1: Donald Bruce Road and Huruhi Bay south

This stretch starts adjacent to Esslin Road, ending adjacent to the Mitchell Road / Hooks Lane 'key hole'. It includes Te Huruhi Primary School, Waiheke High School and Waiheke Recreation Centre.

Scenarios for change		
Low	**Moderate**	**High**
No action 	**No action** 	**No action** 
Explanation		
No action is reflective of the limited Auckland Council land and assets present within hazard areas (noting schools are managed by the Ministry of Education).		
Implementation Notes		
• **No action** does not preclude the management of risk to roading infrastructure as required. Management of risk through location and resilient design is preferred to the use of protection structures. • **Community** feedback identified interest in retaining access to coastal esplanade reserves (Kennedy Point Reserve) within the Esslin Road area.		

1.2: Surfdale Beach East (Mitchell Road to Blake Street)

Commencing adjacent to Mitchell Road, including the pathway and stairs to the coast, Stretch 1.2 concludes at the eastern boundaries of Blake Street, and includes the boat ramp at Surfdale Beach. The highly valued coastal access at Blake Street provides access to private landholdings and coastal structures (rock revetment and boat ramp) which support access to the coast.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Maintain** 	**Adaptation priority** 
Explanation		
Maintain supports the maintenance of existing coastal defences in relation to coastal erosion and beach access. Management of inundation risk over time may require localised relocation of some assets and consideration of the design and management of uses within existing landholdings. In the high change scenario, **adaptation priority** indicates that current land uses (including road access) may require more reviews to manage coastal inundation risk and maintain values including the amenity, coastal character, environmental and cultural values of the Surfdale Beach area. Adaptation priority signals the need for engagement when considering the location and design of structures, infrastructure and activities within reserve areas and to promote engagement with third party landowners.		
Implementation Notes		
• **Cultural and historic heritage:** Surfdale foreshore areas have places of cultural and historic heritage significance. Engagement with iwi and review of impacts on historic heritage will be required in implementation. • **Management:** Maintain supports management of risk to roading infrastructure (including road ends). Location and design of assets is preferred to the use of protection structures, noting areas within this stretch are susceptible to erosion/instability and inundation risks.		

1.3: Surfdale Reserve

This stretch commences at Blake Street extending to the west end of Surfdale Hall Reserve and foreshore. It includes Surfdale Beach's community hall and basketball court.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Adaptation priority** 	**Adaptation priority** 
Explanation		
Maintain supports the maintenance of existing coastal defences for coastal erosion and maintenance of coastal access. Management of inundation risk over time may require localised relocation of some assets within existing landholdings and resilient design to respond to catchment flood and inundation hazards. **Adaptation priority** in the moderate and high change scenario, assuming continued sea-level rise, is identified due to increasing coastal hazard risks. Further discussion regarding the appropriate approach to maintain values and manage risk to uses and assets within Surfdale Reserve will be needed.		
Implementation Notes		
• **Cultural and historic heritage:** Surfdale foreshore includes areas which may have cultural and historic heritage significance. Engagement with iwi and consideration of impacts on historic heritage will be required in implementation. • **Management:** The rock revetments and The Esplanade roading connection are exposed to inundation and susceptible to erosion/instability hazards over all timeframes. This strategy supports the maintenance of existing interventions as required for roading connections.		

1.4: Matenga Point (The Esplanade)

This stretch begins at western boundary of Surfdale, continues to the start of Blackpool Beach and follows Esplanade Path, a popular narrow gravel track that runs along the coastline between Surfdale and Blackpool. It is the only connection other than the main road (Ocean View Road) between Surfdale and the eastern side of Waiheke Island.

Access around Esplanade Road has been managed for many years as it provides the only alternative road access between Oneroa and Matiatia and the eastern areas of the island. A historic wharf (demolished/removed in 1963) was located within this coastal stretch; areas of the historic reclamation which served the wharf are used for fishing. This coastal stretch is subject to land instability (noting this is not directly considered through the selection of strategies in this SAP), coastal erosion and inundation. Areas of the coast are subject to historic and more recent, modifications and defence.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Adaptation priority** 	**Adaptation priority** 

Explanation

Maintain in the short-term relates to the maintenance of this important coastal connection which is currently protected (for erosion) at multiple locations. In the moderate to high change scenario, risk from projected coastal erosion, coastal cliff instability and coastal inundation will require further consideration when managing risk to activities and to maintain access in its current form.

Adaptation priority in the moderate and high change scenario, assuming continued sea-level rise, is identified due to increasing coastal hazard risks. This signals the need for further discussion regarding the appropriate approach to maintain values and manage risk to uses and assets within the Matenga Point stretch.

Implementation Notes

- **Management:** The rock revetments and The Esplanade roading connection are exposed to inundation and erosion/instability hazards over all timeframes.
- **Management:** Consideration of future uses and requirements associated with The Esplanade as a roading connection have been subject to prior engagement (undertaken by Auckland Transport). Adaptation strategies do not direct access arrangements, Adaptation priority signals the need for further consideration of how risks from coastal hazards impact the ongoing use of this coastal stretch.

1.5: Blackpool East (Moa Avenue East to The Esplanade)

This stretch commences at the eastern end of The Esplanade roading connection (at the start of the rock armouring), concludes at the western edge of Moa Avenue and includes the eastern stretch of Blackpool Beach. This section of the coast has various forms of armouring including vertical masonry type walls and rock revetment protecting road access. A boat ramp is located at the easternmost extent of this stretch, where a stormwater outfall discharges to the coast.

Scenarios for change		
Low	**Moderate**	**High**
Protect 	**Adaptation priority** 	**Adaptation priority** 

Explanation

Protect in the short-term provides for the maintenance of existing coastal defences (sea walls) particularly those between Moa Avenue and Kiwi Street and the maintenance of landward uses. **Adaptation priority** in the moderate and high change scenario, is identified due to increasing coastal hazard risks, including erosion and inundation risk. Adaptation priority supports proactive engagement to identify signals for future actions to manage risk to land uses and assets and support the ecological, character and cultural values of the beachfront area.

Implementation Notes

- **Management:** The rock revetments and The Esplanade roading connection are exposed to inundation and erosion/instability hazards over all timeframes. Protect supports the maintenance of roading connections.
- **Community/ Local Board:** There is considerable community interest in the Blackpool area including concern for coastal and flood hazard impacts, ongoing protection of road assets, access for private landholdings and management of land and stormwater assets.

1.6: Blackpool West (Moa Avenue west)

This stretch commences from the western edge of Moa Avenue culminating in the west at Piritahi Esplanade Reserve (inclusive of the reserve), including the western Blackpool Bay area. It includes Blackpool Park, Blackpool Cemetery Reserve, Piritahi Esplanade Reserve and Te Huruhi Bay Reserve. Within Te Huruhi Reserve, key communities uses include Piritahi Marae and the Waiheke Island Pony Club.

Watercourses discharge to the coast at several locations within this coastal stretch, with roading, reserve and stormwater assets subject to coastal inundation over all climate scenarios. Areas of rock revetment are located within western areas (adjacent to Te Huruhi Bay Reserve); the stretch is susceptible to coastal erosion and instability over all climate scenarios.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Adaptation priority** 	**Adaptation priority** 

Explanation

Watercourses discharge to the coast at several locations with structures supporting the alignment of streams and pipe flows to the coast. Roading, reserve and stormwater assets are subject to coastal inundation over all climate scenarios. Rock revetment structures are located within western areas of the stretch (adjacent to Te Huruhi Bay Reserve).

Maintain in the short-term provides for the maintenance of existing lawfully established seawalls, stream alignment structures and management of risk to assets in proximity to the coast. **Adaptation priority** in the moderate and high change scenario reflects the increasing coastal hazard risks. There is strong community interest in responding to coastal and climate change risks and the need to consider how risk to Council land and assets is managed while responding to ecological, amenity, character and cultural values of the beachfront area.

Implementation Notes

- **Cultural and social:** Te Huruhi Bay Reserve has significant cultural, recreational and natural values. Piritahi Marae, located on the reserve, is the only community marae on the island, and provides many community services.
- **Cultural heritage:** Important cultural sites and assets include Blackpool Cemetery Reserve.
- **Community/ Local Board:** Community interest was shown in relation to the Blackpool area including concern for coastal and flood hazard impacts, ongoing management of stormwater assets and flooding from both catchment and coast.
- **Management:** There are significant stormwater outfalls on Blackpool Beach that impact the shape of the beach.
- **Social/policy:** Waiheke Island Pathways Plan 2019 identified a potential greenway through reserve areas. The stretch includes a section of the Te Ara Hura walking path, and access to private landholdings. This stretch provides for multiple community uses, including waka ama and other water-based recreational uses.

1.7: Maunganui Point (Te Huruhi Bay west)

This stretch extends from Blackpool Beach culminating at Te Wharau Bay. There is no public access to the coastline being largely privately-held land. Te Uri Karaka Te Waera Reserve, a large native park area, is located inland with Te Ara Hura (Waiheke's walking track network) passing through it.

Scenarios for change		
Low	**Moderate**	**High**
No action 	**No action** 	**No action** 
Explanation		
No action is reflective of the limited Auckland Council land and assets present within hazard areas.		
Implementation Notes		
• **No action** does not preclude the management of risk to landward reserve areas or connections. Management of risk through location and design of assets is preferred to the use of protection structures. • **Cultural heritage:** This stretch includes important cultural sites and assets; no action does not preclude actions to support cultural heritage outcomes.		

1.8: Park Point/Te Roreomaiaea (Te Wharau Bay to Cable Bay)

This stretch begins at Te Wharau Bay extending to Cable Bay and contains Park Point Coastal Track, also part of the Te Ara Hura Trail. Coastal connections around this coast are identified as highly valued by the local community and visitors.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Maintain** 	**Adaptation priority** 
Explanation		
Maintain supports continued access to and along the coast. Noting that resilient design and location of access structures is preferred to the use of coastal defence structures. **Adaptation priority** in the high change scenario is identified due to increasing coastal hazard risks. This signals the need to consider the relocation of uses and actions to support the ecological, character and cultural values of the beachfront area.		
Implementation Notes		
• **Te Ara Hura Trail:** This stretch includes a portion of the Te Ara Hura (Waiheke's walking track network). Management of risk to coastal walkway connections through resilient design and location of assets and walking tracks is preferred to the use of protection structures. • **Ecology:** Coastal areas within this stretch include pōhutukawa-dominated cliffs which transitions to regenerating native scrub, kauri, podocarp, broadleaved forest and areas of raupō reedland. • **Cultural heritage:** consideration of important cultural sites and assets will be required through implementation.		

1.9: Te Rere Point

This stretch extends from Cable Bay to Hangaura Point. Te Ara Hura / local walking connections are located landward within this coastal stretch.

Scenarios for change		
Low	**Moderate**	**High**
No action 	**No action** 	**No action** 
Explanation		
No action is reflective of the limited Council land and assets located within this stretch. This does not preclude the maintenance of accessways to the coast or associated connections inland of coastal hazard areas.		
Implementation Notes		
• **Cultural heritage:** This stretch includes important cultural sites and assets; no action does not preclude actions to support cultural heritage outcomes.		

1.10: Motukaha Island

This stretch encompasses Motukaha Island.

Scenarios for change		
Low	**Moderate**	**High**
No action 	**No action** 	**No action** 
Explanation		
No action is reflective of the limited Council land and assets located within this stretch. No action does not preclude advocacy for the management of risk to ecological, social and cultural features, sites or values within this stretch.		
Implementation Notes		
• **Ecology:** Motukaha Island is located offshore from Church Bay and is an important breeding site for threatened coastal birds, including white-fronted tern, reef heron and little penguin. • **Landscape:** An Outstanding Natural Feature located between Church Bay and Motukaha Island is the best example of a narrow gravel tombolo (sandbar/spit) in the region. A cobble and pebble 2-8 m wide tombolo stretches 200 m across the gap between the Waiheke and Motukaha islands.		

1.11: Church Bay to Matiatia south

This stretch extends from the southern side of Church Bay to Matiatia south. Church Bay Esplanade Reserve contains the popular Matiatia Headland Path, a section of which (in the south) has been subject to closure in southern areas; this forms a section of the Te Ara Hura Trail and northern sections are part of the popular Waiheke Sculpture walk.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Maintain** 	**Adaptation priority** 
Explanation		
Maintain relates to the management of risk to reserve areas and important coastal connection including a portion of the Te Ara Hura (Waiheke's walking track network). **Adaptation priority** in the high change scenario is identified due to increasing coastal hazard risks. This signals the need to consider the relocation of uses and actions to support the ecological, character and cultural values.		
Implementation Notes		
• **Te Ara Hura Trail:** This stretch includes a portion of the Te Ara Hura (Waiheke's walking track network). Management of risk to coastal walkway connections through design and location of assets and walking tracks is preferred to the use of protection structures, noting local coastal character, ecological and cultural values. • **Cultural heritage:** This stretch has important cultural sites and assets; consideration of sites, values and landscape and engagement will be required through implementation. • **Landscape:** An Outstanding Natural Feature located between Church Bay and Motukaha Island is the best example of a narrow gravel tombolo (sandbar/spit) in the region. A cobble and pebble 2-8 m wide tombolo stretches 200 m across the gap between Waiheke and Motukaha islands.		

1.12: Matiatia Bay South

This stretch commences at the southern end of the embayment ending at the boat ramp access south of the wharf area. It includes the main carparking areas associated with the Matiatia wharf area, and Waiheke Island Reserve, plus associated stormwater infrastructure and community uses (subject to leased areas and buildings). Within the upper areas of this catchment, Watercare wastewater treatment facilities (located beyond the coastal hazard extent) service Oneroa Village.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Adaptation priority** 	**Adaptation priority** 
Explanation		
Maintain is reflective of the maintenance of risk to landholdings, assets and uses, noting the coastline is not fixed and erosion and inundation hazards are currently experienced within the stretch. Community feedback highlighted the impact of catchment flooding and ongoing erosional processes along low-lying areas of the embayment. In the moderate and high change scenario, **adaptation priority** identifies that coastal inundation and erosion hazard extents may require proactive engagement to support management of risk alongside iwi and community outcomes.		
Implementation Notes		
• **Collaboration:** This stretch includes assets managed by Auckland Transport, Healthy Waters and Auckland Council Parks' Teams, with several community leases for uses within coastal areas. Collaboration and engagement will be required to implement strategies and respond to risk through design and location of uses. • **Cultural and historic heritage:** Cultural heritage sites including urupā located in front of Waiheke Reserve carpark as well as settler graves that is exposed to coastal erosion and inundation. • **Ecology:** A large raupō reedland wetland is being actively restored by community volunteers with past catchment scale revegetation supported by community and volunteer efforts within the wider catchment area.		

1.13: Matiatia Wharf

This stretch begins at the southern side of the boat ramp access located adjacent of the wharf, ending to the north of the boat storage area and launching ramp north of the 'old' wharf structure. It includes the ferry terminal, wharves, access for the Coastguard and private vessels to moorings within Matiatia Bay including for two boat ramps, which are highly valued and frequently utilised for (all tide-southern ramp) harbour access. Bus access and access to parking areas are located landward of the coastal edge.

Scenarios for change		
Low	**Moderate**	**High**
Protect 	**Protect** 	**Protect** 
Explanation		
Protect reflects the modified coastal edge and significant established infrastructure reflective of the importance of transport connections, such as Matiatia Ferry Terminal and Ocean View Road and the functional need for access to the marine area for marine and port activities. Under a moderate and high climate scenario, the design and location of uses within the stretch will need to respond to their location in the coastal environment and increasing inundation risk.		
Implementation Notes		
• **Ecology:** The ferry terminal and surrounding environment is utilised by a wide range of threatened shorebirds, seabirds, and marine mammals. Consideration of ecological values will be required through implementation. • **Collaboration** will be required when considering uses and functional need to be located within this coastal stretch and the management of risk from increasing inundation impacts. This will include engagement between multiple asset owners, boat operators, coastguard and parties utilising boat storage and harbour access facilities and structures. • **Cultural and historic heritage:** Cultural heritage sites are identified in proximity to this stretch; engagement with iwi will be required when implementing strategies. • **Te Ara Hura Trail:** This stretch includes a portion of the Te Ara Hura (Waiheke's walking track network).		

1.14: Owhanake - Matiatia Walkways

This stretch begins north of the Matiatia wharf area (dingy storage area) and includes the northern coastline and embayment of Owhanake Bay. It includes 'Island Bay' and finishes at the end of the reserve at Double U (Fossil) Bay, noting the reserve extent within central areas of the bay may be diminished due to active erosion of this edge (the historic loss of walking access to the coast is also noted). Coastal landholdings are largely privately owned, with more extensive DOC landholdings through which Council supports the maintenance of walking networks, including the Te Ara Hura Trail. Local roads include Korora Road which provides access to Owhanake Bay.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Adaptation priority** 	**Adaptation priority** 
Explanation		
Maintain supports the management of risk to Council-maintained walking connections (both on Council reserve land and through easements on third party land-DOC). A**daptation priority** identifies that coastal and catchment inundation in low-lying areas (Owhanake Bay/Island Bay) and erosion hazard extents may require proactive engagement to identify options to continue to manage risk and support uses and coastal walking connections within this coastal stretch.		
Implementation Notes		
• **Maintain** supports the management of risk to Kororoa Road, identified as exposed to coastal inundation in a high change scenario. This strategy does not preclude localised interventions as required for roading connections. • **Te Ara Hura Trail:** This stretch includes a portion of the Te Ara Hura (Waiheke's walking track network). Management of risk to coastal walkway connections through design and location of assets and walking tracks is preferred to the use of protection structures, noting the area's coastal character, ecological and cultural values. • **Collaboration** will be required when considering maintenance of uses noting the ownership of land (including DOC) and presence of cultural sites and landscapes, historic heritage and ecological and landscape values. • **Ecology and marine values:** Little Blue Penguins and Pied Shag have been recorded within areas of the coastline adjacent to the proposed Hākaimangō-Matiatia Marine Reserve in northwest Waiheke. • **Management** intentions include to protect and enhance natural and geological values within the reserve particularly native vegetation, wildlife, and associated ecosystems, noting the location of sites of geological significance, Island Bay submarine volcanics and Double U Bay fossils.		

1.15: Hakaimango Point

This stretch begins within Te Ara Hura Bay (at the end of the Owhanake Matiatia walkway reserve) and extends to the northern end of Oneroa Bay (north of the Korora Road Reserve). The area is largely in private ownership.

Scenarios for change		
Low	**Moderate**	**High**
No action 	**No action** 	**No action** 
Explanation		
No action is reflective of the limited Auckland Council land and assets located within this stretch.		
Implementation Notes		
• **No action** does not preclude the management of risk to assets if required. Management of risk through location and design of assets is preferred to the use of protection structures. • This stretch includes important cultural sites and assets, **no action** does not preclude actions to support cultural heritage outcomes.		

1.16: Oneroa Bay

This stretch commences at the western end of Oneroa Bay, includes Koroa Road Reserve and ends to the east of road access/intersection where Puriri Road turns south from Beach Parade (Oneroa Beach Reserve). Oneroa Bay includes Oneroa Beach Reserve, beach path connections to Oceanview Road (south), Oneroa Beach Reserve accessway, the Beach Parade local road which provides vehicle access to the beach at the western end and runs parallel to the beach front from the eastern end. Sections of the wastewater network connections associated with Oneroa Village are located landward of Beach Parade. Numerous reserve facilities, parking areas, park amenities and toilet facilities are located within reserve areas.

Scenarios for cange		
Low	Moderate	High
Maintain 	**Adaptation priority** 	**Adaptation priority** 

Explanation

During large storm events, beach erosion can occur with no seawalls or dune buffer present to provide protection. **Maintain** supports the continued management of risk to assets while noting the dynamic nature of this beach and the need to support the remaining natural and ecological values. Maintain provides flexibility and the preference to manage risk through location and resilient design, to ensure maintenance of access to the coast and beach, while supporting the values of the beach/coastal area.

In the mid to long term, **adaptation priority** reflects the exposed nature of the low-lying areas including reserve and roading connections, which are highly valued by the community and visitors. Adaptation priority signals the need for further engagement to determine options to manage risk and respond to coastal hazard impacts.

Implementation Notes

- **Monitoring:** Undertaking a beach monitoring programme, including data collected through coastal monitoring cameras, will enable a greater understanding of beach profiles, recovery cycles and mean high-tide position - enabling long-term changes to be recorded. This could inform signals and triggers for future adaptive actions.
- **Management:** Where assets are renewed (or repaired), thought should be given to the landward positioning of assets within existing reserve areas, and to consider the alignment of access while supporting coastal amenity and character outcomes.
- **Engagement:** Comprehensive community engagement will be required involving iwi, communities and asset owners to define adaptation thresholds and associated signals and triggers which reflect adaptation actions.

1.17: Oneroa East & Little Oneroa

This stretch includes the coast east from the Oneroa Beach Reserve, commencing at Little Oneroa Reserve and culminating at the eastern end of Little Oneroa Beach (the eastern extent of the Goodwin Road reserve). Within this stretch is Little Oneroa Beach Reserve, providing access along the cliffed coast (on the coastal edge) and the beach side area of Little Oneroa Beach, including play and park facilities. Goodwin Road Reserve includes a coastal access ramp.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Maintain** 	**Adaptation priority** 

Explanation

Eastern areas within the low-lying embayment of Little Oneroa are subject to coastal inundation during storm events and catchment flood risk associated with the catchment, while coastal erosion and instability susceptibility is identified for sections of the cliffed coast within western areas. **Maintain** is identified due to the predominantly natural coastal edge and associated coastal character, ecological, amenity and cultural values. Maintain reflects the ability to manage risk through design and location of structures and the maintenance of existing coastal modifications and dune planting, alongside consideration of the placement and design of assets within reserve areas.

In the high change scenario, **adaptation priority** signals that increased inundation risk both from the catchment and from the coast may require integrated design of recreation, roading and other land uses. The need to manage risk to coastal connections in the western cliffed area over all timeframes through location and design is identified as is the importance maintaining access to the coast.

Implementation Notes

- **Maintain** supports the continued management of risk utilising design and location of structures and supporting the maintenance of existing defences, including dune planting at Little Oneroa Beach.
- **Maintain** does not preclude the consideration of engineered solutions and protection of critical transport linkages within this coastal stretch, nor actions to manage waste quality outcomes within this catchment and adjacent coastal areas.
- **Community hazards:** Landslides and coastal land instability have been experienced impacting Oceanview Road as a critical transport link and sections of the coastal walkway.
- **Cultural heritage** areas are identified within Little Oneroa Beach Reserve. Engagement with iwi will be required to support implementation of strategies

1.18: Little Oneroa North

This stretch commences east of the Goodwin Road Reserve and includes a section of the coastline north from Little Oneroa Bay to the end of Unit 1. Within this is a portion of Newton Reserve and the beginning of Fishermans Rock Path.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Maintain** 	**Adaptation priority** 
Explanation		
This section of cliffed coast is identified as susceptible to coastal erosion and instability. **Maintain** supports the management of risk to Council-maintained walkways and associated structures within the coastal reserves. Management of risk through design and location of assets and walking tracks is preferred to the use of protection structures. In the high change scenario, **adaptation priority** identifies that coastal erosion hazard extents may require proactive consideration to ensure activities and assets can be maintained within the local area.		
Implementation Notes		
• **Te Ara Hura Trail:** This stretch includes a portion of the Te Ara Hura (Waiheke's walking track network). Management of risk to coastal walkway connections through design and location of assets and walking tracks is preferred to the use of protection structures, noting the coastal character, ecological and cultural values within this stretch. • **Cultural heritage:** Newton Reserve contains sites of cultural and historical significance. Strategies do not preclude the management of risk to cultural heritage as required.		

Unit 2
Waiheke Island

N

Sandy Bay

Water access

Wetland areas

Aspirations for wetland restoration

Walking connections to Hekerua Bay Reserves

Enclosure Bay

Highly valued for marine ecology and water access

Great Barrier road and Empire Avenue access

Community concerns with catchment management and impacts on marine areas

Highly valued beaches for swimming and water based activities, relaxation and nature watching- Sandy Bay Enclosure Bay and Palm Beach

Spotted shag & raupō reedland and marine ecology

Community concerns with coastal erosion and slips

Nani Island

Esplanade Reserves

Esplanade Reserves

Sandy Bay

Enclosure Bay

Coastal broadleaved forest

Opopoto Bay

Fishermans Rock

Hekerua Bay

Oneroa Bay

Great Barrier Rd

Te Ara Hura key coastal connections

Oneroa Beach

Goodwin Ave

Hauraki Rd

Palm Beach

Tankhana Road

This coastline is of high cultural significance to local iwi

Onetangi Bay

Ostend

Important local access to Hekerua Bay

Māwhitipana Reserve

McKenzie Reserve

Palm Beach

Māwhitipana Reserve

Esplanade Reserve

Palm Beach Reserve

Accessible beach access supporting a range of users

Access to the coast

Matapana Reserve

Management of dunes as natural defence

Hill Rd

Great Barrier Rd

Cory Rd

Miro Rd

Tiri View Rd

Palm Rd

Unit boundary

2.1 2.2 Stretch

Informal recreation park

Mooring management area

0 500m 1km

Unit 2: Northwest Coast (Hekerua Bay to Onetangi west)

Unit 2 covers Waiheke's northern coast between Little Oneroa Reserve and Onetangi Beach, including the suburb of Palm Beach. It includes the bays, headlands and islands between Hekerua Bay and Opopoto Bay including Sandy Bay, Enclosure Bay, Mawhitipana Bay, Repo Bay and Waiheke Bay.

What is happening? Coastal context and hazardscape

The northwest coastline of Unit 2 is characterised by coastal cliffs and rocky foreshore, interspersed by small pocket beaches along with the larger, more dynamic Palm Beach within Mawhitipana Bay. This northwest to northeast-facing Unit 2 coastline is periodically exposed to longer period swell events and moderate to high energy, shorter period locally generated storm waves.

Coastal inundation

Within this unit coastal inundation flooding will have the greatest impact on Palm Beach Reserve, with the sand dunes affected in the moderate change scenario and the extent increasing to reach the playground in Palm Beach Reserve in the high change scenario. Also in the high change scenario, coastal inundation extents includes the strip of Great Barrier Road from Sandy Bay to Enclosure Bay.

Coastal erosion and instability

The coastal cliffs along the Unit 2 coastline are subject to slow, ongoing weathering and erosion, with potential for episodic failures or slips to occur. The regional ASCIE lines are predicted to impact entire reserves from Hekerua Bay to Palm Beach in the low change scenario, however the risk does not change significantly from the low to high change scenario.

Palm Beach is dynamic in response to coastal processes. During large storm events erosion of the beach can occur. Relatively low vegetated dunes back Palm Beach and, while the upper beach is relatively steep, these dunes can be eroded during storm events.

Coastal management interventions in Unit 2 include a vertical concrete seawall which armours the reserve edge at Enclosure Bay and native dune planting as depicted below. Auckland Council-supported community dune planting is seasonally undertaken at Palm Beach Reserve. Significant erosion of the Palm Beach dunes occurred in an extreme storm event that coincided with king tides in 2018. Following the erosion event, resource consent was granted to transfer sand from the lower intertidal area for use as dune replenishment. This is a privately-held consent with works undertaken by private residents.

Enclosure Bay seawall. Photo credit yheke.co.nz, Enclosure Bay (July 30, 2025, Jordan Eichler, Beaches, Oneroa)

Dune area, Palm Beach.

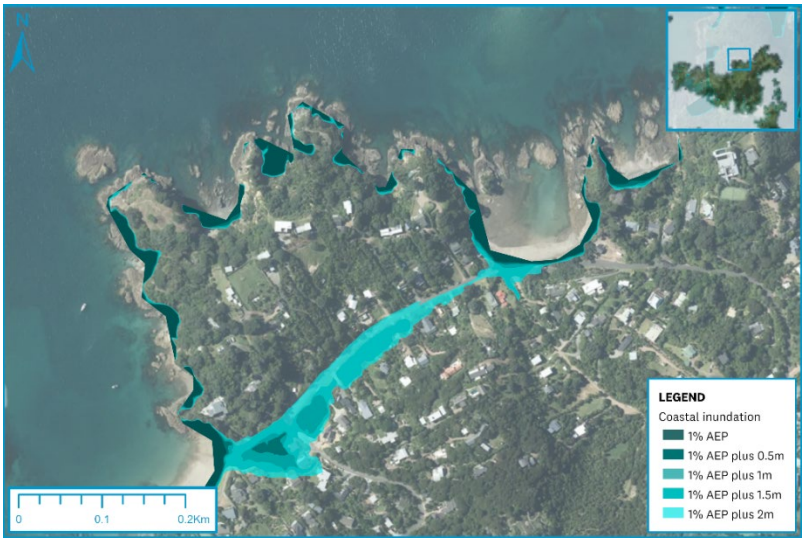
Catchment flooding

Catchment flooding discharges to the coast at Sandy Bay and Enclosure Bay (refer to the figure below) and corresponds with identified coastal inundation areas, where high tides and increasing coastal water levels will further impact the ability for catchment flows to discharge under the moderate and high change scenarios.

Catchment flooding is also identified within the Palm Beach area, with the photo below showing discharge to the coast at the eastern end of the beach where park amenities and beach access is provided.

Catchment flooding at Sandy Bay and Enclosure Bay.

Coastal Inundation at Sandy Bay and Enclosure Bay.



Palm Beach: Looking northwest showing the stream and stormwater discharge to the coastal edge at the eastern end of Palm Beach. (Source: Auckland Council)

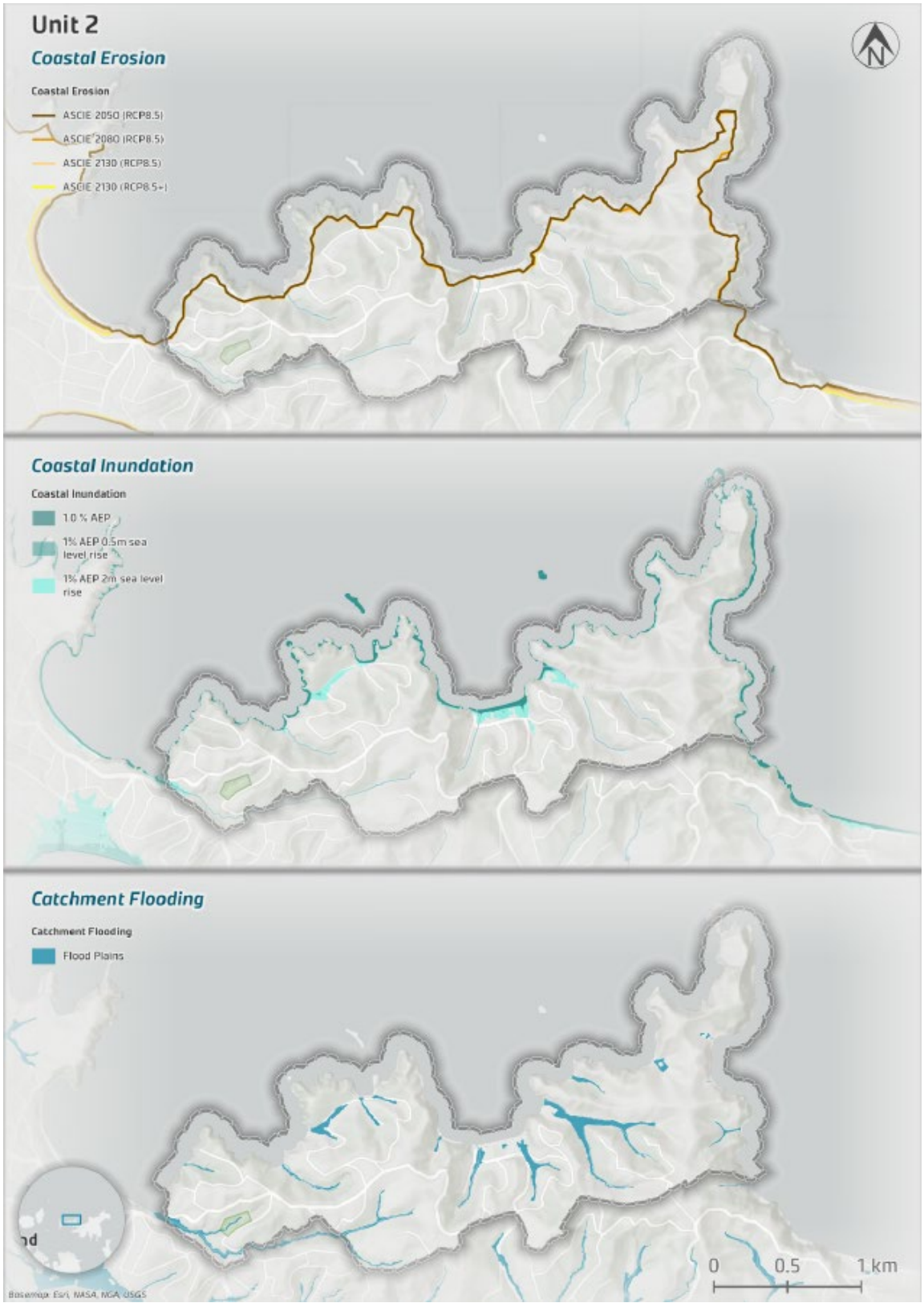


Figure 3: Coastal hazardscape for the Northwest Coast (Hekerua Bay to Onetangi) unit reflecting coastal erosion susceptibility for 2050, 2080 and 2130 considering RCP4.5 and RCP8.5 emission scenarios, coastal inundation for 1%AEP storm surge for present day and with 0.5 m, and 2 m sea-level rise and the identification of flood plains.

Risk assessment

The risk table represents key groups of assets (e.g. Auckland Council-owned land, buildings, road extents) which are supported by the regionally consistent data set. The risk assessment provides a regionally consistent method for comparing risk to Auckland Council-owned land and assets allowing for identification of areas with highest risk for potential future assessment (e.g. Volume 2).

The table below summarises the risk levels for Auckland Council asset types in the short, medium, and long-term and which map to the use of the low, moderate and high climate scenarios.

Council-owned land			Council Community facilities			Transport infrastructure			Water infrastructure		
Park and reserve land (21.5 ha)			Park amenity structures, carparks (0.1 ha) Buildings, wharves (5 No.)			Bridges (0 m^2) AT roads (14.2 km)			Water pipes (1.0 km)		
Short	Medium	Long	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Coastal erosion and susceptibility											
Moderate	Moderate	Moderate	Low	Low	Low	Low	Low	Moderate	Low	Low	Moderate
Coastal inundation											
Low	Low	Moderate	Low	Low	Moderate	Low	Low	Low	Very Low	Low	Low
Key											
Very Low			Low			Moderate			High		Very High

What matters most

Auckland Council land and assets: This section identifies key Auckland Council-owned land and assets within this unit that may be impacted by coastal hazards (inclusive of catchment flooding) over changing climate scenarios.

- Auckland Council assets include Enclosure Bay, Goodwin North Reserve, Great Barrier Foreshore Reserve, Great Barrier Road Esplanade Reserve, Hekerua Bay, Matapana Reserve, Mawhitipana Reserve, Mckenzie Reserve, Newton Reserve, Palm Beach Reserve, Sandy Bay, Sea View Esplanade Reserve, Watters Glen.

- Sandy Bay; Park amenities.
- Enclosure Bay: Park amenities.
- Palm Beach Reserve: amenities, play facilities and BBQ facilities.

- **Piped assets:** stormwater infrastructure associated with road drainage; wastewater treatment fields associated with public toilet facilities.

- **Road networks:** Great Barrier Road, Newton Road.
- **Key walking tracks:** Fishermans Rock Path, McKenzie Reserve Path, Palm Beach Lookout Path, Te Aroha Reserve Accessway, Te Ara Hura Trail.

- **Harbour access:** Sandy Bay boat ramp (Hekerua Bay Reserve).

Social, cultural and ecological context: This section identifies key social, cultural and ecological matters, identified through the development of the SAP reports, that may be impacted by coastal hazards (inclusive of catchment flooding) over changing climate scenarios.

- Specific cultural values and outcomes for this unit will be developed through ongoing engagement with local iwi.

- Unit 2 is largely residential with coastal homes connected by local roads. The unit contains smaller bays that are accessible to the public, e.g. Hekerua Bay, Sandy Bay and Enclosure Bay.
- A Community Hall is located at Palm Beach; other social infrastructure includes a playground, local café and shop.
- Boat ramp access is provided at Sandy Bay, with informal boat trailer parking within adjacent road reserve areas.
- Private residential development at Hekerua Bay is accessible via public walking connections.
- **Te Ara Hura Trail:** Sections of the trail are located within unit areas. Damage to tracks has been experienced from storm events resulting in landslides and instability for sections of the trail.

There are a variety of regionally important and/or vulnerable ecological features and values within this unit, including:

- Pōhutukawa treeland extends around most of the coastline and is frequently the type of vegetation found in Auckland Council-owned reserves, including Sandy Bay Esplanade Reserve, Newton Reserve, Hekerua Bay Reserve, and Hekerua Foreshore Reserve.
- Coastal broadleaved forest can be found within Goodwin South Reserve.
- Raupō reedland wetlands can be found across the unit, including a significant area to the east of Palm Beach.
- Two small areas of pīngao duneland are located to the east of Palm Beach. These represent one of the few sites remaining for pīngao on Waiheke Island.
- A variety of coastal birds utilise this unit, including spotted shag which has been recorded within the rocky reef environment of Opopoto Bay.

Who have we heard from?

Feedback was received via Social Pinpoint and ‘AK Have You Say’ survey. Key themes in community submissions/responses included but were not limited to:

- Concerns of inundation, erosion and storm events along the coastal margin impacting safe use of Council assets and facilities.
- Maintenance of ongoing public access to and along the coast via walkways and road networks/connections.
- Community feedback supported the identified adaptation strategies, however most respondents preferred ‘limited intervention’ instead of a ‘managed retreat’ approach.

What is happening?

A number of hazards have been specifically observed or experienced:

- Increased frequency of tidal inundation and storm surges, leading to flooding.
- Landslips and fallen trees as a result of coastal erosion.
- Loss of coastal access (likely caused or exacerbated by the above processes).

What matters most? Community aspirations or outcomes

- Respondents indicated that the unit area is primarily utilised for passive water-based activities and passive relaxation, as well as nature watching.
- Palm Beach is very popular among both locals and visitors to the island.

What can we do about it? Community feedback and aspirations

- Respondents in most of the unit stretches were supportive of maintaining uses and coastal areas and disagreed with a managed retreat approach[1].

[1] The term 'managed retreat' was included in draft consultation documents. Subject to feedback this term has been removed. Adaptation priority is identified to support the need for further community engagement and consideration of options to manage risk. Refer to Volume 2 and earlier sections of this report for further information on the strategies included in this report.

What can we do about it? Adaptation strategy summary for Unit 2

2.1: Little Oneroa to Newton Road (Newton Reserve)

This stretch extends from east of Little Oneroa Beach to Fishermans Rock. It includes continuation of Newton Reserve and Fishermans Rock Path.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Maintain** 	**Adaptation priority** 
Explanation		
Maintain supports management of risk to Council-maintained walkways and associated assets within the coastal reserves. In the high change scenario, **adaptation priority** indicates the coastal hazard risk to lower-lying areas may mean that current land uses and walking connections (and supporting assets) require further consideration to manage risk and maintain values (amenity, access, coastal character, environmental and cultural) for the coastal area.		
Implementation Notes		
• **Te Ara Hura Trail:** This stretch includes a portion of the Te Ara Hura (Waiheke's walking track network). Management of risk to coastal walkway connections through resilient design and location of assets (including walking tracks) is preferred to the use of protection structures, noting the area's coastal character, ecological and cultural values. • **Cultural heritage:** Newton Reserve contains sites of cultural and historical significance. The strategies do not preclude the management of risk to cultural heritage if required. • **Community:** Kaitiaki of Newton Reserve is a local charitable trust with the goal of restoring Newton Reserve to as close to its original state as possible. (Auckland Council, 2023b).		

2.2: South Hekerua (Newton Road north)

This stretch extends from Fishermans Rock to Hekerua Bay. It starts at the Newton Reserve in the west ending adjacent to the Te Aroha Accessway Reserve in the east. Hekerua Bay is a secluded bay accessible by boat or foot (via a pedestrian pathway access) accessible from Newton Road. The area includes several private residences.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Maintain** 	**Maintain** 
Explanation		
Maintain relates to the management of risk to roading connections due to potential for erosional hazard risks to Newton Road. This strategy does not preclude localised interventions as required for roading connections.		
Implementation Notes		
• **Maintain:** is identified to support the management of risk through resilient design and location of assets and uses. Due to the elevated cliffed coast and generally unconnected areas of esplanade reserve, protection structures are generally not considered appropriate for this coastal stretch.		

2.3: Hekerua Bay

This stretch extends from Hekerua Bay to south Sandy Bay including Te Aroha Reserve Accessway and a section of the Te Ara Hura walking path towards Sandy Bay.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Maintain** 	**Maintain** 
Explanation		
Maintain supports management of risk to Council-maintained walkways and associated structures within the coastal reserves. Management of risk through design and location of assets (including walking tracks) is preferred to the use of protection structures. Access to coastal areas is identified as a priority.		
Implementation Notes		
• **Management:** Te Aroha Reserve Accessway is susceptible to coastal inundation and erosion. This strategy does not preclude localised interventions as required. • **Adaptive approach:** The strategy of maintain reflects the continued management of connections to coastal communities and maintenance of risk to key walking trails, supporting their continued coastal connectivity.		

2.4: Sandy Bay

This stretch encompasses Sandy Bay. It is the only northside beach on Waiheke Island with a boat ramp, making it easy to launch off the beach all year round. Access to the beach is from Great Barrier Road which services multiple local homes.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Adaptation priority** 	**Adaptation priority** 
Explanation		
Sandy Bay is a highly valued coastal area which is backed by access to private land holdings and coastal walking connections to the south (part of the Te Ara Hura Trail). **Maintain** under the low change scenario provides for the continued management of access to the coast, walking connections and supporting facilities and amenities. Management of risk through location and design of uses and assets is preferred to support the amenity and natural coastal outcomes for this stretch. In the moderate to high change scenario, **adaptation priority** reflects the high amenity and coastal character values of the bay and the need to support access to the coast (including boat launching activities), manage flooding risks from the catchment and any resulting impacts on the beach and supporting uses including boat trailer parking, walking connections and recreational use.		

Scenarios for change		
Low	**Moderate**	**High**
Implementation Notes		
• **Monitoring:** Monitoring will enable a greater understanding of coastal change enabling long-term changes to be recorded. This could inform signals and triggers for future adaptive actions for a range of uses and assets located within this stretch. • **Management:** Where assets are renewed (or maintained), consideration should be given to the landward positioning of assets within existing reserve areas, and to consider the alignment of walking access while supporting the maintenance of coastal amenity and character outcomes. • **Engagement:** Comprehensive community engagement will be required involving iwi, communities and asset owners to define adaptation thresholds and associated signals and triggers which reflect adaptation actions.		

2.5: Sandy Bay to Enclosure Bay

This stretch includes the coastline between Sandy Bay and Enclosure Bay. Sandy Bay Esplanade Reserve and Great Barrier Road Reserve are both areas of cultural significance with Sandy Bay Esplanade Reserve being inaccessible to the public as it sits on a steep coastal cliff surrounded by privately-owned land.

Scenarios for change		
Low	**Moderate**	**High**
No action 	**No action** 	**No action** 
Explanation		
No action is reflective of the limited Auckland Council land and assets located within this stretch.		
Implementation Notes		
• **No action** does not preclude the management of risk to assets (if required).		

2.6: Enclosure Bay

This stretch includes the southern aspects of Enclosure Bay. Commencing at the western end of the embayment north of Great Barrier Road reserve, including the reserve area, ending where the rocky shore platform extends northeast of the bay. Great Barrier Road provides a key local roading connection for the Sandy and Enclosure bays.

Scenarios for change		
Low	**Moderate**	**High**
Protect 	**Adaptation priority** 	**Adaptation priority** 
Explanation		
The low-lying area of Enclosure Bay is subject to coastal hazards. **Protect** reflects the current modification of the southern section of the bay and presence of a seawall along the coastal edge providing protection to the road to the south. Protect responds to the limited reserve space and location of Great Barrier Road to the south and the need to maintain the alignment of road access. Protect does not indicate a mitigation of all inundation hazard risks and consideration of level of service may continue to be required in response to increasing inundation impacts. In the moderate to high change scenario, ongoing exposure to coastal hazards coupled with a high degree of community interest supports the identification of **adaptation priority** to ensure future management options to support uses and access can be safely maintained while responding to the values of the coastal environment.		
Implementation Notes		
• **Protect** reflects the existing management of the coastal edge with seawall structures. Management of uses and location of assets within low-lying areas may continue to be required in response to increasing inundation impacts. • **Community / ecology:** feedback identified concerns with the management of land uses which impact Enclosure Bay, an area highly valued for marine based activities and environment. This includes management of stormwater (and sediment) discharge to the coast.		

2.7: Enclosure Bay to Mawhitipana Bay (Palm Beach)

This stretch extends from east of Enclosure Bay to the beginning of Little Palm Beach and includes Great Barrier Foreshore Reserve.

Scenarios for change		
Low	**Moderate**	**High**
No action 	**No action** 	**No action** 
Explanation		
No action is reflective of the limited Auckland Council land and assets located within this stretch.		
Implementation Notes		
• **Cultural heritage:** There is an area of cultural significance with a pā site located on the adjoining private property. • **No action** does not preclude the management of risk to roading infrastructure (if required). Management of risk through location and resilient design of assets is preferred to the use of protection structures.		

2.8: Palm Beach

This stretch encompasses both Little Palm Beach to the west and Palm Beach to the east, including Palm Beach Reserve.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Maintain** 	**Adaptation priority** 

Explanation

Maintain reflects the management of risk to assets and landholdings within Council reserve areas. Design and location of assets are preferred to preserve the values of the stretch, including supporting the dune ecosystem and coastal amenity values of Palm Beach. This includes the management of the stormwater outlets to the beach.

For reserve areas, **maintain** provides flexibility for management of the coastal edge, consideration of nature-based options, dune planting and the landward location of assets and uses to provide more coastal space to support a dry high tide beach and natural coastal edge. For eastern areas of this stretch, the management of risk and interventions are limited to the maintenance of walking connections through steep cliffed reserve areas.

In the high change scenario, increasing inundation risk and associated erosional processes will impact greater areas of landholdings and the values (amenity, cultural and ecological) of Palm Beach. **Adaptation priority**, is identified to proactively signal a need for further consideration of options to manage risk, the impact of such options on the values of the beach.

Implementation Notes

- **Collaboration:** Implementation of strategies will require collaboration with multiple asset owners, iwi and local residents and coastal users, in response to the numerous values and assets located within this highly valued coastal area.
- **Private land:** Maintain does not apply to the management of risk to private landholdings and assets located within the wider coastal stretch.
- **Cultural heritage:** Palm Beach and Matapana reserves are areas of cultural significance. Management intentions include protecting and enhancing natural values within the reserve particularly native vegetation, wildlife, and associated ecosystems with require engagement with iwi on delivering shared outcomes for the wider reserve.
- **Ecology:** Two areas of pīngao duneland are located east of Palm Beach. These represent one of the few remaining pīngao duneland sites on Waiheke Island. Little Blue Penguins have been recorded at Matapana Reserve.

2.9: Thompsons Point

This stretch extends north of Matapana Reserve and extends around Waiheke Bay and Opopoto Bay to the north of Sea View Esplanade Reserve. It includes Nani Island and contains a handful of clifftop houses with no public beach access.

Thompsons Point from Onetangi Beach. Source Auckland Council

Scenarios for change		
Low	**Moderate**	**High**
No action	**No action**	**No action**
Explanation		
No action is reflective of the limited Auckland Council land and assets located within this stretch.		
Implementation Notes		
• **Ecology:** A variety of coastal birds utilise this stretch including the threatened spotted shag which has been recorded within the rocky reef environment of Opopoto Bay. • **No action** does not preclude the management of risk to roading infrastructure. Management of risk through location and design of assets is preferred to the use of protection structures.		

Unit 3
Waiheke Island

N

The Strand Road - Modified shoreline & active dune restoration

Beach access and access to private properties to the west

Beach accessways

Sites and landscape of cultural significance

Water based activities and use of the beach

Highly valued beach for locals and visitors

Highly valued marine environment, marine mammals and shellfish

Seventh Ave

Sixth Ave

The Strand

The Strand Reserve Accessway/Jacobs Ladder

Amenities and park facilities

Sea view Rd

Fourth Ave

Third Ave

Onetangi Beach east & central

Community led dune planting and ecological initiatives

Lost homes to natural hazards, coastal cliffs, flood prone areas

Esplanade Reserve

Modified coastal edge; The Strand Road and coastal development

Belle Terrace Foreshore Reserve

Esplanade Reserve

Onetangi Bay

Private residential properties accessed via beach

Sea View Rd

Onetangi Beach

Local coastal use and ecological restoration

Residential apartments access from The Strand

Third Reserve & Stream: Aspirations for ecological restoration of wetland areas and freshwater systems to build resilience and support ecological outcomes

Waiheke Rd

Access across island East/West

Sea View Road Reserve

Forest and Bird Bush Reserve

Victoria Reserve

Tin Boat Reserve

Pōhutukawa Reserve

"Doing nothing is not a viable long-term strategy for any part of our coasts..."

Community led adaptation planning sought

The Strand Road embankment Gabion baskets

Beach accessways

Beach accessways

Popular beach access point

Access to the East

Popular destination; cafes, restaurants & accommodation

Stream discharge to the beach

Vehicle access for boat launching. Diverse community views on impact of access & storage of water craft

Third Ave Reserve Raupō Wetland

Access to Pōhutukawa Reserve

Onetangi Community hall

Unit boundary

3.1 3.2 Stretch

Informal recreation park

Auckland Council owned land

0 500m 1km

Unit 3: Onetangi Bay

This unit begins at the western extent of the Onetangi Beach area, adjacent to Sea View Esplanade Reserve (south of Needle Rocks) to Belle Terrace Foreshore Reserve (west of Piemelon Bay) in the east. It includes multiple reserve areas, roading connections and key coastal access points.

What is happening? Coastal context and hazardscape

Eastern and western areas of Unit 3's coastline are characterised by coastal cliffs and rocky foreshores. Onetangi Beach is the longest sandy beach on Waiheke Island. The north to northeast-facing coastline is periodically exposed to longer period swell events and moderate to high amplitude shorter period, locally generated storm waves.

The beach dune system has been modified over the past century. Historically, Onetangi Beach had a large sand dune system with early development of a hotel in the area between Third and Fourth Avenues and a wharf opened in 1924 extending into the bay. In the early 1930s, The Strand Road was constructed as a Depression Relief Project involving the importation of fill and filling of dune areas to create the road revetment which remains today. The images below show the beach prior to the development of Strand Road.

While the Coromandel Peninsula, Aotea Great Barrier Island and Auckland mainland shelter Onetangi from most swell directions, Onetangi is vulnerable to low pressure systems and ex-tropical cyclones generating large northerly swells. When the eye of this system tracks west of Waiheke, the coinciding strong northerly winds can add high amplitude short-period storm waves as well as raised water levels (storm surge). When this coincides with spring high tides the events can be expected to be particularly erosive.

Dune erosion following January 2018 storms, Onetangi Beach. (Source: Auckland Council)

Onetangi Beach 1933, looking west along Onetangi Beach, showing the wharf and the Onetangi Hotel (centre left). (Source: Auckland Libraries Heritage Collections)

Coastal inundation

In the low to moderate change scenario, coastal inundation flooding is predicted to impact the beachfront of Onetangi Bay, with the extent increasing over natural land contours to follow the natural stream discharge from the Third Reserve which discharges to the coast in proximity to First Avenue (see image below).

Areas of inundation are also identified at the western end of the beach under the moderate and high climate scenario impacting the eastern end of The Strand Road (and Seventh Avenue boat ramp) where the ramp provides access to the beach. Increasing sea levels would increase the exposure of this road end/access ramp to erosion and inundation from storm events.

View of Onetangi Beach East showing coastal inundation at First Avenue boat ramp and beach access. (Source: Auckland Council)

The modelled potential spatial extent of coastal inundation under the 1% AEP scenario and various increments of sea-level rise. Shown: The eastern end of Onetangi beachfront, with First Avenue Beach access, Le Roy Road and Third Reserve. Source: GeoMaps.

Coastal erosion and instability

The coastal cliffs east and west of the main beach embayment are subject to slow, ongoing weathering and erosion, with potential for episodic failures or slips to occur over all change scenarios, most notably on the cliff reserves (Sea View Esplanade, Garrett Road Accessway and Belle Terrace Esplanade).

Onetangi Beach is the largest sandy beach on Waiheke Island with a relatively narrow dune buffer before The Strand and extends along the beach front. Onetangi Beach is highly dynamic in response to coastal processes and extreme storm events can result in beach and dune erosion in the present day.

The Strand Road was constructed as a Depression Relief project[2] involving the importation of fill and filling of the dune areas to create the road revetment which remains today. The ASCIE identified in the figure below does not consider the modification and armouring located along the frontage of the beach front but represents an area which may be susceptible to coastal erosion and instability without protection.

Limited data recording beach profile dynamics is available for Onetangi Beach. However, visual inspections and consideration by coastal experts following storm events indicates that the beach recovers relatively well naturally, with sand returning to the upper beach. Regular seasonal dune planting has been undertaken (typically by community supported by Council) at Onetangi Beach.

Associated rope and bollard fencing and defined pedestrian accessways have been installed and are adjusted as required, to help protect the dunes. Some targeted planting has been undertaken to help define pedestrian beach accessways in high-use areas.

As the dunes and The Strand Road embankment are at a relatively high elevation in comparison to relative sea level, it is likely that increased sea levels will further exacerbate erosional processes. This may, under a high climate change scenario, appear as more undercutting and scarping of the dunes, road, revetment and a loss of dry high-tide beach space. Sea spray and infrequent inundation of The Strand carriageway is possible. Current coastal management in this unit includes armouring along the shoreline examples of which are included in images below.

Gabion basket armouring at the eastern end of Onetangi Beach. (Source: Auckland Council)

Backstop rock armouring is present along the edge of The Strand, typically buried behind the dune. An extreme storm event in 2018 that coincided with king tides resulted in significant beach and dune erosion, exposing the rock armouring.

2 The old shop at the Strand | Onetangi Community Hall

Regular seasonal dune planting has been undertaken by the community (supported by Council) at Onetangi Beach. Associated rope and bollard fencing and defined pedestrian accessways have been installed and are adjusted as required to help protect the dunes. Photo shows the beachfront area between Third and Fourth Avenues. (Source: Auckland Council)

Buried backstop rock armouring adjacent to the picnic and reserve areas east of Fourth Avenue. Stormwater outfalls to the coast are also located within this area.

Photo: Looking east towards beach access at Fourth Avenue, stormwater outfall and dune planting/fencing in the foreground. (Source: Auckland Council)

Access staircase incorporating a kayak slider adjacent Sixth Avenue. (Source: Auckland Council)

Beach profile monitoring is undertaken at Onetangi Beach with further coastal monitoring initiatives being explored including the use of a beach monitoring camera (currently installed in other locations within the region). Further details can be found on Auckland Council's coastal monitoring portal.

Catchment flooding

Catchment flooding in a 1% annual exceedance probability event is identified in Figure 4 below. The stormwater catchment for the Unit 3 area includes the catchment of the Onetangi Royal Forest & Bird bush reserve and areas directly south of the main beachfront area (Victoria Road). Smaller catchments are located within eastern areas of the beachfront with flood ponding areas located in proximity to Seventh avenue.

The flood plain area is identified as impacting areas of Third Reserve, draining to the coast via overland flow and the stream channel which discharges to the beach in the east at First Avenue. In this area Inundation both from 1% AEP catchment flood events and from coastal inundation may be experienced. Exposing First avenue, Le Roy Road and the Third Reserve (bottom of Waiheke Road) to more frequent inundation events.

Several stormwater outfall pipes discharge onto Onetangi Beach. Upgrades and maintenance are being explored for stream widening for sections between Third Ave and Second Avenue areas, Community engagement has identified community support for the Third Reserve Wetland, to improve ecology and hydraulics. Healthy Waters will work closely with private landowners and the wider community to further explore these catchment actions.

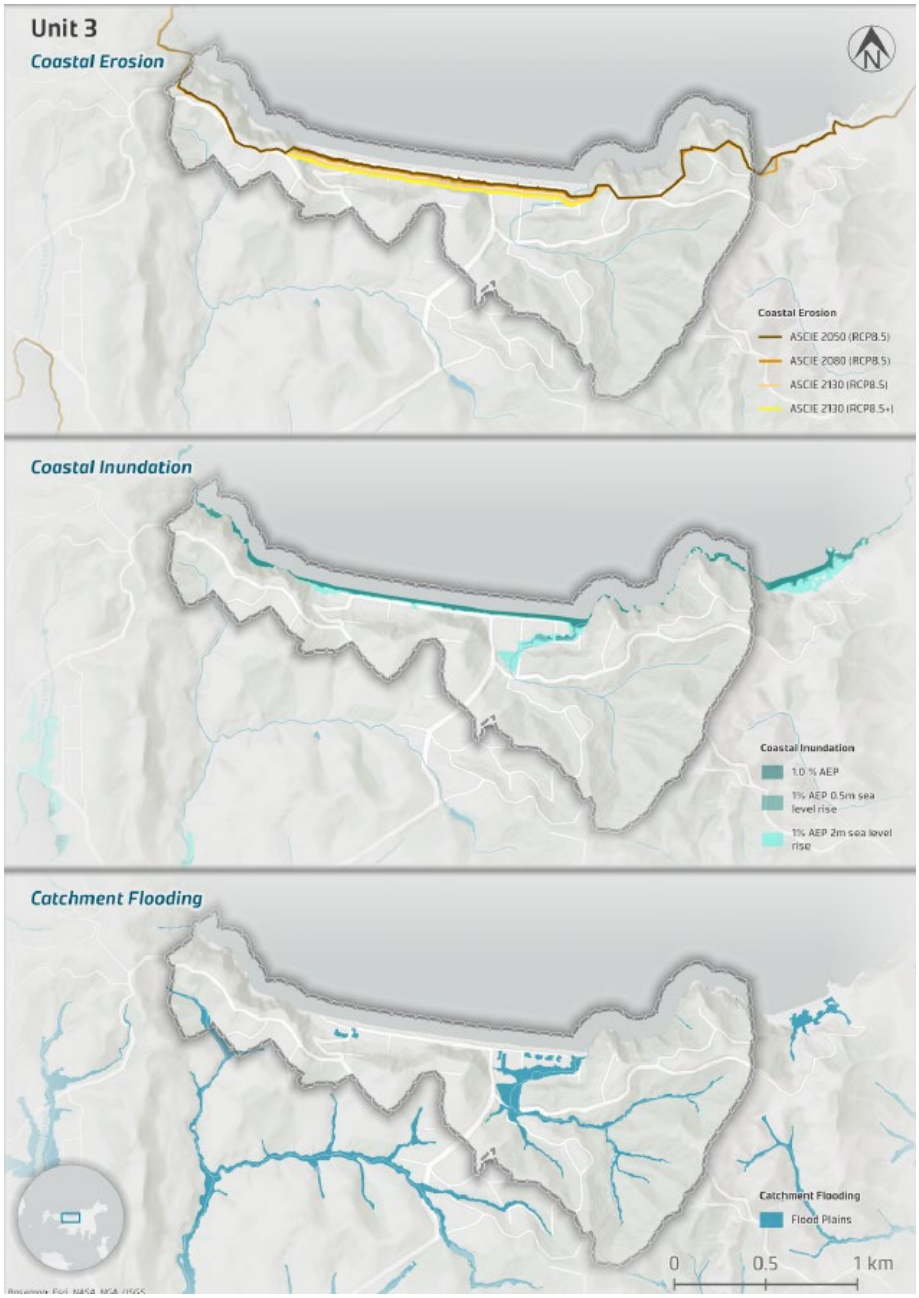


Figure 4: Coastal hazardscape for the Onetangi Bay unit reflecting coastal erosion susceptibility for 2050, 2080 and 2130 considering RCP4.5 and RCP8.5 emission scenarios, coastal inundation for 1%AEP storm surge for present day and with 0.5 m, and 2 m sea-level rise and the identification of flood plains.

Risk assessment

The risk table represents key groups of assets (e.g. Auckland Council-owned land, buildings, road extents) which are supported by the regionally consistent data set. The risk assessment provides a regionally consistent method for comparing risk to Auckland Council-owned land and assets allowing for identification of areas with highest risk for potential future assessment (e.g. Volume 2).

The table below summarises the risk levels for Auckland Council asset types in the short, medium, and long-term and which map to the use of the low, moderate and high climate scenarios.

Council-owned land			Council Community facilities			Transport infrastructure			Water infrastructure		
Park and reserve land (18.8 ha)			Park amenity structures, carparks (0.05 ha) Buildings, wharves (8 No.)			Bridges (0 m^2) AT roads (10.4 km)			Water pipes (1.3 km)		
Short	Medium	Long	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Coastal erosion and susceptibility											
Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	High	High	High	High	High	High
Coastal inundation											
Low	Low	Low	Moderate	Moderate	Moderate	Low	Low	Low	Low	Low	Low
Key											
Very Low			Low			Moderate			High		Very High

What matters most

Auckland Council land and assets: This section identifies key Auckland Council-owned land and assets, which support community and local uses that may be impacted by coastal hazards (inclusive of catchment flooding) over changing climate scenarios.

- **Park areas:** Onetangi Beach Strand Reserve, Homershan Reserve, The Strand Reserve Accessway (Jacobs Ladder/5th Avenue), Third Reserve, and Garrett Road accessway.
- Landward reserves include Pōhutukawa Reserve, Seventh Avenue Reserve Accessway, Tin Boat Reserve, and Seaview Road Reserve/Catherine Mitchell Reserve.

- **Reserve assets/amenities:** Fifth Avenue 'Jacobs Ladder' Reserve parking area, Sixth Avenue access (road reserve) associated parking and reserve area, picnic areas, BBQ and toilet areas (west of Fourth Avenue) park facilities and toilets (Seventh Avenue Road) reserve adjacent to Homershan Reserve.

- **Piped assets:** Stormwater infrastructure associated with road drainage, wastewater treatment fields associated with public toilet facilities.

- **Roads:** The Strand; First, Second, Third, Fourth, Sixth and Seventh avenues; Le Roy Road; Waiheke Road.
- **Beach access structures:** Third Avenue access ramp, staircase between Third and Fourth Avenue, ramp and stairs adjacent to Fourth Avenue, sand ladders, beach access and Kayak slider access between Fourth and Seventh avenues.
- **Key walking tracks:** Onetangi Beach Path, Seventh Avenue Reserve Accessway, The Strand Reserve Accessway, Garratt Road Accessway.
- Sections of the Te Ara Hura walking trail traverse the unit area.

- **Boat launching and vehicle access:** First Avenue boat accessway, boat access ramp western end of The Strand Road (Seventh Avenue Boat Ramp)
- Access for small watercraft in proximity to Sixth Avenue reserve

Social, cultural and ecological context: This section identifies key social, cultural and ecological matters, identified through the development of the SAP reports, that may be impacted by coastal hazards (inclusive of catchment flooding) over changing climate scenarios.

- Cultural heritage within Pōhutukawa Reserve, pā site, (located between Fourth and Fifth Avenue and eastern headland of stretch) middens/ovens located within the wider beachfront area.
- Specific cultural values and outcomes for this unit will be developed through ongoing involvement with local iwi.

- The Hauraki Gulf Marine Park Act (Hauraki Gulf Marine Park Act, 2000) and the Hauraki Gulf Marine Spatial Plan: Sea Change – Tai Timu Tai Pari (Hauraki Gulf Marine Park, 2017) are identified in Volume 2.
- Land use units are identified in the Auckland Council District Plan – the Hauraki Gulf Islands section includes traditional and bush residential with coastal amenity and soil warning notations included for many beachfront areas.
- The people of Onetangi, permanent and temporary residents who live, have lived and may live in Onetangi in the future.
- Onetangi Beach is a significant asset for residents, locals from other areas of the island and tourism. The coastal character and amenity of the beachfront area is internationally acclaimed and supported by policy framing and local plans. Substantive numbers of tourists visit Waiheke and the Onetangi area and the value of the beach as a destination within the Auckland region and within the wider island is notable.
- Onetangi is the eastern most urbanised area on Waiheke Island. Popular with locals and visitors due to its large white sand beach, the predominantly residential nature is interspersed with restaurants, accommodation options, tourism ventures and green space.
- Prior coastal hazard assessments have been undertaken for the Onetangi Beach area, including development of the Auckland Regional Council and Auckland City Council Onetangi Beach Coastal Hazards Management Strategy (2002).
- Historic heritage interests include the Onetangi Hotel and the location of a Historic Wharf (no longer standing) which was located in proximity to the hotel, which is now used as private residences.

- Onetangi Community Hall (located at the intersection of Waiheke Road and Third Avenue) is a highly valued community asset.
- Beachfront cafes/restaurant venues (including Charlie Farleys and 372, privately-owned venues/establishments) provide key meeting areas and venues for the local community.
- The Tin Boat Reserve, a short walk from the beachfront is a key play space (the only public playground facility).
- Walking connections which provide safe off-road walking connections to residential areas and the beachfront area are also highly utilised and valued. Including to the east of the beach through Pōhutukawa Reserve, accessible from both Third and First avenues. Access from central areas to Pā Road (from the Tin Boat Reserve) and at the western end of the beach also provides these connections. Aspects of these local walking connections are also part of the Te Ara Hura Trail.
- The Royal Forest and Bird Bush Reserve is located southeast of the main beachfront settlement area providing the largest catchment area which discharges to the coast at the eastern end of the beach.

- There is a small raupō reedland within Third Reserve.
- Onetangi Beach supports a large variety of coastal birds, including variable oystercatcher, white-fronted tern, black-billed gull, New Zealand dotterel, and Buller's shearwater.
- A large forest mosaic is located to the south of Onetangi Beach. This mosaic comprises kauri, podocarp, broadleaved scrub/forest, and kānuka scrub/forest
- The coastal cliffs are covered in pōhutukawa-dominated tree land and forest.
- Regenerative planting, within central areas of the beach (coastal cliff and back beach vegetation) is being undertaken, on private sites, by private landowners and volunteers.

Who have we heard from?

Feedback was received via Social Pinpoint and 'AK Have You Say' survey, through community events, including:

- Four comments were received through Social Pinpoint.
- 51 responses were received through feedback forms including commentary relevant to multiple coastal areas on Waiheke Island.
- A 'Town Hall' style event was held in Oneroa, with drop-in style events at the Ostend market, library, ferry terminal and local film festival events, and feedback gathered by engagement partners Ecomatters and Waiheke Resources Trust.
- Direct engagement with resident groups, including the Onetangi Beach Residents' Association (OBRA). OBRA is a registered incorporated society established in 1996 to represent its members' interests relating to the protection and enhancement of Onetangi Beach, Onetangi Bay and its coastal environs. It has led dune planting, pest eradication, traffic management and beach restoration measures in Onetangi for around 25 years. Its members are mainly owners of property on or near Onetangi Beach. OBRA have identified that membership (household) includes 115 members), the funds of which are used for OBRA's purposes. OBRA estimates it represents more than 25% of the total Onetangi population (estimated at approximately 1,300) Details on the association have been provided by OBRA.

- Direct engagement with the Waiheke Local Board was held regarding community groups submission for the Onetangi area.

Key themes

Key themes identified across all the feedback received are captured in Volume 2 covering introduction to the SAP overview. Identified through engagement at in-person events, surveys and in community submissions/responses, key themes included:

- Demand for further engagement, community involvement and input in understanding coastal hazard impacts, climate change and the identification of locally applicable signals, triggers and thresholds for change.
- Concerns with hazard impacts including coastal and catchment inundation due to limited stormwater infrastructure and loss of sand dunes due to erosion.
- Strong demand for the maintenance of public access to and along the coast via a range of modes including walkways and road networks/connections and boat access.
- Demand for action in response to climate change and a desire to support the naturalness and values of the coastal area.

What is happening?

Respondents were primarily concerned with the potential for and the observed impacts of coastal erosion, sea-level rise and storm events.

- Feedback noted that at least 3 houses in the area were known to have been 'lost to weather events'.
- Observation of loss of sand due to erosion (differing views on vehicle impacts and access to sensitive beach areas) and flooding due to insufficient or lack of stormwater infrastructure.
- Need for detailed assessment and evidence of the impact of coastal hazards on coastal areas, including Council reserves, public roads and privately-owned land areas.
- Concern that strategies for 'retreat' could result in withdrawal of maintenance in response to storm events and general asset management.
- Sought wider consideration of private land, third party assets and uses and further engagement with communities.

What matters most? Community aspirations or outcomes

- Respondents identified passive water-based activities, passive relaxation, and walking/running as the primary activities which respondents enjoy.
- The access road (The Strand) was noted as a valuable asset enabling access along the beach frontage and providing for a range of mobilities.

What can we do about it? Community feedback and aspirations

Adaptation strategies:

- 'AK Have Your Say' feedback forms received (online and hard copy), included 15 forms with specific feedback on adaptation strategies for this unit. Of these 15 forms, support for the proposed adaption strategies was indicated at ~57%; approximately 37% of respondents indicated they were uncertain about these strategies, suggesting additional outreach or engagement is required within this unit area.
- Unit 3 specific Social Pinpoint comments numbered four (4) and covered a range of matters included under 'general feedback' below.

- Detailed feedback was provided through in-person engagement events and on behalf of 80 residents by the OBRA. 65 OBRA members (plus some 15 other non-member local residents) attended the OBRA AGM in late January 2025, where discussion on the SAP represented the majority of the pre-circulated agenda. The members unanimously supported OBRA's proposed submissions on the August 2024 Draft SAP with non-members in attendance also strongly supporting that action (statistics on membership and attendance have been provided by OBRA).
- Community group submissions (including OBRA) and feedback received through in-person events identified considerable concern with the terminology of 'managed retreat[3]' and believe that the effects on people have not been adequately considered as part of decision-making. They called for further evidence that such a strategy will be required, questioned the use of timeframes[4] and sought exploration of signals, triggers and thresholds for change and identification of 'hold the line' or 'limited intervention' until this has been established.
- General feedback from respondents (all platforms) identified the following key themes:
    - Need for greater community involvement in the adaptation process including consideration of all land and assets, greater community engagement and location-specific detailed understanding of coastal processes and climate impacts.
    - Desire for nature-based solutions including restored wetland areas, more sand dunes, and support for dune planting. Need for restoration and limiting further development (which may impact the function of natural systems) centred on the Third Reserve and associated water courses.
    - Opposition for hard engineering and interventions, noting that specific examples of the types of 'hard engineering' opposed were limited. There was a desire for a balance between vehicle access and parking along The Strand and the amenity and safety of The Strand for all users (pedestrians) plus further beach space and support for dune areas through future reconfiguration of coastal areas, including The Strand Road corridor. A consistent theme was the need for access to and along the beach and preservation of the natural coastal character, amenity and enjoyment of Onetangi Beach.
    - Varied views on the options (protection or adaptation of coastal areas and reconfiguration of uses) for risk management to reserve and road areas, and beachside amenities and access ways.
    - Varied views on the benefits, and potential costs, including physical engineering costs, amenity, convenience, provision of services near the beach, property values, natural systems (dunes), and the long-term outcomes sought for Onetangi Beach. All wanted continued access to and along the coast and supported the current amenity of Onetangi Beach.

[3] The term 'managed retreat' was included in draft consultation documents. Subject to feedback this term has been removed. Adaptation priority is identified to support the need for further community engagement and consideration of options to manage risk. Refer to Volume 2 and earlier sections of this report for further information on the strategies included in this report.

[4] Draft engagement documents included indicative timeframes for the identification of strategies. Subject to feedback this has been amended to reflect the climate change scenarios and sea level rise considerations which have been considered. This is reflected as low, moderate and high climate scenarios. Refer to Volume 2 and earlier sections of this report for further information on the climate scenarios included in this report.

- No further consents should be granted for new development in proximity to the coast which would negatively impact the function of natural systems, coastal values and immediately adject wetland areas.
- Improve the natural catchment and coastal systems at Third Reserve and wider dune systems. Impact of flood/stormwater need to resolve/improve flood impacts and support ecological outcomes.
- A call for vehicles to be banned from beaches, due to their impact on natural features and amenity values.

Actions sought through feedback:

- Commitment to maintenance of assets where triggers for adaptive actions are not met. Maintaining and investing in existing assets and services.
- Removal of reference to managed retreat (refer to footnote 4 above), seeking further community engagement and exploration of the likely impacts of coastal hazards on the Onetangi Beach area.
- Development of clear signals and triggers for adaptation action to be identified and further community engagement and involvement in this process.
- Ongoing monitoring at Onetangi Beach to support an understanding of coastal change and inform signals, triggers and thresholds for change.
- Remove pre-ordained dates or time periods for action (engagement material included short, medium and long timeframes associated with adaptation strategies as identified in footnote 5 above.

What can we do about it? Adaptation strategy summary for Unit 3

3.1: West Onetangi

This stretch begins at the north of the Sea View Esplanade Reserve A and extends part way along Onetangi Beach to the beginning of Onetangi Beach Strand Reserve. It includes unmaintained esplanade reserve and primarily privately-owned coastal properties, with steep cliffed coast. There is no public access to this portion of the coastline other than along the eastern end of the beach.

Scenarios for change		
Low	**Moderate**	**High**
No action	**No action**	**No action**

Explanation

No action responds to the limited Council land and assets located within coastal hazard exposure/susceptibility areas. Access to properties is currently provided from the Seventh Avenue boat ramp (located within Stretch 3.2) at which point this access is provided across beach areas. No protection structures or current management activities are identified in relation to this access.

Implementation Notes

- **No action** does not preclude the management of risk to roading infrastructure. Management of risk through location and design of assets is preferred to the use of protection structures; sections of Sea View Road are identified as susceptible to coastal erosion and instability over all climate scenarios.
- **Ecology:** Little Blue Penguins have been recorded adjacent to the Sea View Esplanade Reserve.

3.2: Central Onetangi

Commencing at the western end of the formed Strand Road (at the Seventh Avenue boat ramp) culminating at (and including) the Garratt Road accessway reserve. This stretch includes the majority of Onetangi Beach.

Auckland Council land and assets at Onetangi Beach includes The Strand Road parallel to the beach, Avenues (7) perpendicular to the beach, beach assess structures (stairs and ramps) and vehicle beach access at the eastern and western ends of the beach. Reserve areas landward of the beach also support open space activities and play. Beach reserve areas front The Strand Road and provide for parking, parks amenities and facilities with localised stormwater and on-site wastewater servicing.

Onetangi Beach, although modified by the construction of The Strand Road (see unit section above), is highly dynamic in response to coastal processes. Extreme storm events can result in beach and dune erosion and damage to beach access structures.

Scenarios for change		
Low	**Moderate**	**High**
Maintain	**Adaptation priority**	**Adaptation priority**

Explanation

Onetangi Beach has established a dynamic equilibrium (reflective of a reasonably closed sand system) which provides a dry high-tide beach area. The Strand Road embankment is at a relatively high elevation in comparison to relative sea level. As a result, under the low climate change scenario, the uses, roads, reserve areas and beach access points can continue to be supported in their current location with the current coastal equilibrium, provided for under a **maintain** strategy. Further monitoring will provide a better understanding of how this beach changes over the course of years and decades. Asset-specific design may be considered to respond to hazard exposure and support for natural beach buffers, dune planting and care will help maintain a dry sandy beach and provide protection for the road behind.

Adaptation priority is identified to ensure proactive engagement with asset owners, communities and mana whenua can be achieved to inform agreed signals and triggers for actions.

Scenarios for change		
Low	**Moderate**	**High**
Implementation Notes		
• **Engagement:** Comprehensive community engagement will be required involving communities and community groups (including OBRA), iwi and asset owners to define adaptation thresholds and associated signals and triggers which inform adaptation actions. • **Monitoring:** Expansion of council's beach monitoring programme (including beach monitoring camera and beach surveys) will enable a greater understanding of beach profiles, recovery cycles and mean high-tide position for the beach to identify long-term recorded change. Residents' organisations (OBRA) expressed interest and input to support local beach monitoring. This monitoring could inform signals and triggers for future adaptive actions. • **Maintain:** supports continue active management of erosion exposure of the road revetment, such as through limiting parking on the seaward side of the road (as is currently in place). Extending and improving the dune planting (where possible) will support dune retention. Further management to manage pedestrian access and protect dune planting areas could be considered, noting active community volunteer efforts in dune planting already in place. Engagement to evaluate any actions or options proposed will be required. • **Maintain:** supports the continued maintenance and repair of the armouring associated with The Strand as and if required due to storm damage. • **Management:** Where assets are renewed or damaged, consideration should be given to uses within the road carriageway and the landward alignment of the road carriageway. Opportunity to provide a one way or narrowed carriage width could be considered, to provide co-benefits for safety and access and/or more beach space and develop and support dunes to function and buffer The Strand behind.		

3.3: East Onetangi

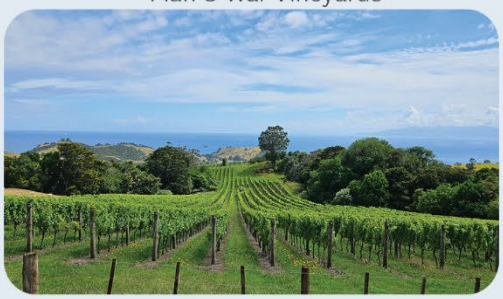
Commencing northeast of the Garratt Road accessway reserve and including the Belle Terrace reserves, culminating west of Piemelon Bay. Limited stormwater assets and roads are located within this stretch are set back and elevated above coastal areas. Coastal reserves are generally inaccessible and not contagious around this section of the coast.

Scenarios for change		
Low	**Moderate**	**High**
No action 	**No action** 	**No action** 
Explanation		
No action is reflective of the limited Auckland Council land and assets located within this stretch. Belle Terrace Reserve sits along the steep coastal cliffs and no formal access is provided to the reserve.		
Implementation Notes		
• **No action** does not preclude the management of risk to roading infrastructure (including Garrett Road and Belle View Place end). Management of risk via location and design of assets is preferred to using protection structures. • **Community/ Ecology:** No action does not preclude actions to support the revegetation and ecological outcomes for esplanade reserve areas including identified Kānuka scrub forest. Noting that no formal access is identified within this coastal reserve.		

Unit 4
Waiheke Island

N

Man O'War Vineyards



The exposed rocky reef system from Onetangi to Hooks Bay is recognised as one of the best examples of this type of habitat in the Inner Hauraki Gulf

Ruruwhango Bay

Popular northern bays for boating and water sport

Hooks Bay

Anita Bay

Owhiti Bay

Carey Bay

Stony Batter Historic site and tourist destination

Key roading connection for eastern end of the island

Onetangi Bay

Piemelon Bay

Man O'War Rd

Waiti Bay

Garden Bay

Opopo Bay

Onetangi

Orapiu Rd

Vineyards and visitor attractions within the eastern area of Waiheke Island

The Awaawaroa Stream and Wetland Reserve traverse the mid-eastern end of Waiheke Island in a roughly north-south line. They are home to a number of classified threatened species including tuna, giant kōkopu, īnanga, banded rail and spotless crake

Rocky Bay (Whakanewha Bay)

Te Matuku To Awaroa Walkway

Te Ara Hura walking connection between Awaawaroa bay and Te Matuku

Gordons Rd

Koi Island

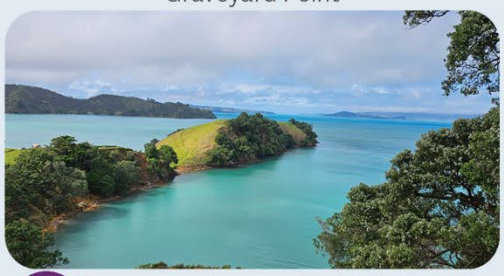
Awaawaroa Bay

Te Matuku Bay (Mcleods Bay)

Woodside Bay Rd

Graveyard Point

Waimangu Bay



Cultural landscapes, sites and features

Unit boundary

4.1 4.2 Stretch

Informal recreation park

Unit 4: Waiheke East (North and South coast)

Unit 4 covers most of the eastern portion of Waiheke Island, from Onetangi to Hooks Bay and includes Awaawaroa Bay in the south. In the northeast this includes Piemelon Bay, Woodlands Bay, Carey Bay, Cactus Bay, Garden Cove, Owhiti Bay, Ruruwhango Bay, Te Patu / Thumb Point, Anita Bay, Garden Bay Waiti Bay, Huse Bay and Opopo Bay. In the south this includes the western half of Te Matuku Bay, Sandy Bay, Little Bay, Whites Bay, Circular Bay, Deadmans Bay, Woodside Bay, Kaikuku Bay, and Kauaroa Bay.

Council landholdings are limited within this unit with many areas of open space / reserve land being owned by the Crown and managed by the DOC and the Pokai Wawahi Ika (Hunterville Reserve) subject to Treaty Settlements.

Roading access and areas identified as road at Awaawaroa Bay and Woodside Bay are exposed to coastal and flood hazards and other portions of the road network are exposed to flood hazards in various locations. Woodside Bay Reserve previously had a walking track (along foreshore areas), however due to landslides and coastal erosion, this track no longer exists.

What is happening? Coastal context and hazardscape

The Unit 4 coastline is characterised by coastal cliffs, rocky foreshore and shore platforms, with sandy pocket beaches on the northern-facing section and coarse to finer sediment pocket beaches on the southern facing section. The coastlines of Te Matuku Bay and Awaawaroa Bay include more estuarine environments, with finer sediment intertidal flats and established mangrove areas that graduate into saltmarsh habitat.

The northern-facing section of the Unit 4 coastline is periodically exposed to longer period swell events and shorter period, more locally generated storm waves. The pocket beaches along this section are dynamic in response to coastal processes.

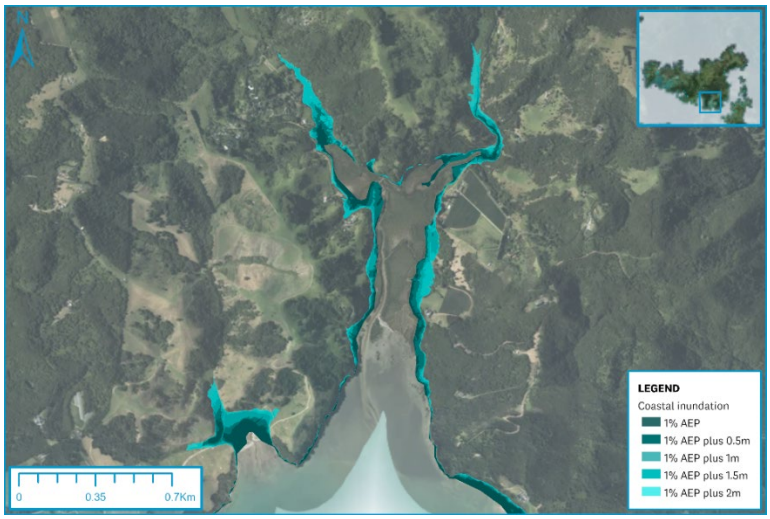
The southern-facing coastline is less dynamic, only being exposed to low, short period fetch restricted waves. The Woodside Bay section of coastline is exposed to an approximately 15 km a fetch distance from the west to southwest angle. With the predominant wind direction being southwest, this section of coast is therefore frequently exposed to low wind waves.

Coastal inundation and catchment flooding

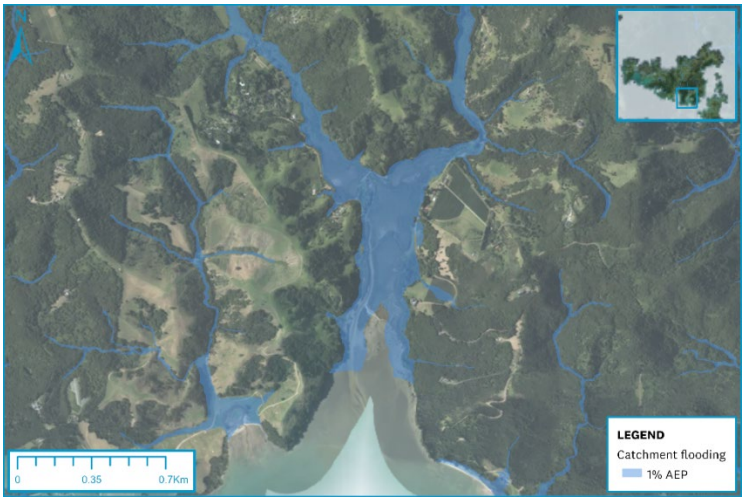
Coastal inundation for this unit is typically limited to the foreshore of pocket beaches and to low-lying land adjacent of Awaawaroa Stream. Between the low and moderate change scenario, the extent of coastal inundation is not predicted to change significantly until the high change scenario, where coastal inundation is predicted to impact coastal areas along the northern coastline (such as Carey Beach, Cactus Bay, Owhiti Bay). As identified in the figure below, a portion of Awaawaroa Road located beside the wetland reserve, is also identified as being increasingly impacted by coastal inundation events.

Catchment flooding is also identified within the catchments draining to the coast at Awaawaroa. Community feedback identified the impact of flooding on low-lying sections of the road network where road networks cross or are adjacent to stream areas.

Coastal Inundation at Awaawaroa Bay showing the 1% AEP coastal storm event plus varying increments of sea-level rise. (Source: GeoMaps)



Catchment flooding at Awaawaroa Bay, showing areas of the road network impacted by flooding (Source: GeoMaps)



Coastal erosion and instability

The coastal cliffs along the Unit 4 coastline are subject to slow, ongoing weathering and erosion, with potential for episodic failures or slips to occur. The regional ASCIE lines are predicted to impact large sections of the coast and headlands in the low change scenario, such as Te Patu Point and the headlands near Sandy Bay, although extent of ASCIE does not change significantly over the low to high change scenario.

The northern areas of this unit have minimal Council land and assets. Within southern areas, coastal connections have been impacted by coastal instability and erosion in the past including the closure / loss of coastal walking connections at Woodside Bay Reserve (along foreshore areas).

While there are no coastal structures armouring reserves along this unit's coastline, in places there are private seawall structures. Bridges and supporting abutments bay also traverse watercourses located within this unit area.

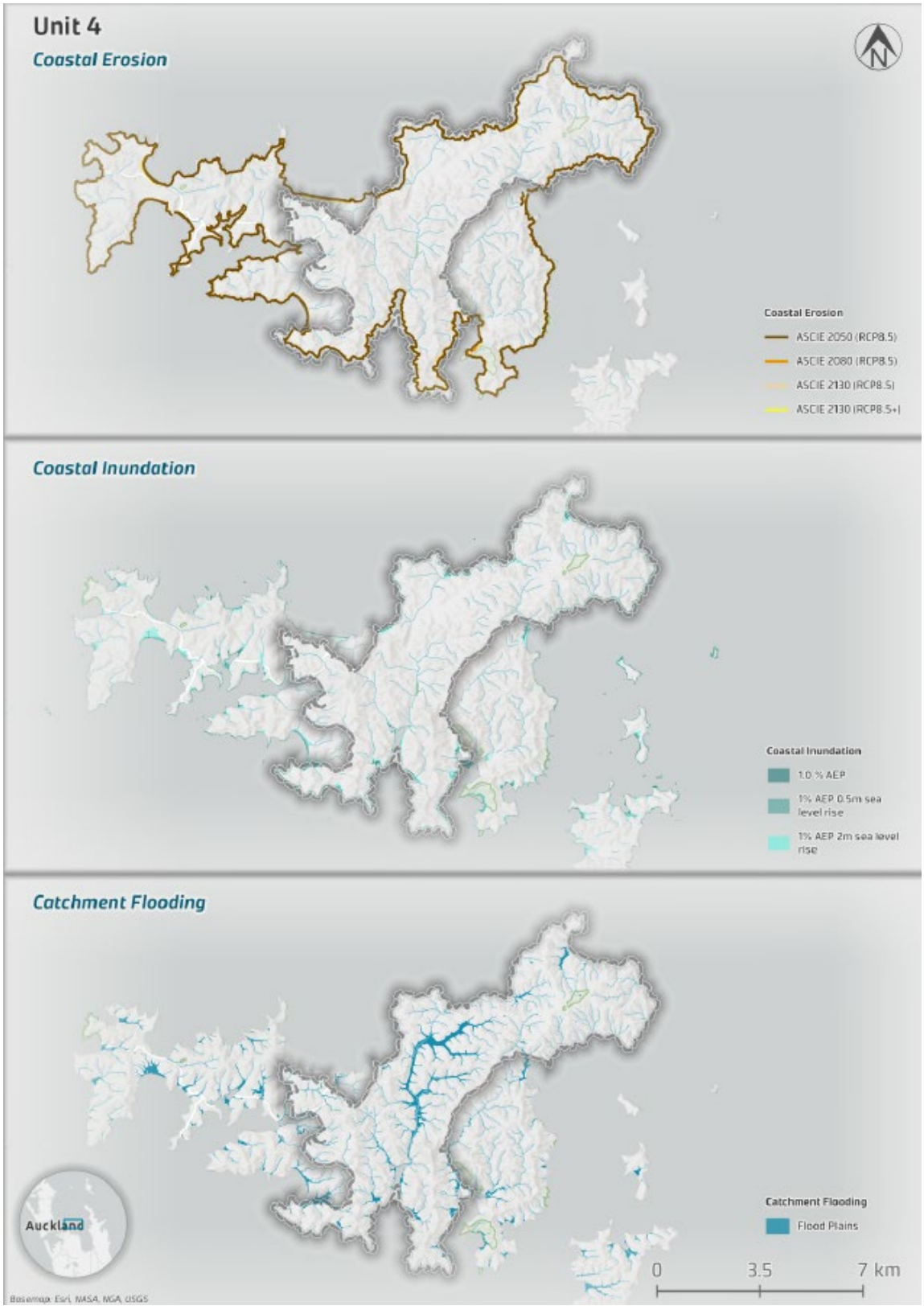


Figure 5: Coastal hazardscape for the Waiheke East (North and South coast) unit reflecting coastal erosion susceptibility for 2050, 2080 and 2130 considering RCP4.5 and RCP8.5 emission scenarios, coastal inundation for 1%AEP storm surge for present day and with 0.5 m, 1 m and 2 m sea-level rise and the identification of flood plains.

Risk assessment

The risk table represents key groups of assets (e.g. Auckland Council-owned land, buildings, road extents) which are supported by the regionally consistent data set. The risk assessment provides a regionally consistent method for comparing risk to Auckland Council-owned land and assets allowing for identification of areas with highest risk for potential future assessment (e.g. Volume 2).

The table below summarises the risk levels for Auckland Council asset types in the short, medium, and long-term and which map to the use of the low, moderate and high climate scenarios.

Council-owned land			Council Community facilities			Transport infrastructure			Water infrastructure		
Park and reserve land (23.2 ha)			Park amenity structures, carparks (0.03 ha) Buildings, wharves (1 No.)			Bridges (135.7 m^2) AT roads (25.7 km)			Water pipes (0.1 km)		
Short	Medium	Long	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Coastal erosion and susceptibility											
Low	**Low**	**Low**	**Very Low**	**Very Low**	**Very Low**	**Moderate**	**Moderate**	**Moderate**	**Very Low**	**Very Low**	**Very Low**
Coastal inundation											
Low	**Low**	**Low**	**Very Low**	**Very Low**	**Very Low**	**Low**	**Low**	**Low**	**Very Low**	**Very Low**	**Very Low**
Key											
Very Low			**Low**			**Moderate**			**High**		**Very High**

What matters most

Auckland Council land and assets: This section identifies key Auckland Council-owned land and assets within this unit that may be impacted by coastal hazards (inclusive of catchment flooding) over changing climate scenarios.

- Auckland Council land is limited within this unit.
- Awaawaroa Esplanade Reserve and Awaawaroa Wetland Reserve.

- **Key walking tracks:** Te Matuku to Awaroa Walkway (part of Te Ara Hura), Trig Hill Walkways, Woodside Bay Esplanade Walkway.
- Sections of the Te Ara Hura walking trail traverse the unit area, including on road connections where public coastal access is limited.
- **Roading connections:** Main roading connection for the eastern end of the island, including the 'loop road' and connections for communities at Awaawaroa and Woodside Bay.

Social, cultural and ecological context: This section identifies key social, cultural and ecological matters, identified through the development of the SAP reports, that may be impacted by coastal hazards (inclusive of catchment flooding) over changing climate scenarios.

- There are cultural features in this unit. Specific cultural values and outcomes will be developed through ongoing involvement with local iwi.
- Statutory acknowledgement areas are included within this unit.

- Social infrastructure in Unit 4 is limited due to the largely private horticultural / agricultural and historic land uses. Park amenities and facilities may be located within limited reserve holdings within road and recreational reserves.
- Historic heritage includes Fort Stony Batter; numerous historic heritage features are located within coastal areas at Awaawaroa, Woodside Bay and along northern coastal areas.
- This area includes Cactus Bay (and neighbouring northern beaches) which is considered by many locals and boating communities to be Waiheke Island's best beach (access from the water only).
- Roading connections which traverse the unit provide access to the eastern areas of Waiheke and form a section of the 'loop road' providing access to tourists routes, vineyards and recreational activities.
- Roading connections at Awaawaroa and Woodside Bay support local communities within these areas.
- A section of the Te Ara Hura walking trail traverses this unit.

- Unit 4 encompasses a large portion of the island's biodiversity and is characterised by significant freshwater wetland ecosystems and pockets of remnant forest. The marine environment is equally diverse, with several areas identified as marine Significant Ecological Areas (SEA-M). Many of the indigenous ecosystems within this unit are located beyond Auckland Council-owned landholdings.
- Pōhutukawa and broadleaved coastal forest surrounds the entire unit, with particularly large fragments to the southeast of Hooks Bay along the northern coastal areas.
- The exposed rocky reef system from Onetangi to Hooks Bay is recognised as one of the best examples of this type of habitat in the Inner Hauraki Gulf.
- Owhiti Bay contains an important ecological sequence from pīngao duneland to brackish and freshwater wetlands to small patches of coastal forest. Owhiti Bay and the surrounding landscape are recognised as an important breeding site for Northern New Zealand dotterel, New Zealand pipit and variable oystercatcher.
- Te Matuku Bay is a Biodiversity Focus area.
- Awaawaroa Bay, Awawaroa Wetland Reserve and the surrounding stream system is located at the southern end of this unit and holds highly significant ecological values:
    - There is an important ecological sequence within this reserve from shell barrier beach to mangrove forest to freshwater wetland ecosystems, and finally to fragments of coastal forest. The shellbanks are recognised as an important high-tide bird roost for a variety of coastal birds.
    - There is a population of giant kōkopu within the Awaawaroa wetland and stream system – one of the last known populations within the Auckland region.

- A variety of cryptic wetland birds can be found within the Awaawaroa wetland mosaic, including North Island fernbird, banded rail, spotless crake and Australasian bittern (New Zealand eBird, n.d.).
- Awaawaroa Bay is recognised as an important breeding area for Caspian tern, Northern New Zealand dotterel, pied shag, and variable oystercatcher (Auckland Council, 2016c)

Who have we heard from?

Feedback was received via Social Pinpoint and 'AK Have You Say' survey and through engagement with community members at in person events. No specific events were held in this unit area.

Key themes in community submissions/responses included but not limited to:

- Enjoyment of coastal areas along the northern beaches (water access only).
- Community concerns with the impact of coastal storm events, inundation and erosion on private development and pollution to marine areas.
- Support of the proposed adaptation strategies of allowing natural processes to take course and maintain natural coastal values.

What is happening?

- Respondents observed increased residential development near coastal areas.
- Concern was expressed because of perceived damage to property and resulting pollution and debris in coastal areas (waters). Respondents identified this was experienced following storm events and impacted on their enjoyment of coastal areas.

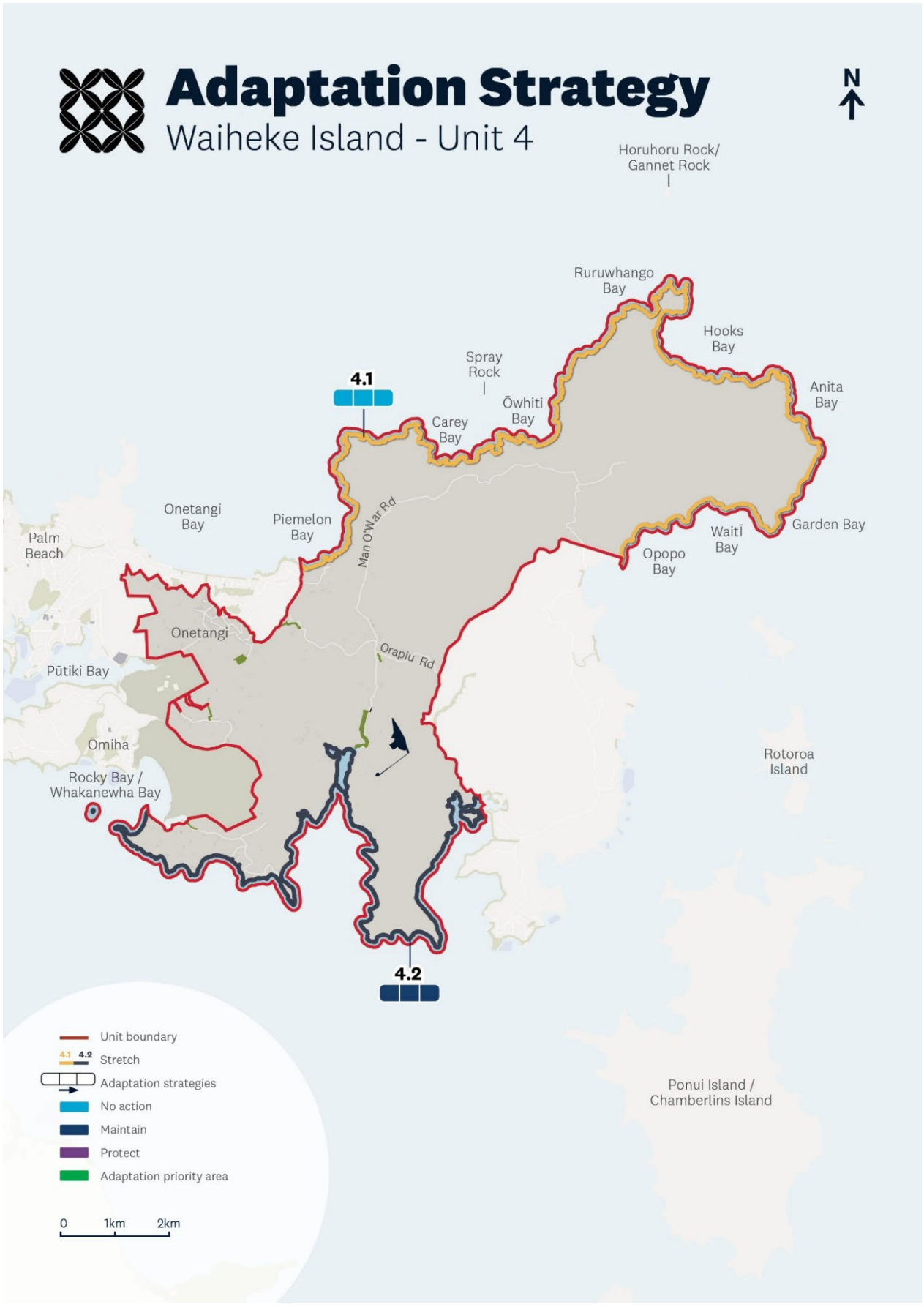
What matters most? Community aspirations or outcomes

- Enjoyment of active and passive water-based recreation, walking and running, and open water activities such as boating or sailing.
- Value of the coastal areas at Hooks Bay, Garden Bay and Owhiti Bay, noting access was from the water; activities included fishing, swimming and playing sports on the beach.
- Support for supporting and restoring wetland areas for more resilience within this more rural area of the island (Unit 4).

What can we do about it? Community feedback and aspirations

- Support for natural systems and processes, including restoration of wetland areas and natural dunes, to build resilience to catchment flooding and coastal processes.
- Resilience of roading networks and the importance of these connections for the communities and visitors to southeastern areas of the island.
- Integration of adaptation planning with land use planning, relevant to the proximity of private development to coastal areas resulting in damaged assets/structures impacting marine areas.

What can we do about it? Adaptation strategy summary for Unit 4



4.1: Waiheke East - North coast

This stretch encompasses the entire northeastern peninsula of Waiheke Island. It begins at Piemelon Bay (south of the Unit 3 Onetangi coastal areas) and extends around to Opopo Bay north of Man 'o' War Bay (at the end of the unit area) in the east. Access to coastal areas is limited to water access and roading assets are generally set back from coastal hazard areas.

Scenarios for change		
Low	**Moderate**	**High**
No action	**No action**	**No action**
Explanation		
No action is reflective of the limited Auckland Council land and assets located within this stretch. Coastal landholdings are primarily in private ownership / managed by DOC, including walking connections between Hooks Bay and Opopo Bay.		
Implementation Notes		
• **Ecological, historic & cultural heritage:** This stretch includes the Stony Batter Historic Reserve and coastal access walkways located within and managed by DOC landholdings. This strategy does not preclude Auckland Council support for the management of historic, cultural and historic heritage or ecological outcomes within this stretch and unit extent. • **Resilient roading connections:** Flood exposure to areas of roading infrastructure is identified, **no action** does not preclude the maintenance of safe access in relation to transport assets, as required.		

4.2: Waiheke East - Southern coast

This stretch includes the southeastern coast of Waiheke Island. Commencing west of the Pioneer cemetery in the east (within the wider te Matuku Bay area) and including the coast west (including Awaawaroa and Woodside Bay), culminating at Kauaroa Bay and the Whakanewha Regional Park in the southwest.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Maintain** 	**Maintain** 

Explanation

This stretch includes limited Auckland Council landholdings, primarily at Awaawaroa and Woodside Bay areas, where inundation and catchment flood hazards are identified in relation to roading assets and landholdings.

Maintain is identified in relation to these roading and limited reserve areas, including the need to manage risk to access and council-owned assets. Under the high climate change scenario, the frequency and extent of inundation hazards may require consideration of options to maintain the level of service provided to roading connections.

Implementation Notes

- **Ecology:** The Awaawaroa Wetland Reserve and stream system is a SEA which supports a variety of significant native species and ecosystems home to several classified threatened species including tuna, giant kokopu, inanga, banded rail and spotless crake. The coastal marine area at Te Matuku Bay is an identified Marine Reserve, and is administered by DOC.
- **Collaboration:** A partnership group of community members, CVNZ, Forest & Bird, Auckland Council Biodiversity Team and Local Parks staff identified the Awaawaroa Wetland Reserve as a priority location for stream restoration on Waiheke Island and regionally.
- **Maintain** does not support the management of risk to private land and assets. Noting that private coastal roading connections are located between Awaawaroa and Te Matuku Bays.
- **Community:** Roading connections to Awaawaroa and Woodside Bay provide critical roading access for these areas/communities and businesses.

Unit 5
Waiheke Island

N

Man O'War Bay

Man O'War Station Ltd have provided feedback seeking proactive further engagement with Auckland Council in identifying opportunities to improve the waterfront area where future shoreline protection can be planned and managed to address sea level rise as this relates to both public and private infrastructure. Opportunities are supported which consider and respond to the current uses, amenity, pedestrian and cyclist access (for those traveling by road and water), local biodiversity and conservation values

Te Matuku Bay is the largest wetland on the island and has been identified as a high priority for restoration and protection, being a site of national ecological significance. There are notable chenier-type shellbanks within this stretch that are recognised as an important high tide bird roost

Man O'War Vineyard & Winery

Private wharf

Man O'War Bay

Community identified need for improved stormwater management and opportunity for ecological and a regeneration plan for the wetland stream at Neapen Avenue discharging to Otakawhe Bay

Wairere Bay

Karipaka Bay

Waikopou Bay Esplanade Reserve

Valued coastal connection in eastern coast

Orapiu Road Reserve

Awakiriapa Bay

Pakihi Point Cemetery Reserve

Cowes Bay Esplanade Reserve

Arran Bay Esplanade Reserve

Community expressed value of preserving the area's raw beauty and natural character. "I would rather see it erode naturally than have intrusive structures alter its essence"

Cowes Bay

Te Matuku Stockyard Reserve and Waiheke Pioneer cemetery

Key 'loop' road connection

Lowlying road connections and reserve land

Cowes Bay Rd

Squirells Reserve

Community concerns with increased impervious surfaces and stormwater run off damaging coastal areas

Orapiu Rd

Te Matuku Bay Marine Reserve

Omaru Bay

Te Matuku Bay / Mcleods Bay

Community identified need for improved stormwater management and opportunity for ecological regeneration plan for the wetland stream at Neapen Avenue discharging to Otakawhe Bay

Pearl Bay

Pōhutukawa Bay

Otakawhe Bay

Te Matuku

Ecological restoration

Te Matuku Oyster Farm

Te Matuku Marine Reserve

Te Matuku Bay Scenic Reserve is of historical, spiritual, cultural, traditional and holistic significance for iwi

Orapiu, Otakawhe and Pearl Bay

Hotere Lane

Anzac Rd

Neil Road Reserve

Pearl Bay

Pearl Bay Wky

Nepean Ave

Wallingford Ave

Otakawhe Lodge

Hunterville Reserve

Otakawhe Bay

Orapiu Wharf

Coastal armoring of road end and wharf structure

Key transport connection for eastern Waiheke Orapiu Wharf

Unit boundary

5.1 5.2 Stretch

Informal recreation park

0 1km 2km

Unit 5: Man O'War Bay to Te Matuku Bay

Unit 5 includes the southeastern area of Waiheke. Commencing at Man O'War Bay in the north and culminating at Te Matuku Bay in the south. The unit includes Orapiu, Man O'War, Wairere, Karipaka, Waikopou, Awakiriapa, Days, Cowes, Arran, Silver, Pasadena, Connells, Waikorariki, Patio, Omaru, Orapiu, Pōhutukawa, Otakawhe, and Pearl bays and eastern areas of Te Matuku Bay.

What is happening? Coastal context and hazardscape

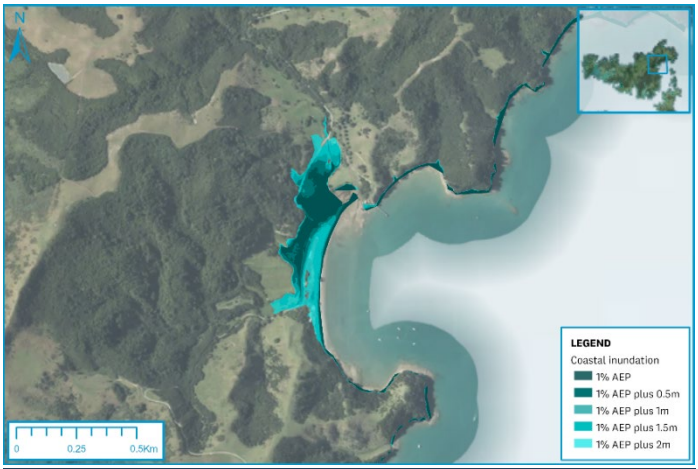
The Unit 5 coastline is characterised by vegetated coastal cliffs and a series of pocket beaches contained between headlands and shore platforms. It is only exposed to low, short-period fetch restricted waves, due to sheltering by adjacent islands. A number of these pocket beaches have relatively coarse sediments and therefore are relatively steep in profile. The inner coastline of Te Matuku Bay is characterised by intertidal flats, finer sediments and established mangroves, with the upper area transitioning into saltmarsh habitat.

Coastal inundation

Coastal inundation flooding is predicted to impact the low-lying land and embayments along the Waiheke Channel in the present day 1% AEP, notably in Man O'War Bay, Cowes Bay, Orapiu Bay and Te Makutu Bay. At Man O'War Bay, the flooding extent follows along the stream to Man O'War Bay Road in the low change scenario, increasing to potentially encompassing the whole reserve in the high change scenario. This can similarly be seen in Cowes Bay, where majority of the esplanade reserve is predicted to be inundated in the high change scenario.

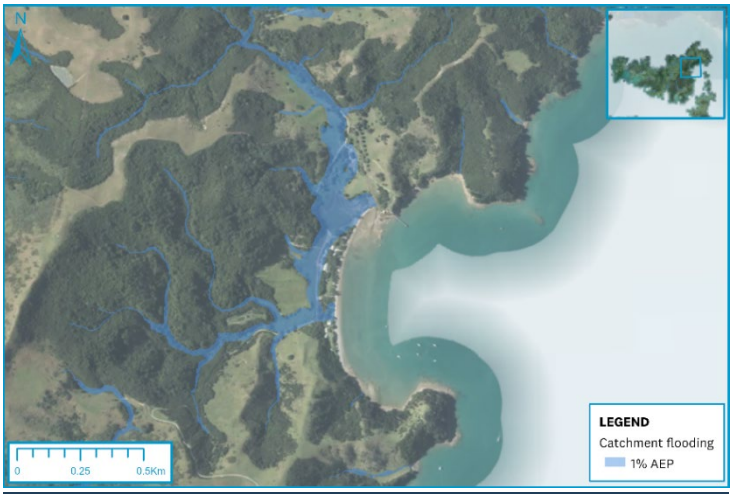
The whole of Te Makutu Marine Reserve is predicted to be impacted by coastal inundation in the low change scenario, with extent increasing to the surrounding stream areas and Orapiu Road in the high change scenario. In Orapiu Bay, coastal inundation is predicted to cover the wharf in the low change scenario, extending to inundate Anzac Road in the high change scenario.

Coastal Inundation at **Man O'War Bay** showing increments of sea-level rise impacting coastal reserve and roading connections (Source: GeoMaps)



Private jetty at **Orapiu Bay.** Source: Auckland king tides website – credit 'Orapiu jetty sinks below the King Tide at Waiheke Island, 02 February 2014. (Photo Richard Wedekind)

Catchment flooding at **Man O'War Bay**, showing the 1% AEP storm event. Impacting roading access in low-lying areas (Source: GeoMaps)



Coastal erosion and instability

The coastal cliffs along the Unit 5 coastline are subject to slow, ongoing weathering and erosion, with potential for episodic failures or slips to occur.

- Man O'War Bay, Man O'War Bay Road and the cliffside backing the embayment are identified as being susceptible to coastal erosion and instability in the low change scenario, with the extent increasing to include the strip of reserve land in the high change scenario.
- Reserve land at Waikopu Bay, Cowes Bay and Huntersville reserve is identified as susceptible in the low change scenario with the roading connections in Huntersville also impacted by coastal erosion and instability risk.
- In Te Matuku Bay Scenic Reserve, coastal erosion and instability is predicted to impact the full esplanade width along the coastal margin in the low change scenario, with the area susceptible extending to Squirrels Reserve and Orapiu Road in the inner Te Matuku Bay. This extent increases landward to Te Matuku Marine Reserve in the high change scenario.

Coastal protection structures are limited along the Unit 5 coastline, however several private seawalls are present along the pocket beaches.

Coastal protection at **Orapiu Wharf** (Source: Auckland Council 2011)

Catchment flooding

Catchment flooding within this unit area is identified in the figure below. Areas where feedback identified community experience with flooding was in relation to the Nepian Road end at Otakawhe Bay, where lower sections of this water course are low lying and adjacent to the road. Planting of water courses which discharge to the coast is evident at Otakawhe Bay. The stream discharge to the coast is also subject to changes within the coastal area (impoundment of the outfall).

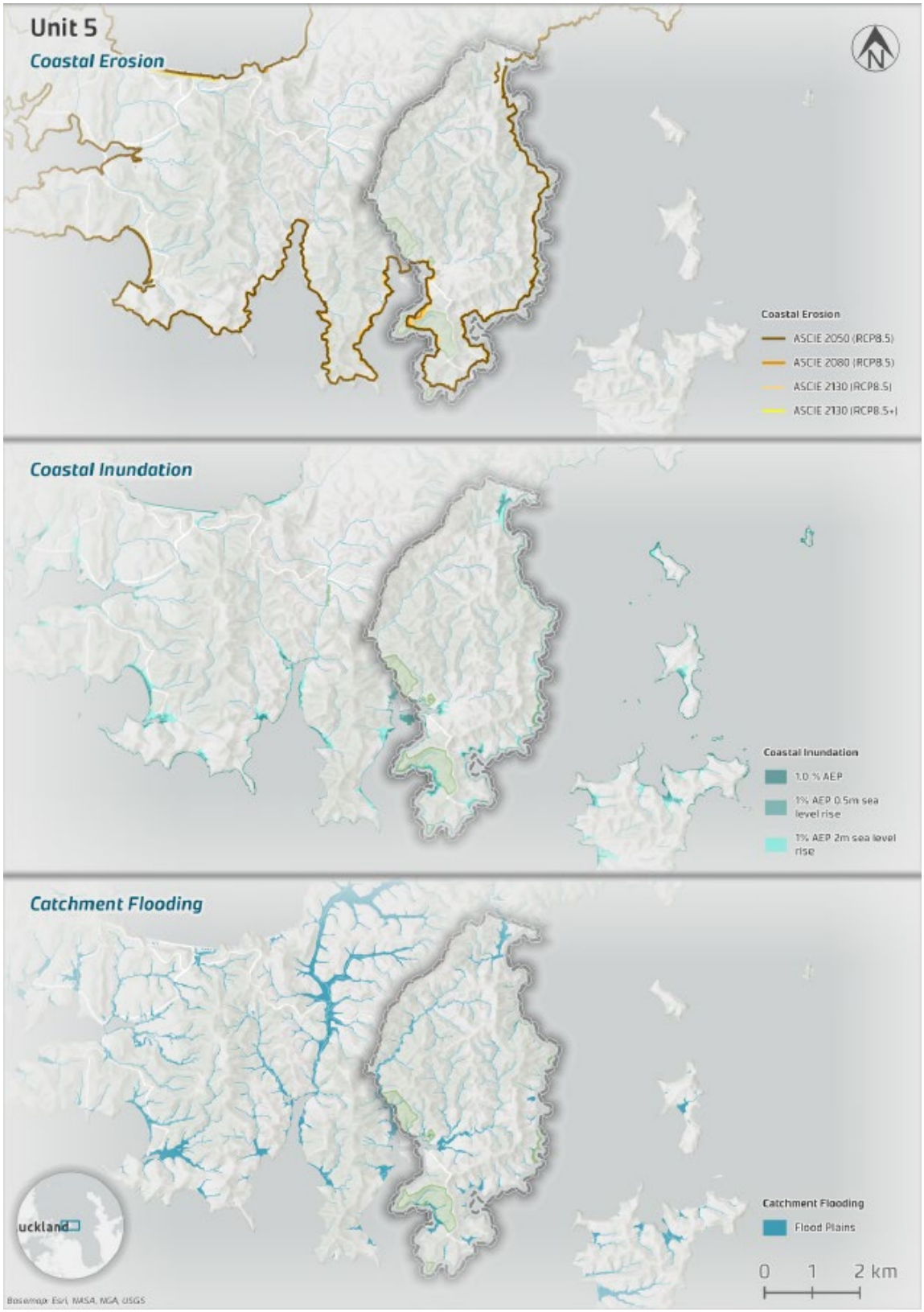


Figure 6: Coastal hazardscape for the Unit 5 area reflecting coastal erosion susceptibility for 2050, 2080 and 2130 considering RCP4.5 and RCP8.5 emission scenarios, coastal inundation for 1%AEP storm surge for present day and with 0.5 m, and 2 m sea-level rise and the identification of flood plains.

Risk assessment

The risk table represents key groups of assets (e.g. Auckland Council-owned land, buildings, road extents) which are supported by the regionally consistent data set. The risk assessment provides a regionally consistent method for comparing risk to Auckland Council-owned land and assets allowing for identification of areas with highest risk for potential future assessment (e.g. Volume 2).

The table below summarises the risk levels for Auckland Council asset types in the short, medium, and long-term and which map to the use of the low, moderate and high climate scenarios.

Council-owned land			**Council Community facilities**			**Transport infrastructure**			**Water infrastructure**		
Park and reserve land (34.3 ha)			Park amenity structures, carparks (0 ha) Buildings, wharves (7 No.)			Bridges (0 m^2) AT roads (13.7 km)			Water pipes (0 km)		
Short	Medium	Long	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Coastal erosion and susceptibility											
High	**High**	**High**	**Moderate**	**Moderate**	**Moderate**	**Moderate**	**Moderate**	**Moderate**	**Very Low**	**Very Low**	**Very Low**
Coastal inundation											
Moderate	**Moderate**	**Moderate**	**Moderate**	**Moderate**	**Moderate**	**Low**	**Low**	**Moderate**	**Very Low**	**Very Low**	**Very Low**
Key											
Very Low			**Low**			**Moderate**			**High**		**Very High**

What matters most

Auckland Council land and assets: This section identifies key Auckland Council-owned land and assets within this unit that may be impacted by coastal hazards (inclusive of catchment flooding) over changing climate scenarios.

- Auckland Council reserves are limited on the eastern shoreline with access to the coast primarily located at Man O War Bay, Waikopou Bay Esplanade Reserve and at Orapiu including the Hunterville Reserve and Neil Avenue Bush Reserve.
- Public access is more limited in relation to Arran Bay Esplanade Reserve, Cowes Bay Esplanade Reserve, Pakihi Point Cemetery Reserve, Squirells Reserve and areas of Pearl and Te Matuku Bay.
- Access to the coast is also provided at the Te Matuku Stockyard Reserve.

- **Park amenities and facilities:** Amenities including toilets and seating areas are located at Man O'War Bay, Orapiu Wharf and Te Matuku Stockyard Reserve with more limited amenities provided within other reserve and road reserve areas.

- **Piped assets:** Stormwater infrastructure associated with road drainage; wastewater treatment fields associated with public toilet facilities.

- **Key road networks:** Man O'War Bay Road, Anzac Road, Orapiu Road.
- **Key walking tracks:** Orapiu to Pearl Bay Path.
- Sections of the Te Ara Hura walking trail traverse the area, including on-road connections where public coastal access is limited.

- **Harbour access:** Orapiu Wharf (noting the Wharf at Man O'War Bay is privately owned).

Social, cultural and ecological context: This section identifies key social, cultural and ecological matters, identified through the development of the SAP reports, that may be impacted by coastal hazards (inclusive of catchment flooding) over changing climate scenarios.

- Specific cultural values and outcomes for this unit will be developed through ongoing engagement with local iwi. Statutory acknowledgement areas are included within this unit.

- This unit remains generally less populated than western areas of the island, with most of the area classed as rural productive land, regenerating slope and forest and bush areas. Roads connecting private houses and vineyard/restaurants remain gravel in places.
- The Hauraki Gulf District Plan identified several sites within this unit including Cowes Police Station / Oyster Inspectors House and the Hewin/Connells Homestead / Store / Post Office.
- Orapiu wharf provided transport connections between Waiheke, the Coromandel and Auckland.
- Communities are located at Otakawhe/Pearl Bay and Orapiu.
- Man O' War Bay provides for visitor activities and a vineyard. Local hospitality (including Distilleries and vineyards) and sculpture parks are located along coastal areas on private landholdings.
- The Te Ara Hura Trail generally follows roading connections.
- Coastal connections from Orapiu Wharf along Huntersville Reserve to Otakawhe and Pearl Bay beyond are locally important.

- Te Matuku Bay is a Biodiversity Focus area.
- Most of Unit 5 is covered in coastal forest ecosystems, including pōhutukawa-dominated treeland, broadleaved forest and regenerating bush.
- Man O'War Bay is surrounded by large remnant of kauri, podocarp, broadleaved forest, with smaller patches of kahikatea, pukatea forest and areas of freshwater wetland.
- Moko skink and copper skink have been recorded within the coastal environment of Karipaka Bay and Pōhutukawa Bay.
- Te Matuku Bay is an important estuarine area which supports a range of plant and a variety of shorebirds, seabirds and cryptic wetland birds. There are several shellbanks within the bay which are surrounded by mangrove forest and coastal shrub. The saline vegetation of Te Matuku Bay grades into small wetlands, including areas of oioi restiad rushland, raupō reedland, and mānuka, tangle fern, scrub, fernland.
- There are also a large number of white-fronted tern which rest on the Orapiu Bay Point Wharf (New Zealand eBird, n.d.; iNaturalist, n.d.).

Who have we heard from?

Feedback was received via Social Pinpoint and 'AK Have You Say' survey and through community engagement events.

Key themes in community submissions/responses included but not limited to:

- Concerns re coastal storm events, inundation, erosion and accumulation of sediment.
- Aspirations of maintaining access to key location via at least two roads and no further allowances of coastal consents for new builds.
- The 'natural beauty and character' of coastal areas is a core value in this unit area.
- Man O'War Station seek further proactive engagement with Auckland Council and to identify opportunities to improve the waterfront area of Man O'War Bay, where future shoreline protection is desired to address sea-level rise risk to both public and private infrastructure. Opportunities are supported by the Station which consider and respond to the current uses, amenity, pedestrian and cyclist access (for those traveling by road and water), local biodiversity and conservation values.

What is happening?

- Concerns among respondents were coastal erosion and inundation, noting coastal storm events, sea-level rise, the accumulation of sediment and reduced marine life within the unit area.

What matters most? Community aspirations or outcomes

- Respondents identified several activities which they enjoy undertaking within the unit area including boating and kayaking, fishing, walking and cycling, active water-based activities (surfing, paddle boarding, and kite surfing), open water-based activities, passive water-based and recreation activities.
- An aspiration to maintain access via at least two roads to key locations and not allowing any further coastal consents for new builds.
- Connection to the coast are limited within central areas of this coastal unit. Access at Waikoupu bay was identified as highly valued as a connection to this eastern facing coastal area.

What can we do about it? Community feedback and aspirations

Feedback identified support for maintaining management approaches which supported existing' natural beauty and character'.

In response to the proposed strategy of 'hold the line' (protect) at Orapiu Wharf, concerns that hard infrastructure may disrupt natural processes within this coastal area. Recommendations also included:

- The extension and restoration of existing wetland areas, the Otakawhe Wetland was specifically identified and community actions to restore this area were noted.
- Resilience of roading networks and the importance of these connections for the communities and visitors to southeastern areas of the island.
- Integration of adaptation planning with land use planning.

What can we do about it? Adaptation strategy summary for Unit 5

5.1: North Man O'War Bay

This stretch begins at north Man O'War Bay extending to the south, following the Man O'War Bay Estuary upstream. It culminates at the northern end of Man 'o War Bay Reserve, where the road turns toward the coast.

Scenarios for change		
Low	**Moderate**	**High**
No action 	**No action** 	**No action** 
Explanation		
This stretch includes limited Council-owned landholdings and assets identified as being exposed to coastal hazard. As a result, a **no action** strategy is applied.		
Implementation Notes		
• **No action** does not preclude the management of risk to roading infrastructure, as required. Management of risk through location and design of assets is preferred to the use of protection structures. • **Management:** Man O' War Bay wharf is a private wharf accessed through private landholdings and is not owned by Auckland Council. • **Community/organisational feedback:** Man O'War Station provided feedback seeking proactive engagement with Auckland Council to identify opportunities to improve the waterfront area of Man O'War Bay, where future shoreline protection is sought to address sea-level rise as this relates to both public and private infrastructure. They support opportunities which consider and respond to current uses, amenity, pedestrian and cyclist access (for those traveling by road and water), local biodiversity and conservation values.		

5.2: Man O'War Bay

This stretch begins at the Man O'War Estuary, extending to the south of Man O'War Bay Park.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Adaptation priority** 	**Adaptation priority** 
Explanation		
Maintain in the low change scenario reflects the exposure of Man O'War Bay Road and Man O'War Bay areas to flood, coastal inundation and coastal erosion in this low-lying coastal area. In the moderate to high change scenario, **adaptation priority** is identified to manage impacts of coastal erosion/ instability and inundation risk on accessways and reserve areas.		

Scenarios for change		
Low	**Moderate**	**High**
Implementation Notes		
• **Ecology:** There is an important ecological sequence from saline vegetation to freshwater wetland ecosystems to impact coastal forest fragments within this stretch. • **Management:** Man O'War Bay Road is exposed to erosion/instability and coastal inundation from the low change scenario. This strategy does not prevent localised interventions as required for roading connections. Auckland Transport, the asset manager, will monitor how coastal hazards may impact their operation and future implementation options. • **Feedback** from Man O'War Station sought proactive engagement with Auckland Council to identify opportunities to improve the bay's waterfront area; future shoreline protection for both public and private infrastructure Is sought to address sea-level rise. Opportunities should consider and respond to current uses, amenity, pedestrian and cyclist access (for those traveling by road and water), local biodiversity and conservation values.		

5.3: Rangitawhiri Point

Commencing in the south of Man O'War Bay and including the coastline south to Waikopou Bay.

Scenarios for change		
Low	**Moderate**	**High**
No action	**No action**	**No action**
Explanation		
No action is reflective of the limited Auckland Council land and assets located within this stretch.		
Implementation Notes		
• **No action** does not preclude the management of risk to roading infrastructure, noting the value of this roading connection for multiple users (including walking). • **No action** does not preclude collaboration and advocacy for the management of risk to ecological cultural and historic heritage values and sites.		

5.4: Waikopou Bay

Commencing at the northern end of the bay culminating at the southern end of the reserve area. Access to the reserve from Cowes Bay Road is provided by way of an easement over adjacent private properties.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Maintain** 	**Maintain** 
Explanation		
Maintain supports management of risk to walking connections to the coast; it recognises the dynamic coastline, noting historic coastal modifications (reclamations) may need further management. Management of risk can occur via the design and location of assets, supporting access to the coast while supporting ecological outcomes. Under the high change scenario increasing inundation of reserve areas may prompt further risk management considerations. Limited esplanade reserve areas are located on the coastal edge at Waikopou Bay.		
Implementation Notes		
• **Heritage:** Waikopou Bay Esplanade Reserve is an area of cultural significance with recorded archaeological middens/pits/sites of Māori origin. • **Management:** Areas of the historically mapped reserve may be below mean high water springs (MHWS) and as a result are part of the Common Marine and Coastal Area (CMCA). They were divested from the reserve under Section 11 of the Marine and Coastal (Takutai Moana) Area Act 2011.		

5.5: Eastern Coast

Commencing in the south of Waikopou Bay including the majority of the eastern coastline (Cowes, Arran, Pasadena, Conells and Orapiu bays), culminating to the north of Orapiu wharf where Anzac Road meets the coast.

Scenarios for change		
Low	**Moderate**	**High**
No action 	**No action** 	**No action** 
Explanation		
No action is reflective of the limited Auckland Council land and assets located within this stretch.		
Implementation Notes		
• **No action** does not prevent management of risk to roading infrastructure, noting the value of this roading connection for multiple users (including walking). • **No action** does not preclude collaboration and advocacy for the management of risk to ecological cultural and historic heritage values and sites.		

5.6: Orapiu Wharf

Commencing in the north where Anzac Road meets the coast and including the wharf area, culminating to the south of the wharf area. It includes Orapiu jetty and wharf.

West along Anzac Road, road access to Orapiu Wharf, with coastal armouring along the road edge and private jetty structure in the mid view. Source Auckland Council 2011

Scenarios for change		
Low	**Moderate**	**High**
Protect	**Protect**	**Protect**

Explanation

Protect reflects the importance of this harbour access structure and the limited landholdings which include the wharf and road access. It provides for ongoing maintenance of the rock seawall armouring the wharf and Anzac Road, an important transport connection. In the high change scenario, coastal inundation risk will increase and design of assets and location of facilities will require further review, including consideration of the ecological context and coastal processes.

Implementation Notes

- **Community:** When implementing the protect strategy, ensure assessment and consideration of intertidal areas that are crucial for marine life. Options should include allowing the coast to adapt naturally while still managing and protecting key assets.
- **Ecology:** Ecological values include white-fronted tern roosting on the wharf and jetty which will need to be considered in implementation of options.

5.7: Hunterville and Otakawhe Bay

Commencing south of the wharf including Otakawhe Bay coastline culminating in the northwest prior to Pearl Bay.

Looking northeast from the Hunterville walkway to the Orapiu Wharf (Source: Auckland Council)

Scenarios for change		
Low	**Moderate**	**High**
Maintain	**Maintain**	**Adaptation priority**

Explanation

Maintain reflects the need to maintain walking connections along coastal areas and vehicle access within the Anzac Road, Hunterville Road, Neil Avenue, Wallingford Avenue and Nepean Avenue. Management of risk to walking connections is envisaged through localised intervention, management of walkway alignment and design of walking connections. Low-lying roads (Anzac Road, and Neil, Wallingford and Nepean Avenues) and reserve areas may be exposed to both catchment flooding and coastal hazards. Management of risk to these roads may be required under the low and moderate change scenarios.

Adaptation priority in the high change scenario reflects the increasing exposure of key coastal walkways and the importance of these for local connections to and along the coast, as well as recognition of its ecological and cultural heritage values. Further engagement is needed to identify actions to manage coastal hazard risks.

Implementation Notes

- **Cultural and historic heritage:** Two pā sites are located within coastal areas of Hunterville Reserve. Statutory acknowledgement areas are located within this stretch.
- **Management:** Anzac Road, Neil Avenue, Wallingford Avenue and Nepean Avenue are exposed to erosion/ instability from the low change scenario.

5.8: Pearl Bay and North

This stretch begins at Hunterville Road west, continues north to Te Matuku Point Lane and includes the southern areas of Te Matuku Marine Reserve and Esplanade.

Te Matuku Bay Scenic Reserve sits adjacent to the esplanade reserve. The scenic reserve was recently transferred from the DOC to Ngāi Tai ki Tāmaki as part of a treaty settlement - they are now the administering body of the reserve.

Scenarios for change		
Low	**Moderate**	**High**
No action	**No action**	**No action**
Explanation		
No action is reflective of the largely natural state of the coastline and its limited Auckland Council land and assets.		
Implementation Notes		
• **No action** does not preclude the management of walking accessways to/within this stretch. • **No action** does not preclude actions to support cultural, geological or ecological features. • **Ecology:** The wetland in the inner Te Matuku Bay is the largest wetland on the island and being a site of national ecological significance, has been identified as a high priority for restoration and protection. There are notable chenier-type shellbanks within this stretch that are recognised as an important high-tide bird roost.		

5.9: Te Matuku Bay

This stretch extends from Te Matuku Bay Esplanade Reserve north of the mouth of Te Matuku Bay Estuary and concludes at Waiheke Cemetery Reserve. The Cemetery Reserve is Crown-owned land managed by DOC.

Looking east over the mangroves at Orapiu and Te Matuku Bay. Ponui Island can be seen in the background. Photo credit: Andrew Macdonald, Biospatial Ltd 2019 as appears in https://www.tiakitamakimakaurau.nz/discover-tamaki-makaurau/learn-about-your-area/bfa-te-matuku-bay/

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Maintain** 	**Maintain** 

Explanation

Sections of this stretch are exposed to catchment flooding and inundation from coastal areas, increasing in the moderate to high climate scenario. The low energy environment is supported by mangroves and salt marsh areas, meaning consideration of coastal instability in the high change scenario may be required. **Maintain** is identified due to reserve and roading assets located within hazard areas and supports managing risk to assets in low-lying areas (including the Stockyards Reserve and Orapiu Road) through design and location of assets.

Implementation Notes

- **Ecology:** Te Matuku Bay is a biodiversity hotspot and supports a plethora of marine, freshwater, and terrestrial ecosystems, including areas of oioi restiad rushland, raupō reedland, and mānuka, tangle fern, scrub, and fernland. Species recorded at Te Matuku Bay include a variety of shorebirds, seabirds and cryptic wetland birds.
- **Cultural and historic heritage:** Te Matuku Bay Esplanade Reserve and Te Matuku Bay Stockyard Reserve contains several heritage sites.
- **Management:** The coastal marine area was established as the Te Matuku Bay Marine Reserve in 2005 and is administered by DOC. The bay is also a biodiversity focus area. Maintain supports continued support for ecological outcomes.

Unit 6
Waiheke Island

N

Pūtiki Bay

Community experience of flood hazards.

Sourced: social media and community submissions

Rangihoua Reserve and Onetangi Sports Park

Golf course, sport fields highly valued community facilities

Te Komiti Whakahaere o Rangihoua me Tawaipareira

Rangihoua and Tawaipareira Management Committee

Anzac Bay Reserve

Pūtiki Bay contains a complex of saline wetlands grading from mangrove forest to saltmarsh and into freshwater wetland systems. Banded rail are present within this estuarine environment

Anzac Bay

Road causeway and bridge connection

Waiheke Golf Club

Waiheke House Boats

Pūtiki Bay

Okoka Bay

Wharetana Bay

Te Rangihoua Te Pūtiki o Kahumatamomoe - culturally significant site to local iwi

Vintage Ln

O'brien Rd

Te Whau Dr

Glenbrook Reserve

Community valued park area for range of uses

Hitapa Bay

Kauakarau Bay

Whakanewha Regional Park

Te Whau Esplanade Reserve

Community collaboration in ecological preservation and restoration. Support for local environmental initiatives and support for bird nesting areas

Gordons Rd

Whakanewha Regional Park

Unit boundary

Stretch 6.1 6.2

Informal recreation park

Co-managed or Co-governed Park

Mooring management area

Auckland Council owned land

0 500m 1km

Unit 6: Ōmiha (Rocky Bay) and Whakanewha to Rangihoua

Unit 6 includes the southern coastline between Whakanewha in the south and Ōmiha / Rocky Bay to Rangihoua Wetland in the north. This includes Whakanewha, Ōmiha /Rocky Bay, Kuakarau Bay, Te Akau o Hine, Hitapa Bay, Te Whau Bay, Ōakura Bay, Wharetana Bay, Okoka Bay and Rangihoua Creek/wetland.

The unit includes multiple reserves surrounding the suburb of Ōmiha/ Rocky Bay, several sheltered coves, Whakanewha Regional Park and Rangihoua, a co-managed reserve.

Whakanewha Regional Park - View of the Shell Spit Wildlife Area (source Auckland Council)

What is happening? Coastal context and hazardscape

The Unit 6 coastline is characterised by vegetated coastal cliffs, shore platforms and small pocket beaches. The inner Pūtiki Bay coastline is a sheltered environment and only exposed to very low localised wind waves. Pūtiki Bay is characterised by shallow intertidal flats, finer sediments and established mangroves, transitioning into saltmarsh habitat where the coastline is more sheltered.

The Te Whau Bay to Ōmiha /Rocky Bay and Whakanewha Bay section of the coastline is exposed to frequent, low, short-period waves generated by the predominant southwest winds across adjacent fetch distances of in the order of 12-15 km.

Coastal erosion and instability

The shoreline coastal cliffs are subject to slow, ongoing weathering and erosion, with potential for episodic failures or slips to occur. In the Rocky Bay and Whakanewha Bay coastline, coastal erosion and instability susceptibility (in the low change scenario) is identified for the Upland Road Walkway Reserve, Pōhutukawa Reserve and Te Whau walkways (including areas of Wharetana Bay and Okoka Bay). The area potentially susceptible increases to include roading connections by Ōmiha Bay and Kauakarau Bay in the high change scenario.

In the inner Pūtiki Bay coastline, the majority of Te Whau Esplanade is predicted to be impacted by coastal erosion or instability in the low change scenario, along with instability identified for coastal edges of low-lying wetland areas. This includes areas of the walkway/bridleway towards Onetangi and southern areas of Rangihoua Reserve. There is no significant increase in extent from the low to high change scenario for these shorelines.

Coastal management includes a short rock seawall at Ōmiha Beach, providing protection to a vehicle parking and foreshore access area. Armouring or protection structures are limited to those associated with stormwater outfalls and roading connections. Planting has previously been undertaken along the coastal edge at Whakanewha Regional Park.

Coastal inundation

Coastal inundation (the 1% AEP coastal storm event) is predicted to impact low-lying reserve land and stream areas along the Ōmiha Rocky Bay and Whakanewha Bay coastline and low-lying areas at Whakanewha Regional Park (Pokaraka Flats), Kauakarau Bay (Mary Wilson Reserve) and Ōmiha Bay (including the boat ramp).

The flooding extent increases marginally (not significantly) in the moderate change scenario, with the exception of Kauakarau Bay where a larger spatial area (and a number of fixed park assets) are identified as inundated in a 1% AEP storm event (refer to the area-specific figure below).

In the high change scenario, coastal inundation extent is predicted to extend landward including roading connections (Gordons Road) within Whakanewha Regional Park and impact both roading connections, esplanade and park areas at the Mary Wilson Reserve (Kauakarau).

Along the inner Pūtiki Bay shoreline, the 1% AEP storm event is predicted to impact the coastline of Te Whau Bay, inundating Okoka Bay ('Dead Dog Bay') and sections of the walkway, and the surrounding wetlands of Rangihoua. This extent increases in the high change scenario, where roading connections such as O'Brien Road and Onetangi Road (including the road bridge) will be impacted.

The two figures below provide further illustration of the impact that coastal inundation and catchment flooding may have on low-lying areas at Ōmiha and Kauakarau Bays.

Coastal Inundation at **Ōmiha and Kauakarau Bay** showing increasing spatial exposure to coastal inundation with sea-level rise. The more elevated coastal area at Ōmiha Bay displays a more limited spatial extent. Noting that the depth of inundation events at the coastal edge may increase. (Source: GeoMaps)

Catchment flooding at **Ōmiha and Kauakarau Bay**, showing the 1% AEP flood event impacting roading areas within the Ōmiha Bay area, and within central areas impacting the roading connections and Mary Wilson Reserve. (Source: GeoMaps)

Catchment flooding

The 1% AEP flood plain areas discharge to the coast in several areas within the unit area. In southern areas, catchments (mainly vegetated) discharge to the coast within the Whakanewha Regional Park (in the Poukaraka Flats area and at several locations within the wider embayment area). Smaller catchments drain to the coast within the Ōmiha / Rocky Bay area.

Identifiable floodplain areas within the Te Whau Peninsula include Wharetana Bay and Okoka Bay areas. Multiple catchments drain to the coast within the Rangihoua area as illustrated below.

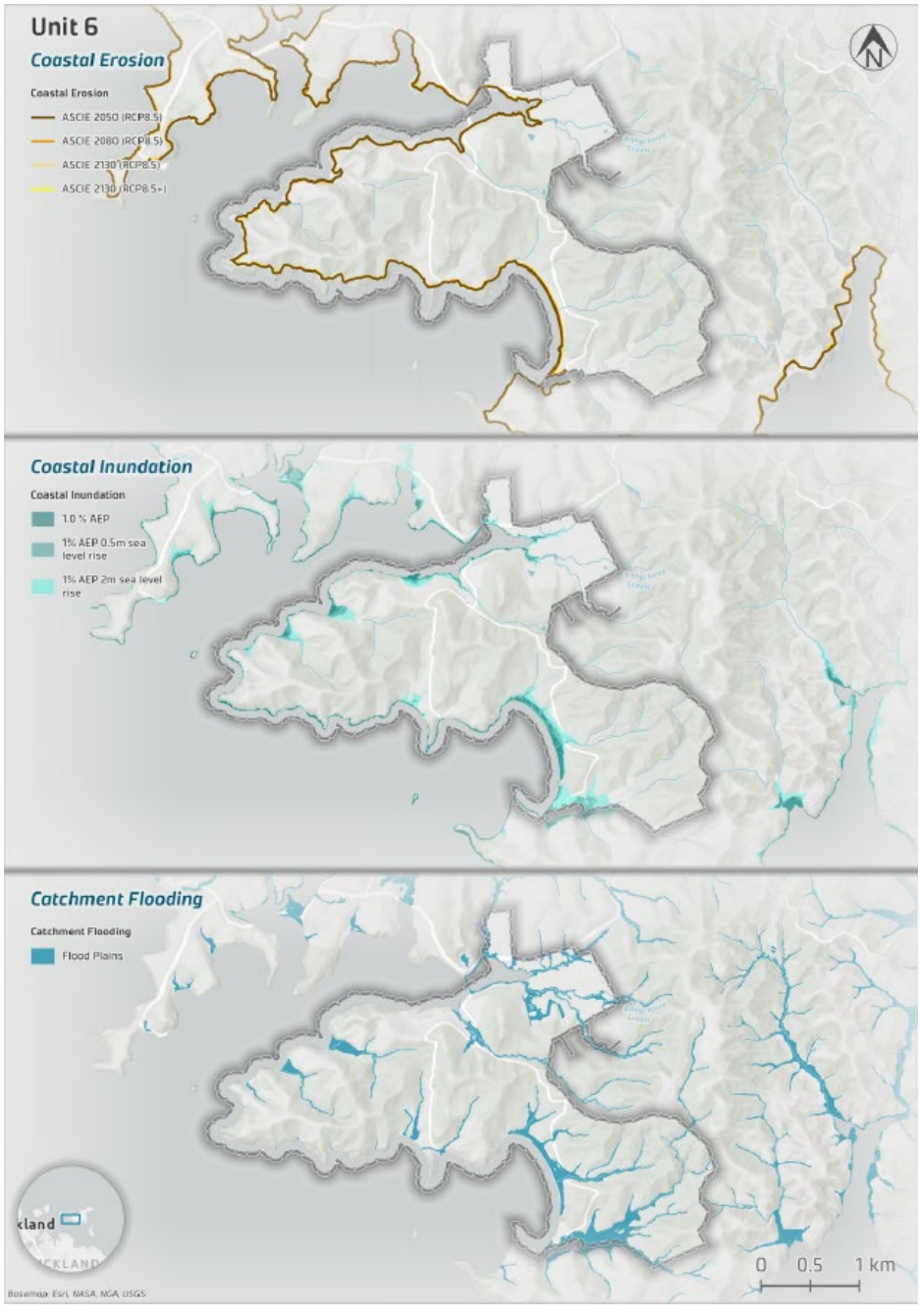


Figure 7: Coastal hazardscape for the Omiha (Rocky Bay) and Whakanewa to Rangihoua unit reflecting coastal erosion susceptibility for 2050, 2080 and 2130 considering RCP4.5 and RCP8.5 emission scenarios, coastal inundation for 1%AEP storm surge for present day and with 0.5 m, 1 m and 2 m sea-level rise and the identification of flood plains.

Risk assessment

The risk table represents key groups of assets (e.g. Auckland Council-owned land, buildings, road extents) which are supported by the regionally consistent data set. The risk assessment provides a regionally consistent method for comparing risk to Auckland Council-owned land and assets allowing for identification of areas with highest risk for potential future assessment (e.g. Volume 2).

The table below summarises the risk levels for Auckland Council asset types in the short, medium, and long-term and which map to the use of the low, moderate and high climate scenarios.

Council-owned land			Council Community facilities			Transport infrastructure			Water infrastructure		
Park and reserve land (419 ha)			Park amenity structures, carparks (1.6 ha) Buildings, wharves (26 No.)			Bridges (64.9 m^2) AT roads (17.4 km)			Water pipes (0.04 km)		
Short	Medium	Long	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Coastal erosion and susceptibility											
High	High	High	Moderate	Moderate	High	Very High	Very High	Very High	Very Low	Very Low	Very Low
Coastal inundation											
High	High	High	High	Very High	Very High	Low	Very High	Very High	Very Low	Very Low	Very Low
Key											
Very Low			Low			Moderate			High		Very High

What matters most

Auckland Council land and assets: This section identifies key Auckland Council-owned land and assets within this unit that may be impacted by coastal hazards (inclusive of catchment flooding) over changing climate scenarios.

- **Esplanade reserves** along the coastal margin are almost continuous from Kauakarau Bay (Ōmiha / Rocky Bay) to Rangihoua Creek. Note not all areas are accessible and coastal access is not contagious.
- **Regional park:** Whakanewha Regional Park.
- **Co- managed reserve:** Rangihoua.
- **Cemetery:** Onetangi Lawn Cemetery.
- **Reserves** include Glen Brook Reserve, Gordons Road Esplanade Reserve, Kuakarau Bay Forest, Mary Wilson Reserve, Ōmiha Beach Reserve, Onetangi Historic Reserve, Pōhutukawa Reserve, Te Whau Esplanade Reserve(s), Valley Road O'Brien Road Access, Wairua South Reserve.

- **Park amenities and facilities:** Whakanewha Regional Park (including Student Quarters Portacom, dangerous goods shed, Green House, and Nurse pottery shed), Poukaraka Flats, Ōmiha Beach, Mary Wilson Reserve.
- Within northern areas: Waiheke animal shelter facility, Waiheke Cemetery Shed, Waiheke Historical Society, Waiheke Mortuary.

- **Water:** Whakenewha Regional Park pump shed and wastewater treatment fields associated with public toilet facilities.
- **Piped assets:** Stormwater infrastructure associated with road drainage.

- **Key road networks:** Gordons Road, O'Brien Road, Onetangi Road, Te Whau Drive.
- **Key walking tracks:** Okoka Bay Dead Dog Walkway, Poukaraka Pā Path, Rangihoua Wetland Path, Rocky Bay Beachfront Path, Rocky Bay Roads Path, Upland Road Walkway, Whakanewha Forest Path.
- This unit includes Sections of the Te Ara Hura walkway.

- **Harbour access:** Boat ramp (Ōmiha Bay), informal water access (for small craft) at multiple locations within the regional park and at the Mary Wilson reserve.

Social, cultural and ecological context: This section identifies key social, cultural and ecological matters, identified through the development of the SAP reports, that may be impacted by coastal hazards (inclusive of catchment flooding) over changing climate scenarios.

- Specific cultural values and outcomes for this unit will be developed through ongoing engagement with local iwi.

- Whakanewha Regional Park has significant cultural and recreational values. It contains important restored habitats and ecosystems that support rare New Zealand bird species. Important natural features include Poukaraka Wetland, Cascades Stream and a dotterel and shorebird breeding area on the foreshore.
- Te Komiti Whakahaere o Rangihoua me Tawaipareira (Rangihoua and Tawaipareira Management Committee) a co-management committee, oversees the activities and management of Rangihoua maunga and surrounding area, plus Tawaipareira Reserve. It has Ngāti Paoa (mana whenua) and local board members. The committee is responsible for all management decisions for the area, ensuring the area is managed according to Ngāti Paoa tikanga (customs), District Plans and the Unitary Plan, reserve management plans and proposing any works or activities to help protect or enhance the area according to the Reserves Act 1977.
- Hauraki Gulf District Plan has identified historic heritage features including Wharetana House, the Rocky Bay Store, Omiha Welfare and Recreation Society Memorial Hall and the Memorial Plinth and flagpole.
- A Houseboat community is located within coastal areas of the Pūtiki Creek.
- The Waiheke Museum and the Waiheke Cemetery are located within this unit area.
- Horse-riding facilities and bridle trails traverse this unit area.
- This unit includes sections of the Te Ara Hura walking trail.

- Whakanewha Regional Park is classified as coastal broadleaved forest and regenerating scrub dominated by kānuka. The following ecosystems are also found within and adjacent to the regional park: a flaxland wetland in the north; a large raupō reedland wetland in the south; areas of Machaerina sedgeland; and a long strip of chenier-type shell barrier beach which grades into mangrove forest.

- The regional park provides habitat for native lizards, passerine birds, cryptic wetland birds, and coastal birds. Little penguin are found in burrows along this stretch of coastline.
- A contiguous remnant of pōhutukawa-dominated treeland continues along Te Whau Point, within Ōmiha Beach Reserve, Wairua South Reserve, and Te Whau Esplanade Reserve – this belt of coastal pōhutukawa forest is one of the largest remaining examples on Waiheke Island.
- Pūtiki Bay contains a complex of saline wetlands grading from mangrove forest to saltmarsh and into freshwater wetland systems. Banded rail are present within this estuarine environment (New Zealand eBird, n.d.).

Who have we heard from?

Feedback was received via Social Pinpoint and 'AK Have You Say' survey. Key themes in community submissions/responses included but not limited to:

- Community concerns of coastal erosion and rainfall flooding, resulting in land slips, fallen trees, and closed or inaccessible walking tracks.
- There was majority support of the proposed adaptation strategies with a few respondents suggesting future planting to establish a coastal buffer and the implementation of nature-based design to restore wetlands and improve resilience at Rangihoua Reserve.

What is happening?

- The primary concern is coastal erosion, with some noting rainfall flooding as an existing hazard.
- Flooding has been experienced by several respondents, alongside land slips, fallen trees, and closed or inaccessible walking tracks.

What matters most? Community aspirations or outcomes

- Walking and running on the beach and passive recreation, as well as active and passive water-based activities and horse riding.
- Dotterel protection.
- The value of 'well maintained' tracks; Rocky Bay walking connections were identified as well-loved walks.

What can we do about it? Community feedback and aspirations

- Opportunities for nature-based design within the Rangihoua Reserve to restore wetlands and improve resilience.
- Further planting be established along the edge of beach areas to create a coastal buffer.
- Local Board feedback identified the importance of harbour connections at Ōmiha boat ramp. They provide important access for the community in the event of the loss of road access and to support community resilience in the event of fire in this coastal settlement. The Board sought that the importance of this access be highlighted, and the facility maintained and protected to support community resilience.
- Local Board feedback identified the highly valued nature of coastal connections in relation to Wharetana Bay and Okoka Bay. Coastal access between the bays is important and is identified as exposed to coastal hazards. Maintenance of this access and support for the further development of access to the coast in this area is highlighted as a priority.

What can we do about it? Adaptation strategy summary for Unit 6

6.1: Whakanewha South

Stretch 6.1 begins at the southern point of Whakanewha Bay ending at the start of the regional park area.

Scenarios for change		
Low	**Moderate**	**High**
No action	**No action**	**No action**
Explanation		
No action is reflective of the limited Auckland Council land and assets located in this stretch.		
Implementation Notes		
• **No action** does not preclude the management of roading infrastructure. Management of risk by location and design of assets is preferred to the use of protection structures.		

6.2: Poukaraka Flats (Whakanewha Regional Park)

Stretch 6.2 starts at the park's boundary in the southwest and continues to the central headland (pā site) including the Poukaraka Flats area.

Poukaraka Flats Campground area and view of campground amenities (source: Auckland Council)

Scenarios for change		
Low	**Moderate**	**High**
Maintain	**Maintain**	**Adaptation priority**
Explanation		
Under the low and moderate climate scenarios, coastal and catchment inundation may impact regional park (campground) areas and roading. **Maintain** supports the management of risks to roads, park amenities and their uses by prioritising their location, design and management. This could include nature-based solutions and ecological enhancement, particularly at the coastal edge. Increasing inundation risk and erosion susceptibility in coastal areas under the high change scenario provides for **adaptation priority** with further engagement with multiple asset owners/managers, iwi, community and other parties to consider options for managing these coastal hazard risks.		

Implementation Notes
• **Maintain:** Gordons Road is exposed to coastal inundation from the moderate to high change scenario leading to localised interventions, as required, for roading connections. • **Community:** Support for the management of risk to highly valued areas while preserving the coast's natural character and amenity. • **Cultural heritage:** Whakanewha Regional Park contains several recorded sites. Engagement with mana whenua is required to further understand their cultural values. • **Management:** The Regional Park Management Plan provides direction the uses and aspirations for this regional park.

6.3: Whakanewha (Whakanewha Regional Park)

Commencing in the south at the central headland (pā site) continuing to the Upland Road boundary where it connects to the road. This stretch includes the majority of Whakanewha Regional Park.

Park access and connections and view south of the picnic area in Whakanewha Bay

Scenarios for change		
Low	**Moderate**	**High**
No action	**Maintain**	**Maintain**

Explanation
No action under the low change scenario supports maintaining natural coastal areas. While it does not exclude management of accessways or the upkeep of areas for existing uses, it prioritises preserving the natural coastal environment by allowing space for coastal processes and adapting to coastal change. **Maintain** under the moderate to high change scenarios recognises the need to manage increasing inundation risks to park assets and roads and ensuring a safe and functional walkway network.

Implementation Notes
• **Cultural heritage:** Whakanewha Regional Park contains several recorded sites. Engagement with mana whenua to further understand the cultural values associated with this coastal area. • **Management:** The Regional Park Management Plan provides guidance on managing uses and aspirations for this regional park.

6.4: Whakanewha to Ōmiha Rocky Bay

Commencing adjacent to the corner of Upland Road to the eastern side of Ōmiha Bay encompassing the eastern portion of Ōmiha Rocky Bay. It includes the eastern section of the Ōmiha Beach Reserve.

Scenarios for change		
Low	**Moderate**	**High**
No action 	**No action** 	**No action** 
Explanation		
No action is reflective of the limited Auckland Council land and assets located in this stretch.		
Implementation Notes		
• **No action** does not preclude the management of risk to roading infrastructure or assets as required.		

6.5: Ōmiha Bay

This stretch encompasses the western section of Rocky Bay, concluding at the eastern side of Pōhutakawa Reserve. It has a boat ramp and multiple private jetties and boat sheds. A short rock seawall is present at Ōmiha Beach Reserve, Rocky Bay, providing protection to a vehicle parking and foreshore access area.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Maintain** 	**Maintain** 
Explanation		
Maintain supports management of risk to Auckland Council land and assets including Ōmiha Bay's dinghy launching area, bus turning circle, public facilities and roading connections. In the high change scenario, coastal erosion, instability and inundation may require resilient design of assets and coastal access structures at renewal. Maintenance of protection (noting the presence of existing protection structures) may be required to support highly valued and critical harbour access connections such as the Ōmiha boat ramp.		
Implementation Notes		
• **Cultural heritage:** Sites of interest to mana whenua have been recorded in Ōmiha Bay. Engagement with mana whenua will be required to support the implementation of adaptation strategies. • **Maintain** under a moderate and high change scenario may require further assessment of options to manage access to the coast while protecting historic heritage and locally-valued features. • **Maintain** supports the management of risk to roading connections, including Pōhutukawa Avenue. • **Local Board** feedback identifies the importance of the Ōmiha boat ramp to support community resilience and provide for coastal access if road access is lost. The Board identified the need to maintain and protect this harbour access point to support community resilience.		

6.6: Pōhutukawa Avenue Headland

This stretch includes the headland from the road end, culminating in the west at McMillan Road.

Scenarios for change		
Low	**Moderate**	**High**
No action 	**No action** 	**No action** 
Explanation		
No action is reflective of the limited Auckland Council land and assets located in this stretch.		
Implementation Notes		
• **No action** does not preclude the management of roading infrastructure or walkway connections maintained by Auckland Council and located within this stretch.		

6.7: Kauakarau Bay (Mary Wilson Reserve)

This stretch encompasses Kauakarau Bay and includes Mary Wilson Reserve across the road from the beach which has a playground, barbecue, picnic tables and toilet.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Adaptation priority** 	**Adaptation priority** 
Explanation		
Maintain in the short term supports the current use and management of risks using existing structures and interventions. In the moderate to high change scenario, **adaptation priority** will require proactive consideration of land uses and assets to mitigate coastal inundation risk.		
Implementation Notes		
• **Heritage:** Several middens/pits/burial sites of Māori origin are recorded on Kauakarau Bay beachfront. Engagement with the Heritage Team may be required for any specific management of this area.		

6.8: Te Akau o Hine (Wairua and Te Whau reserves/ walkways)

This stretch begins to the west of Mary Wilson Reserve and extends to Te Whau Esplanade Reserve including Wairua South Reserve and coastal areas west to the access connection north to Te Whau Drive. There are areas of coastal cliff reserve on the southern side of the Te Whau Peninsula (Hitapa Bay). The walking connection which forms a section of the Te Ara Hura walkway has been impacted by instability and landslides.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Maintain** 	**Adaptation priority** 
Explanation		
This stretch is exposed to future coastal instability and erosion. **Maintain** in the low to moderate change scenario and **adaptation priority** in the high change scenario supports management of risk to the walkway through resilient design and localised realignment within reserve areas.		
Implementation Notes		
• **Cultural and historic heritage:** Te Whau Esplanade Reserve contains recorded sites of cultural significance. The reserve is also listed in the Cultural Heritage Inventory as the grave site of Pierre De Norrie. Engagement with iwi and further information from the Heritage Team may be required for any specific management of this area. • **Ecology:** Little Blue Penguins have been recorded at The Whau Esplanade Reserve.		

6.9: Te Whau & Southern Pūtiki Bay

Stretch 6.9 begins on the southern side of Te Whau Peninsula and includes the coastline northeast to the O'Brien Road causeway. It starts west of Te Whau Reserve and extends around Te Whau Bay into Pūtiki Bay to Rangihoua Onetangi Sports Park and includes cultural heritage sites including Te Whau wahi tapu and Te Rangihoua Te Pūtiki o Kahumatamomoe.

Scenarios for change		
Low	**Moderate**	**High**
No action 	**No action** 	**No action** 
Explanation		
This stretch includes areas of esplanade reserve land with limited council assets. Wharetana Bay (Te Whau Esplanade Reserve) and Okoka (Dead Dog) Bay are located within this stretch, with access to the coast in these locations highly valued by the local community. **No action** does not exclude continued maintenance of access to the coast and walking connections (between Wharetana and Okoka Bays) and associated park amenities. It is also noted that private house boats located within this coastal stretch access across reserve and road reserve areas within this stretch.		
Implementation Notes		
• **No action** does not preclude the management of risk to coastal connections and assets located within Wharetana Bay and Okoka Bay. The strategy does not preclude the potential future development and improvement of walking connection in this area. • **Cultural:** This stretch includes Te Whau wahi tapu and Te Rangihoua Te Pūtiki o Kahumatamomoe which are sites of significance to mana whenua. • **Management:** Location and design of new and renewed assets and should be responsive to coastal instability and erosion and inundation risks in low-lying areas. **No action** does not preclude managing risk to roading connections, if required. • **Management** for Te Whau Reserve includes considering opportunities to develop and enhance the native biodiversity of the area, and the paths through the reserve that are part of the Waiheke Island Pathways Plan 2019, Te Ara Hura, the Wharetana Bay Concept Plan 2017, and Okoka Bay walkway.		

- **Management:** Opportunities are being considered to implement proposals outlined in the Wharetana Bay Concept Plan 2017. This includes protecting and recognising the historical significance of Wharetana Bay (Auckland Council, 2023b).
- **Local Board Feedback** identified the highly valued nature of coastal connections in relation to Wharetana Bay and Okoka Bay. Coastal access to and between the bays is considered important and is identified as exposed to coastal hazards. Maintenance of this access and support for the further development of access to the coast in this area is highlighted as a priority.
- **Review of strategies:** a review of the strategies (and identification of coastal stretches) can be undertaken in response to the further development of coastal connections, specifically in relation to Wharetana and Okoka bays.

6.10: Rangihoua

This stretch commences in the southeast of O'Brien Road and includes the Rangihoua co-managed reserve, Onetangi Sports Centre (which contains multiple Auckland Council assets including sports fields, a sports pavilion, and two pump sheds) and other leased park uses (golf course, adult riding facilities, Waiheke Museum and animal management facilities).

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Maintain** 	**Maintain** 

Explanation

This stretch is exposed to coastal erosion susceptibility, inundation from catchment and coastal sources over all climate scenarios. **Maintain** reflects the management of risk to road connections (O'Brien and Onetangi Roads), park areas and uses (including sport facilities, cemetery and leaseholder uses) and the wider Rangihoua wetland and park, in accordance with the relevant management plans, ensuring the location of assets and uses are designed and located appropriately. Coastal inundation and catchment flooding risk will increase in low-lying areas and design response may be required for roading connections under the moderate and high climate scenarios. Catchment flooding is an identified issue in relation to sections of the Onetangi Road area (East of the Historic reserve area), **maintain** providing for the continued consideration of options to manage risk.

Implementation Notes

- **Cultural:** Rangihoua Reserve and Onetangi Sports Park form part of a wider landscape of significance to Ngāti Pāoa, including the maunga and the awa, collectively known as Te Rangihoua, with the visions and goals for the area outlined in the Rangihoua Reserve and Onetangi Sports Park Reserve Management Plan 2024.
- **Management:** Te Komiti Whakahaere o Rangihoua me Tawaipareira (Rangihoua and Tawaipareira Management Committee) a co-management committee, oversees the activities and management of Rangihoua maunga and surrounding area. It has Ngāti Paoa (mana whenua) and local board members. The Rangihoua Reserve and Onetangi Sports Park Reserve Management Plan 2024 also outlines a focus on wetland restoration, riparian planting and improving water quality.
- **Management:** O'Brien and Onetangi roads, both critical connections for the southern areas, are exposed to coastal inundation in the high change scenario. Continued management of risk in response to inundation and coastal processes will be required.

Unit 7
Waiheke Island

Te Komiti Whakahaere o Rangihoua me / Tawaipareira Rangihoua and Tawaipareira Management Committee

Aspirations for connections to Tawaipareira Reserve

Community concerns for flood risk

Key community youth play facilities

Opopoto Bay

Tawaipareira Reserve

Te Toki Rd

Waiheke Primary School

Te Toki Reserve

Wilma Rd

Ostend

Anzac Bay Reserve

Waiheke Island waste transfer and recycling centre

Huruhi Bay

Community observe erosion of coastal edge

Esslin Reserve

Picnic Bay

Local Sea Scouts

Ostend Rd

Anzac Bay

Ostend Rd

Waiheke Quarry

Putaki Bay

Coastal erosion and land instability - concerns for erosion of reserve areas and coastal access

Wharf Road, key boat launching location and access to mooring zone

Historic wharf access location

Community priority for adaptation with flood hazard and coastal erosion experienced

Kennedy Point Reserve

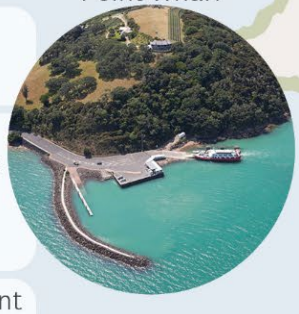
Donald Bruce Rd

Low lying exposed reserve and roading connections

Local coastal access point

Kennedy Point Marina

Kennedy Point Wharf



Kennedy Point Wharf 2018 prior to private Marine development

Critical transport connection for Waiheke Island providing roll on roll off vehicular ferry service to the island

Key harbour access point and boat trailer parking

Te Toki Reserve/ Okahuiti Scientific Reserve supported by local community restoration groups

Ostend Domain

Waiheke sports club and playing fields and courts; key community sports facility

Cultural landscapes and sites

Access to western end of island

Causeway key road access

Waiheke boating club hardstand/ boat haul out area

Highly valued local beach

Shelley Beach - water

Unit boundary

7.1 7.2 Stretch

Informal recreation park

Unit 7: Pūtiki Bay (Ostend to Kennedy Point

Unit 7 includes the south coast of Waiheke between the Onetangi Road O'Brien Road bridle path in the east and Kennedy Point in the west. This includes Tawaipareira Creek, Anzac Bay, the Ostend community, Okahuiti Creek, Putaki Bay (and the northern side of Pūtiki Bay), Kennedy Point and Takirau Bay.

What is happening? Coastal context and hazardscape

The Unit 7 coastline is characterised by predominantly vegetated coastal cliffs, shore platforms and small pocket beaches. Extensive intertidal flats of finer sediments, with extensive muddy intertidal flats and established mangroves characterise the inner Pūtiki Bay coastline.

The upper Pūtiki Bay intertidal area beyond Causeway Road has been constricted by past reclamation and construction of the causeway. With tidal movements into and out of this upper area via a single culvert through the causeway, this area has become more estuarine and depositional in character.

The southern and western-facing sections of Kennedy Point Reserve are exposed to frequent, low, short-period waves, generated by the predominantly southwest winds across fetch distances in the order of 11-12 km. The inner more sheltered sections of the Unit 7 coastline are only exposed to very low localised wind waves.

Coastal erosion and instability

The coastal cliffs along the Unit 7 coastline are subject to slow, ongoing weathering and erosion, with potential for episodic failures or slips to occur. The ASCIE in this unit is predicted to apply to most coastal esplanade reserve areas in close proximity to the coast and in some cases, impact adjacent roading connections, with little to no significant increase in extent from the low to high change scenario.

In the Pūtiki Bay intertidal area, coastal erosion and instability risk extends to Ostend Road, Natzka Road and Wharf Road, impacting the reserves from Anzac Bay to Pūtiki Reserve.

For Kennedy Point, coastal erosion and instability is predicted to impact Donald Bruce Road in the low change scenario, with the extent increasing to Kennedy Point Road in the high change scenario.

Coastal management in this unit includes armouring in sections of Kennedy Point Reserve, Wharf Road Esplanade Reserve, Ostend Domain ('The Causeway'), and Anzac Bay. Examples of some of the protection structures located along the coastal margin are as follows:

View west over the wharf road area. Photo credit Wharf Road Boat Ramp

February 8, 2025 / Justin Eichler / Boat Ramp, Carparks, Ostend (accessed from https://www.yheke.co.nz/wharf-road-boat-ramp/).

Ostend Domain. Looking west along the coastal edge toward pathway connection to the 'causeway' showing the end of the seawall adjacent to the leased area (Waiheke Boating Club) boat maintenance area. (Source: Auckland Council 2023)

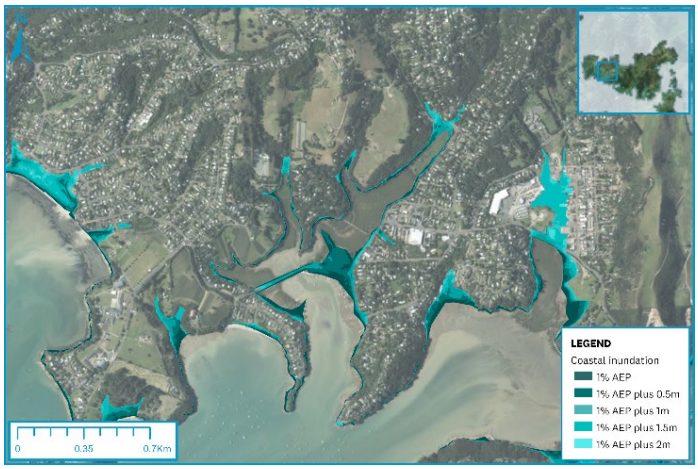
Kennedy Point ferry and wharf connections (background) and the recently developed Waiheke Marina (foreground). (Source: https://waihekeislandmarina.nz/discover/gallery/)

Picnic Bay rock revetment seawall. (Source: Auckland Council).

Coastal inundation

Coastal inundation under the low change scenario is identified for low-lying areas at Anzac Bay and within the coastal margins of the Ostend Domain area. With sea-level rise, under the moderate and high climate scenarios, inundation extents increase, with extensive areas of inundation identified for the Ostend Domain area, at Tawaipareira Reserve, Pūtiki Reserves along the eastern side of the 'point' and at Anzac Bay.

Coastal inundation within Unit 7 showing a variety of sea-level rise increments and the 1% coastal storm inundation events. Inundation extents are viable for the Tawaipareira, Anzac Bay (Natzka Street) Ostend Domain area and the upper reaches of Pūtiki inlet.



Catchment flooding within areas of unit 7: showing the 1% AEP flooding event impacting areas at Tawaipareira, Anzac Bay (Natzka Street) and Ostend Domain area.

inundation across roading areas at Anzac Bay (Natzka Street). Source: Stuff 2018 "King tides added to heavy rain to wash over roads at Anzac Bay on Waiheke Island. Rose Davis / Stuff".

View west along Onetangi Road, showing flooding in 2023 storm events. (Source: community feedback).

Catchment flooding

Catchment flooding in the 1% AEP flooding event impacting areas at Tawaipareira, Anzac Bay (Natzka Street) and Ostend Domain area is represented in the above image. Recent stormwater infrastructure upgrades included the development of an open channel from Tawaipareira Reserve Wetland to the coast, including a culvert under Ostend Road, to flooding on Tahi Road and Ostend Road areas. Further maintenance of stormwater networks is planned for this area supporting the discharge of catchment flows to the coast and managing flood risk.

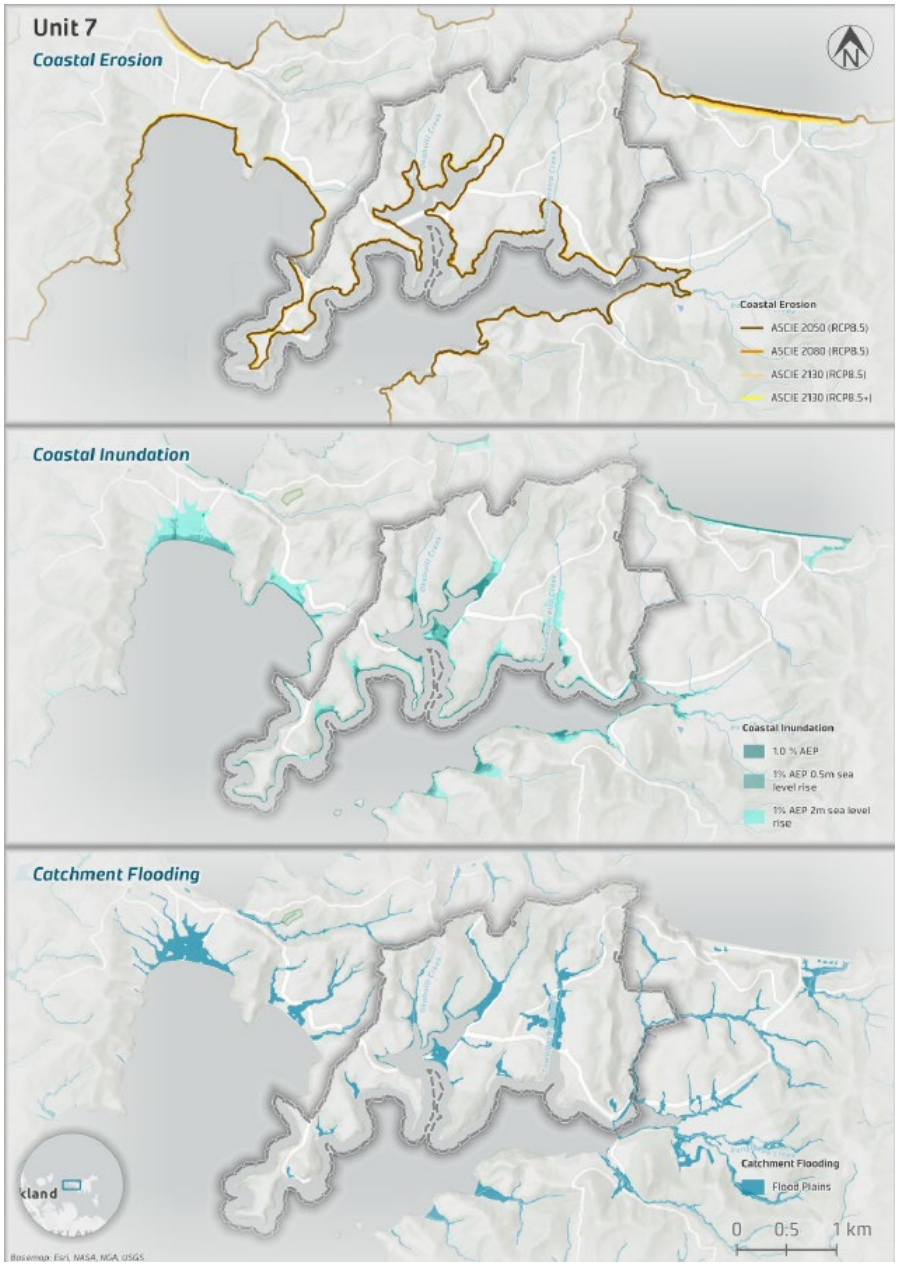


Figure 8: Coastal hazardscape for the Putiki Bay (Ostend to Kennedy Point) unit reflecting coastal erosion susceptibility for 2050, 2080 and 2130 considering RCP4.5 and RCP8.5 emission scenarios, coastal inundation for 1%AEP storm surge for present day and with 0.5 m, and 2 m sea-level rise and the identification of flood plains.

Risk assessment

The risk table represents key groups of assets (e.g. Auckland Council-owned land, buildings, road extents) which are supported by the regionally consistent data set. The risk assessment provides a regionally consistent method for comparing risk to Auckland Council-owned land and assets allowing for identification of areas with highest risk for potential future assessment (e.g. Volume 2).

The table below summarises the risk levels for Auckland Council asset types in the short, medium, and long-term and which map to the use of the low, moderate and high climate scenarios.

Council-owned land			Council Community facilities			Transport infrastructure			Water infrastructure		
Park and reserve land (48.6 ha)			Park amenity structures, carparks (0.8 ha) Buildings, wharves (19 No.)			Bridges (31.8 m^2) AT roads (24.6 km)			Water pipes (1.0 km)		
Short	Medium	Long	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Coastal erosion and susceptibility											
High	**High**	**High**	**Very High**	**Very High**	**Very High**	**Very High**	**Very High**	**Very High**	**Moderate**	**Moderate**	**Moderate**
Coastal inundation											
Moderate	**High**	**High**	**Very High**	**Very High**	**Very High**	**Moderate**	**High**	**High**	**Low**	**Low**	**Low**
Key											
Very Low			**Low**			**Moderate**			**High**		**Very High**

What matters most

Auckland Council land and assets: This section identifies key Auckland Council-owned land and assets within this unit that may be impacted by coastal hazards (inclusive of catchment flooding) over changing climate scenarios.

- **Notable reserves include but not limited to:** Anzac Bay Reserve, Albert Crescent Kennedy Point Reserve, Muritai Road Reserve – Waiheke, Natzka Road Foreshore, Ostend Domain, Pūtiki Reserve, Tawaipareira Reserve, Te Toki Reserve, Wharf Reserve – Waiheke, Wharf Road Esplanade Reserve, Wilma Foreshore Reserve, Wilma Hillside Reserve.

- **Park amenities and facilities:** Wharf Road Reserve, Ostend Domain (including Waiheke Sports Club, Pūtiki Reserve, Tawaipareira Reserve, Shelly Beach Road toilet blocks, Waiheke Sea Scouts.
- Council-owned buildings leased to the community/tenant include Waiheke Transfer Station Recovery Shop, and Waiheke Sea Scouts.

- **Piped assets:** Stormwater infrastructure associated with road drainage; wastewater treatment fields associated with public toilet facilities.

- Tawaipareira Closed Landfill.

- **Key roads:** Ostend Road, Natzka Road, Wharf Road, Causeway Road, Donald Bruce Road.
- **Key walking tracks:** Albert Crescent Wharf Road Walkway, Okahuiti Path, Rangihoua Wetland Path, Te Toki Circuit Path, Wharf Road Walkway, Wharf Road Wilma Road Walkway

- **Harbour access:** Kennedy Point Wharf / Ferry Terminal, Boat Ramps (Wharf Road, Pūtiki Reserve, Kennedy Point Reserve).

Social, cultural and ecological context: This section identifies key social, cultural and ecological matters, identified through the development of the SAP reports, that may be impacted by coastal hazards (inclusive of catchment flooding) over changing climate scenarios.

- This unit contains Te Rangihoua Te Pūtiki o Kahumatamomoe, a site of significance to mana whenua. This is located in Stretches 7.1 and 7.2.
- Note: Specific cultural values and outcomes for this unit will be developed through ongoing involvement with local iwi.

- Ostend Village is a popular spot for tourists and locals alike with many boutique shops, bars and cafes and contains the Ostend Medical Centre.
- Unit 7 includes Kennedy Point which contains Kennedy's Bay Oyster Farm, a historic heritage site identified in the Auckland Unitary Plan. The area also includes Waiheke High School, the only high school in the SAP area.
- Te Komiti Whakahaere o Rangihoua me Tawaipareira (Rangihoua and Tawaipareira Management Committee) a co-management committee, oversees the activities and management of the Tawaipareira Reserve. It has Ngāti Paoa (mana whenua) and local board members.
- The committee is responsible for all management decisions for the area, ensuring the area is managed according to Ngāti Paoa tikanga (customs), District Plans and the Unitary Plan, reserve management plans and proposing any works or activities to help protect or enhance the area according to the Reserves Act 1977.
- Kennedy Point ferry terminal is the only car ferry on the Island with 4-7 services running per day from the Auckland city centre and Half Moon Bay.

- There are intact ecological sequences at Okauiti Bay – mangrove forest grades into coastal broadleaved forest to freshwater wetlands.
- Pōhutukawa-dominated coastal forest wraps around the majority of Unit 7, particularly within Anzac Bay Reserve, Kennedy Point Reserve, and Pūkiti Reserve.
- Little penguin burrow sites are found along this stretch of coastline.
- Seagrass is recorded within the marine area of Pūkiti Bay (Department of Conservation, 2011).

Who have we heard from?

Feedback was received via Social Pinpoint and 'AK Have You Say' survey. Key themes in community submissions/responses included but were not limited to:

- Concerns of coastal erosion, coastal storms, sea-level rise, inundation and rainfall flooding with coastal erosion as the primary matter of concern. Observations of land erosion (and the subsequent death of trees), accumulated sediment, pollution, a lack of marine life and the inundation of both Council and private properties.
- Surfdale and Wharf Road seen as important transport connections.
- Majority support of the proposed adaptation strategies with the general preference of monitoring with no intervention.

What is happening?

- Primary concern is coastal erosion. Some highlighted rainfall flooding, sea-level rise, coastal storms, and inundation flooding as additional hazards.
- Respondents have observed or experienced land erosion, accumulated sediment, pollution, a lack of marine life and the inundation of both Council and private properties.

What matters most? Community aspirations or outcomes

- Walking and running on the beach, nature watching and passive water-based activities. Some also enjoyed open water-based activities and passive recreation.
- The existing boat ramp (Wharf Road) is a key community resource.
- The roading connection with Surfdale (to the west) and the lower end of Wharf Road were identified as a 'vital communication links'.

What can we do about it? Community feedback and aspirations

Most respondents indicated support for the proposed adaption strategies, with the general preference being monitoring with no intervention. Several key aspirations were expressed by different respondents:

- Regular maintenance of stormwater infrastructure.
- Improved road access at Shelly Beach and Putaki Bay.
- Remedial action on Wharf Road 'desperately needed'.
- The development of a strategy for determining the risk of inundation for new builds and establishing access following the impacts of sea-level rise.

What can we do about it? Adaptation strategy summary for Unit 7

7.1: Onetangi Road/Ostend Road

This stretch encompasses Onetangi Road/O'Brien Road Bridge Reserve and the stretch of coast along Onetangi Road and Ostend Road. The Onetangi causeway (road) connects the suburb of Ostend to Onetangi. Shared pathways connections (bridleway and walkway) are located adjacent to the road along the coastal edge. Areas of coastal modification and localised protection works may be associated with this coastal edge along the roading and reserve connections. Landward of the coastal edge Auckland Council animal management facilities are located within landward areas, accessed from Onetangi Road. The Stoney Ridge Quarry is also located in this stretch and identified as Council-owned land.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Maintain** 	**Maintain** 
Explanation		
Coastal reserves and roading connections are exposed to coastal erosion/instability and inundation (both catchment and coast). **Maintain** provides for the continued management of risk to assets including walkways, roading (Onetangi and O'Brien Road connections and walking/ bridle tracks) and Council facilities, through resilient design and location of assets and management of existing interventions, including historic causeway structures (O'Brien Road).		
Implementation Notes		
• **Maintain** supports continued management of risk utilising design and location of assets. • **Cultural:** Te Rangihoua Te Pūtiki o Kahumatamomoe is a site of significance to mana whenua.		

7.2: East Tawaipareira / Ostend Road south

This stretch extends west of Ostend Road and follows Anzac Bay estuary north toward Tahi Road.

Scenarios for change		
Low	**Moderate**	**High**
No action 	**No action** 	**No action** 
Explanation		
No action is reflective of the limited Auckland Council land and assets located in this stretch. This does not preclude the management of landward roading connections, as required.		
Implementation Notes		
• **Cultural:** Te Rangihoua Te Pūtiki o Kahumatamomoe is a site of significance to mana whenua.		

7.3: Tawaipareira Reserve

Commencing adjacent to Tahi Road end and culminating at the western end of the embayment (Calais Terrace Road end). It includes Tawaipareira Reserve / closed landfill and Waiheke Waste Transfer Station.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Maintain** 	**Adaptation priority** 
Explanation		
This low-lying area is subject to both catchment flooding and coastal inundation under the low change scenario, increasing in extent (and depth) under the moderate and high change scenarios. **Maintain** reflects recently undertaken management of stormwater and road networks, and the ongoing need to manage risk to land and assets. This includes the Ostend Road connections, Tawaipareira Reserve (a co-managed reserve), areas of closed landfill, current refuse transfer facilities and ongoing investment and in highly valued community recreational assets. **Adaptation priority** indicates the need to proactively engage multiple assets owners and managers alongside community and iwi to consider options to manage the impacts of inundation on low-lying contaminated land and several uses.		
Implementation Notes		
• **Management:** Tawaipareira Reserve is co-managed by the Rangihoua and Tawaipareira Management Committee which includes has Ngāti Paoa (mana whenua) and local board members who oversee the activities and management of Tawaipareira Reserve. • **Collaboration:** Management approaches under maintain will require collaboration between asset owners and respond to management intentions in reserve management plan documents. • **Closed landfill:** Tawaipareira Reserve is a closed landfill managed under the Closed Landfill Asset Management Plan.		

7.4: Calais Terrace/ Anzac Bay Reserve

Commencing at the eastern end of Calais Terrace. This stretch follows the estuary to where Natzka Road meets the coast.

Scenarios for change		
Low	**Moderate**	**High**
No action 	**No action** 	**No action** 
Explanation		
No action is due to the limited Auckland Council land and assets located in this stretch, noting the location of some coastal walking connections are within a coastal stretch which has a highly vegetated coastal edge.		

Scenarios for change		
Low	**Moderate**	**High**
Implementation Notes		
• **No action** does not preclude management of risk to landward roading connections, if required. • **No action** does not preclude the management of walking connections and ecological outcomes within reserve areas; any new assets should be designed and located to reduce exposure to hazards. • **Cultural / ecology:** Anzac Bay Reserve is an area of cultural significance with significant natural values.		

7.5: Anzac Bay (Natzka Road)

This stretch encompasses Anzac Bay and includes Natzka Road Foreshore Reserve and road connection. The area contains Waiheke Retirement Village with Natzka Road providing access to residential land uses. Park amenities are located along foreshore areas and rock revetements protect roading connections within the western areas of the bay.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Adaptation priority** 	**Adaptation priority** 
Explanation		
This low-lying stretch is identified as susceptible to coastal erosion and instability as well as inundation from both the catchment and coast. With **maintain** in the low change scenario, the management of risk to existing assets and land uses in response to coastal erosion will continue; this includes continued maintenance of existing structures but provides flexibility for the management of risk to assets (amenities) through design and location of these structures. **Adaptation priority** is in response to increasing inundation risk, continued coastal instability and erosion. This highlights the need for further adaptation planning, to consider how to support existing services and respond to the values of the bay, coastal and land uses, including vehicle access and reserve use.		
Implementation Notes		
• **Engagement:** Engagement will be required involving community groups and key land owners, iwi, wider community and asset owners to define adaptation thresholds and associated signals and triggers which inform adaptation actions. • **Monitoring:** Monitoring will enable a greater understanding of coastal change and frequency of inundation events. This monitoring could inform signals and triggers for future adaptive actions. • **Management:** Natzka Road is exposed to coastal erosion risk in the low change scenario. Auckland Transport, the asset manager, will monitor how coastal hazards may impact their operation and future implementation options.		

7.6: Albert Crescent/ Anzac Bay West

Commencing at Natzka Road end and culminating in the west at the Wharf Road walkway/reserve.

Scenarios for change		
Low	**Moderate**	**High**
No action 	**No action** 	**No action** 
Explanation		
No action reflects no Council land and assets being located in this stretch.		
Implementation Notes		
• **No action** does not exclude the management of roading infrastructure. Management of risk through location and design of assets is preferred to the use of protection structures.		

7.7: Wharf Road

This stretch begins at the end of Albert Crescent, follows the coastline northeast along Wharf Road and ends at the intersection of Ostend and Wharf Roads. It includes Wharf Road Esplanade Reserve which contains an all-tide boat ramp and walkway. This coastal connection is identified as highly valued by the community.

Scenarios for change		
Low	**Moderate**	**High**
Protect 	**Adaptation priority** 	**Adaptation priority** 
Explanation		
Protect in the low change scenario supports the continued maintenance of existing coastal modifications and the continued functions of the coastal access point and all-tide boat ramp and supporting access. **Protect** also supports the maintenance of the coastal edge which provided for road access to Wharf Road coastal access. This road was impacted by instability during recent storm events, is located within limited landholdings and provides a critical access to this coastal connection. **Adaptation priority** under the moderate change scenario responds to the need for further adaptation planning, to consider how to support existing services (ongoing management of risk to roading connections and the coastal access) can be achieved while responding to the values of the bay and land uses, including vehicle access, vessel facilities and reserve uses.		
Implementation Notes		
• **Cultural heritage:** Wharf Road Esplanade Reserve contains one record of maritime heritage. Engagement with the Heritage Team may be required for any specific management of this area.		

7.8: Ostend Domain

Commencing at the intersection of Ostend and Wharf Road and including the coast north to the causeway bridge/culvert (including Ostend Domain south of the Causeway/Wharf Road). This stretch includes Ostend Domain including highly valued marine related uses.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Adaptation priority** 	**Adaptation priority** 
Explanation		
Maintain in the low change scenario confirms management of risk to existing facilities and assets, considering existing coastal hazard risks and utilising design and location to manage this. In the moderate to high change scenario, increasing inundation risks for this low-lying area signals the need for further planning with **adaptation priority** identified in the mid to long term. This includes management of risk to activities and assets within the reserve area and roading connections while reflecting the area's values.		
Implementation Notes		
• **Monitoring:** Monitoring will enable a greater understanding of coastal change enabling long-term changes to be recorded. This could inform signals and triggers for future adaptive actions for a range of uses and assets located within this stretch. • **Management:** Where assets are renewed (or repaired), consideration should be given to the landward positioning of assets within existing reserve areas. • **Engagement:** Comprehensive community engagement will be required involving iwi, communities and asset owners to define adaptation thresholds and associated signals and triggers which reflect adaptation actions. • **Cultural heritage:** Ostend Domain contains sites and landscapes of significance to iwi. Further engagement will be required to support implementation of strategies over all change scenarios.		

7.9: Waiheke Sports Club to Te Toki Reserve

This stretch begins to the east of Causeway Road and follows the estuary north to Te Toki Reserve. It includes Waiheke Island Sports Club (Ostend Domain) which contains multiple Council assets.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Adaptation priority** 	**Adaptation priority** 
Explanation		
Maintain confirms the need to manage risks to assets and land uses, preferring to manage risks by location and through asset design while reflecting the values of the local area. **Adaptation priority** in the moderate to high change scenario refers to the need for further planning to consider how hazard risk and sea-level rise can be responded to alongside local uses and values, including roading connections, active recreation uses and associated facilities, cultural sites and landscape and ecological values.		

Scenarios for change		
Low	**Moderate**	**High**
Implementation Notes		
• **Monitoring:** Monitoring will enable a greater understanding of coastal change, allowing long-term changes to be recorded. This could inform signals and triggers for future adaptive actions for a range of uses and assets located within this stretch and that of adjacent areas. • **Management:** Where assets are renewed (or damaged), consideration should be given to the design and resilience of assets in response to inundation. Coastal walking connections and roading may require localised protection to support current alignment and/or further design options. • **Engagement:** Comprehensive community engagement will be required involving iwi, communities, key community groups and reserve users and asset owners to define adaptation thresholds and associated signals and triggers which reflect adaptation actions. • **Cultural heritage:** Te Toki Reserve / Okahuiti Scientific Reserve is a site of cultural significance and a priority area for archaeological survey. Further engagement with the iwi and Council's Heritage Team in implementation. • **Management:** Okahuiti Scientific Reserve is one of very few scientific reserves in the Auckland region. Significant restoration works such as weed control, planting and track development have been undertaken in the reserve. The Waiheke Local Management Plan outlines continued intentions to protect, enhance, and preserve the surrounding wetlands and native fauna.		

7.10: Te Toki Reserve to the Causeway

This stretch begins at Te Toki Reserve (with the Te Toki circuit path) and continues around the estuary to the west of Causeway Road, including Okahuiti Path.

Scenarios for change		
Low	**Moderate**	**High**
No action 	**No action** 	**No action** 
Explanation		
No action responds to the limited Auckland Council land and assets located in this stretch. This does not exclude management of risk to landward roading connections, if required, or support for ecological-focused initiatives such as the wetland restoration at Okahuiti Creek.		
Implementation Notes		
• **Cultural heritage:** Wilma Foreshore Reserve and Te Toki Reserve / Okahuiti Scientific Reserve are sites of cultural significance. • **Management:** Okahuiti Scientific Reserve is one of very few scientific reserves in the Auckland region. Significant restoration works such as weed control, planting and track development have been undertaken in the reserve. The Waiheke Local Parks Management Plan outlines continued intentions to protect, enhance, and preserve the surrounding wetland and native fauna.		

7.11: Causeway West

This stretch includes the Causeway Road connection west of the bridge/culvert. It includes the causeway revetment and associated structures. The causeway provides for critical access between Ostend and Surfdale and western ferry access points with the causeway revetment providing for a shared path and road carriageway.

Scenarios for change		
Low	**Moderate**	**High**
Protect 	**Protect** 	**Protect** 
Explanation		
Protect responds to the critical nature of this roading (and shared path) connection and the need to maintain and protect this connection. With sea-level rise, further design options will be required to ensure inundation risk to the road is proactively managed.		
Implementation Notes		
• **Management:** The causeway revetment is exposed to inundation and erosion/ instability hazards over all timeframes. Protect supports the maintenance of roading connections. • **Community/ Local Board:** There is considerable community interest and support for maintaining this connection and need to take a comprehensive view of the eastern side of this connection alongside the outcomes for adjoining stretches (Ostend Domina and Sports park areas).		

7.12: Shelly Beach Road East

This area begins at the west of Causeway Road and continues south to the end of Shelley Beach Road. It includes sections of Pūtiki Reserve which includes low-lying coastal walking connections along both narrow coastal margins and connections between landward roads and the coast.

Scenarios for change		
Low	**Moderate**	**High**
No action 	**No action** 	**No action** 
Explanation		
No action is reflective of the limited Auckland Council assets located in this stretch. Management of risks to access to and along the coast in low-lying areas should include design and location to respond to anticipated inundation risk.		
Implementation Notes		
• **No action** does not preclude the management of risk to walking connections located within this stretch. Inundation risks will increase over the moderate and high scenarios and strategies can be updated reflective of impacts on landholdings and assets in this stretch. • **Cultural heritage:** Pūtiki Reserve contains numerous records of sites and features of significance to mana whenua. Engagement will be required in implementation. No action does not preclude collaboration to manage risks to cultural heritage sites located within this reserve area and management of uses such as walking access.		

7.13: Pūtiki Reserve/ Point

This stretch includes the Pūtiki Reserve area. Commencing at Shelly Beach Road end and including the coast south and west culminating north of the boat access ramp. It includes a boat ramp, the Waiheke Sea Scout Building and park facilities and coastal access stairs.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Adaptation priority** 	**Adaptation priority** 
Explanation		
This stretch is identified as susceptible to coastal instability and erosion. Uses including the road end, community-leased uses (Scouts) and coastal recreational areas**. Maintain** supports managing risk to current land and facilities. Given the cliffed nature of the coast, management of risk through resilient design and location is preferred to the use of protection structures. A transition to **adaptation priority** is reflective of ongoing erosion and instability impacts within this stretch and the need for further engagement to support planning for the management of risk to all current activities, and cultural values within existing landholdings.		
Implementation Notes		
• **Cultural heritage:** Pūtiki Reserve contains sites and landscapes of cultural significance to mana whenua.		

7.14: East Putaki Bay

Commencing north of (and not including) the boat access ramp and including the coast north to the southern end of Shelley Beach.

Scenarios for change		
Low	**Moderate**	**High**
No action 	**No action** 	**No action** 
Explanation		
No action is reflective of the limited Auckland Council assets located in this stretch.		
Implementation Notes		
• **No action** does not preclude the ongoing management of assets. Management of risk through location and design of assets is preferred to the use of protection structures, if required.		

7.15: Shelley Beach (Putaki Bay)

Commencing at the southern extent of Shelley Beach area and culminating in the north at the end of the reserve landholding. It encompasses the eastern section of Putaki Bay and includes Pūtiki Reserve (spread across several stretches) and its toilet block.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Maintain** 	**Maintain** 
Explanation		
Shelley Beach Reserve includes large open space reserve areas, access roads and is identified by the community as being a hidden gem providing for safe coastal access for a range of coastal users. Lower-lying areas of the reserve and immediate foreshore are exposed to coastal inundation and erosional processes are likely to impact the coastal edge with sea-level rise over moderate and high climate scenarios. **Maintain** reflects the management of coastal hazard risk utilising nature-based approaches which support a natural coastal edge and through design and asset location within reserve areas.		
Implementation Notes		
• **Cultural heritage:** Pūtiki Reserve contains numerous records of sites and features of significance to mana whenua. Engagement will be required in implementation. • **Maintain** does not apply to privately-owned landholdings or assets.		

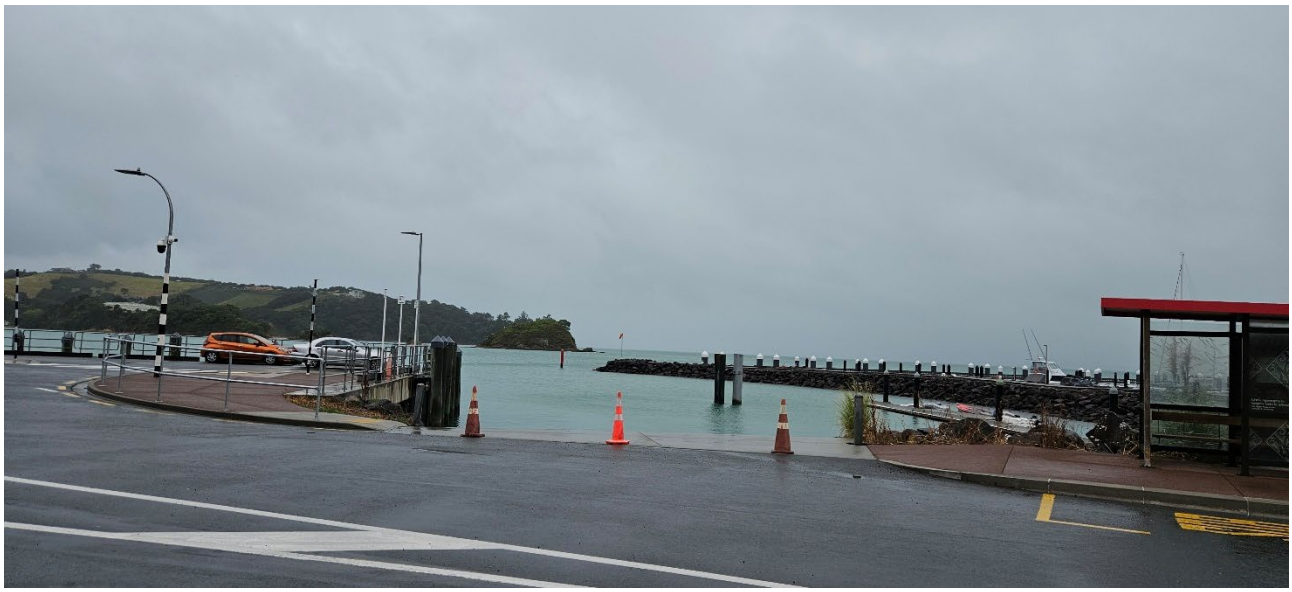
7.16: Donald Bruce Road East/ West Pūtiki Bay

This stretch begins in the centre of Pūtiki Bay, encompassing areas of Pūtiki Reserve, and continues west around to Kennedy Point Wharf.

Scenarios for change		
Low	**Moderate**	**High**
No action 	**No action** 	**No action** 
Explanation		
No action is reflective of the limited Auckland Council assets located in this stretch.		
Implementation Notes		
• **No action** does not preclude the management of risk to assets as required. • **Heritage:** This stretch includes Putaki Bay Oyster Farm and multiple vineyards. Kennedy's Bay Oyster farm is also located in the stretch and has a historic heritage overlay.		

7.17: Kennedy Point Wharf and Access

Commencing east of the wharf, ramp infrastructure/ assets including the wharf area, breakwater and roading connections west, culminating where Donald Bruce Road turns north from the coast including a section of the coast adjacent to the Waiheke marina where roading connections are located landward of the coastal edge. This stretch encompasses Kennedy Point Wharf and includes the vehicle Ferry Terminal.



Scenarios for change		
Low	**Moderate**	**High**
Protect	**Protect**	**Protect**

Explanation

Protect is identified for Kennedy Point ferry connection, wharf and boat ramp to maintain this critical vehicle ferry connection and associated road connections. In the future, these coastal connections will require further design consideration to manage risk from increasing coastal inundation with sea-level rise.

Implementation Notes

- **Management:** Donald Bruce Road is exposed to coastal erosion in the low change scenario and to coastal inundation in the high change scenario.
- **Protect** does not apply to privately-owned land or structures

7.18: Kennedy Point Reserve

Commencing in the east at Kennedy Point Reserve, where the road leaves the coastal edge, this stretch includes the point area and culminates in the north adjacent to the Donald Bruce Road intersection with Kennedy Point Road.

This stretch encompasses a section of the Kennedy Point Reserve and reserve amenities. It includes the western area of Kennedy Point Bay with open reserve areas and dingy storage, and the Takirau Bay Reserve area with connections to Kennedy Point Road. Waiheke Marina is located within the coastal marine area adjacent to this coastal stretch.

Scenarios for change		
Low	**Moderate**	**High**
No action	**No action**	**No action**
Explanation		
Reserve areas are primarily elevated and include coastal cliff areas. Small embayments are located on the western side of the point with coastal access connection provided along this stretch. **No action** is the predominant strategy for this stretch noting the generally inaccessible and steep cliff coast of much of the Kennedy Point coastline. No action supports natural coastal processes and is reflective of the generally inaccessible nature of coastal reserves and predominant private land use.		
Implementation Notes		
• **No action** does not preclude the management of risk to uses, assets and activities and the maintenance of safe access to the coast within this coastal stretch. • **Cultural heritage:** Kennedy Point Reserve contains numerous records of sites of significance to iwi. Engagement will be required in implementing strategies and no action does not preclude collaboration to address risk to cultural heritage sites.		

7.19: Kennedy Point north and Picnic Bay

Commencing in the west within Kennedy Point Reserve, adjacent to the Donald Bruce Road/Kennedy Point Road intersection culminating at the end of the reserve adjacent to the end of Esslin Road end, this stretch includes Picnic Bay which is a pebble beach, highly valued, backed by steeper grassed reserve areas.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Maintain** 	**Maintain** 

Explanation

This stretch is identified as susceptible to coastal erosion and instability. Assets including the Donald Bruce Road connection are located within this susceptibility area along with foreshore reserve areas of Esslin Reserve, with walking connections impacted within western areas of the stretch. Concerns in response to instability have resulted in the location of a rock revetment within the eastern area of Picnic Bay. Due to the elevation of reserve areas, inundation exposure is limited, however, with sea-level rise, inundation events may further impact on coastal erosional processes.

Maintain is reflective of the management of risk to reserve and road assets (Donald Bruce Road in the east) and reserve area and the assets and facilities located within these landholdings. This includes maintenance of protection structures and consideration of the design and location of future assets and interventions.

Implementation Notes

- **Cultural heritage:** Kennedy Point Reserve contains numerous records of midden/burial/pit sites of Māori origin. Engagement with the Heritage Team may be required for any specific management of this area.
- **Key roading connection:** Kennedy Point vehicle ferry terminal is a key transport connection for the island. Management of risk to this connection is important to support access to the island.
- **Maintain** provides for continued management of existing coastal protection structures. Management of risk to assets in and uses within reserve areas encourages consideration of design and location of assets and uses ahead of the consideration of engineering protection to support coastal processes and values.

Unit 8

Waiheke Island and Inner Hauraki Gulf Islands

N

Islands in Unit 8 are managed under a range of ownership and governance arrangements, including private ownership and Department of Conservation (DOC) oversight. Similar to other islands across the Gulf, several within Unit 8 have been the focus of restoration efforts over the past decade - particularly through community-led and environmental group initiatives such as native planting - to help restore their natural landscapes and support native species. Like other islands within the inner and outer Hauraki Gulf, these islands also hold deep cultural significance for mana whenua. A combination of public and private water-based transport operators and associated infrastructure (wharves - private/public) provides access to the majority of islands within this unit.

Motukorea/Browns Island Regional Park Map

Unit boundary

4.1 4.2 Stretch

Regional park

Unit 8: Inner Hauraki Gulf Islands (Rangitoto, Motutapu, Rākino, Motuihe/ Te Motu-a-Ihenga, Motukorea/ Browns Island)

This unit is in the Waiheke Local Board area and includes the 'inner' islands of the Hauraki Gulf / Tīkapa Moana. Those located west of Waiheke and south of the Whangaparāoa Peninsula include Rangitoto, Motutapu, Motuihe/ Te Motu-a-Ihenga, Motukorea / Browns Island, Rākino, and several smaller uninhabited islands (including The Noises). Islands in the south-eastern part of the Hauraki Gulf / Tīkapa Moana, east of Waiheke and near the Firth of Thames, include Pakatoa Island, Tarahiki Island/Shag Island, Frenchmans Cap, Rotoroa Island, Ponui Island/Chamberlins Island, Pakihi Island (Sandspit Island), and Karamuramu Island.

What is happening? Coastal context and hazardscape

The coastlines of the central islands are exposed to longer period swell events generated from some distance away and more localised shorter period storm waves generated by strong onshore winds. The coastlines are characterised by coastal cliffs, rocky foreshores, and with sandy beaches present on Rākino, Motutapu and Motuihe Islands that are dynamic in response to coastal processes.

Coastal inundation

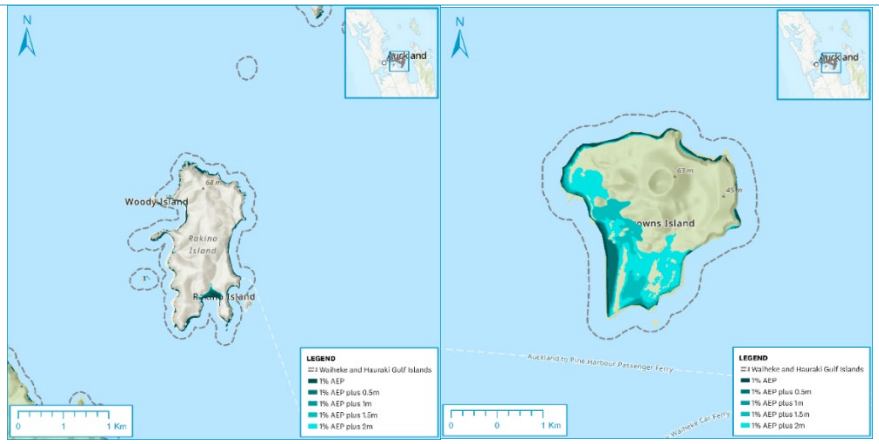
The coastlines of the southeast islands are sheltered from longer period swell events by Waiheke Island and the Coromandel Peninsula. These islands are exposed to more localised shorter period storm waves generated by strong onshore winds, with relatively long fetch distances from the west and easterly directions. Their coastlines are characterised by coastal cliffs, rocky foreshores and with sandy pocket beaches.

The Rakino Community Hall, and the reclamation the building is located on, are impacted by coastal inundation and wave overtopping during present-day extreme storm events and elevated water levels, with greatest exposure to waves from the east to southeast directions. This has resulted in damage to the walls of the hall and failure of a timber deck on the seaward side of the hall. An assessment of options to manage risk to the community hall has been undertaken and this project remains in development, in consultation with the Local Board and local community.

Coastal inundation and wave overtopping, Rakino reclamation and community hall, Ex-tropical Cyclone Lola, October 2023.

Coastal inundation and wave overtopping, Rakino wharf reclamation and community hall, Ex-tropical Cyclone Lola, October 2023.

Coastal inundation for Rakino Island (left) and Motukorea Browns Island (right)



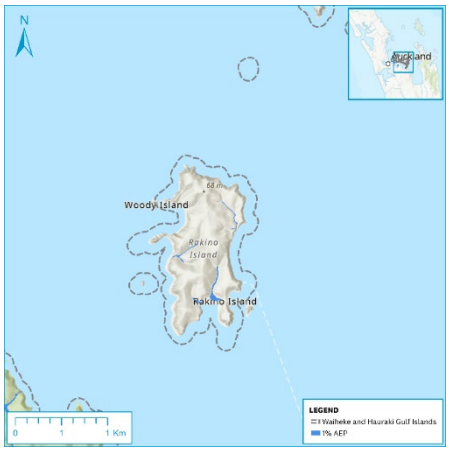
Coastal erosion and instability

Being volcanic rock, erosion rates along the Rangitoto and Motukorea (Browns Island) coastlines are relatively slow compared to the coastlines of the surrounding islands. Coastal protection structures owned or managed by Auckland Council are limited.

An Auckland Transport-owned rock revetment armours the road reserve at Sandy Bay, Rākino.

Catchment flooding

Catchment flooding is identified in a 1% flood event for both Rakino and Motukorea islands.



Risk assessment

The risk table represents key groups of assets (e.g. Auckland Council-owned land, buildings, road extents) which are supported by the regionally consistent data set. The risk assessment provides a regionally consistent method for comparing risk to Auckland Council-owned land and assets allowing for identification of areas with highest risk for potential future assessment (e.g. Volume 2). No risk assessment is included for the southeastern islands (stretch 8.5) due to the limited nature of land and assets within these islands/stretch.

Council-owned land			Council community facilities			Transport infrastructure			Water infrastructure		
Park and reserve land (59.6 ha) Buildings, wharves (6 No.)			Park amenity structures, carparks, accessways, buildings (0 ha)			AT roads (3.4 km) Bridges (0 m^2)			Water pipes (0 km)		
Short	Medium	Long	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Coastal erosion and instability susceptibility											
Very low	Very low	Very low	Very low	Very low	Very low	Very low	Very low	Very low	Very low	Very low	Very low
Coastal inundation											
Moderate	Moderate	Moderate	Very low	Very low	Very low	Very high	Very high	Very high	Very low	Very low	Very low
Key											
Very Low		Low		Moderate		High		Very High			

What matters most

Auckland Council land and assets: This section identifies key Auckland Council-owned land and assets within this unit that may be impacted by coastal hazards (inclusive of catchment flooding) over changing climate scenarios.

- Auckland Council-owned assets are very limited within this unit to Browns Island (Motukorea) Regional Park, the Rākino Island Community Hall and toilets.

- **Park amenities and facilities:** Rākino Island Community Hall and toilets, Bunk House - Browns Island.

- Browns Island pump shed.
- Local wastewater management networks associated with public amenities (toilets).

- **Roads:** Rakino Island.
- **Walking tracks:** Rotoroa Island North Path, Rotoroa Island South Path
- **Regional park:** Motukorea walking tracks.

- Sandy Bay (Rakino) & Rakino Island Wharf.
- Home Bay Boat Ramp (vehicle ferry).

Social, cultural and ecological context: This section identifies key social, cultural and ecological matters, identified through the development of the SAP reports, that may be impacted by coastal hazards (inclusive of catchment flooding) over changing climate scenarios.

- The coastal area is within the area of interest of Te Kawerau ā Maki, Ngāi Tai ki Tāmaki, Te Ākitai Waiohua, and Ngāti Tamaoho.
- Ngāi Tai Ki Tāmaki hold Statutory Acknowledgement of Motutapu Island Recreation Reserve and Motuihe Island Recreation Reserve. DOC's Island Operating Procedure for Rangitoto and Motutapu recognises Ngāi Tai Ki Tāmaki have mana whenua over Motutapu and requires their engagement and approval for certain matters.
- Identification of sites of significance to mana whenua is a District Plan matter; this unit is governed by the Hauraki Gulf Islands District Plan (HGI:DP), which has not specifically identified sites of significance to mana whenua to date. One site within this unit has been identified on the Cultural Heritage Inventory (CHI): Whatutatangi – Te Whatu-tatangi (Heritage ID 17615): Māori Traditional Stone (Stretch 2.1)

- Most of the islands in this unit are conservation reserves or are in private ownership, except Rākino which has been subdivided into private ownership and holds a small permanent population.
- Motukorea / Browns Island is a regional park. It is described in the RPMP as one of the least modified and best-preserved volcanic cones in Auckland (including archaeological sites and cultural landscapes). There is no wharf, so access is only possibly by smaller vessels.
- Rotoroa is managed by the Rotorua Island Trust, a trust for the purposes of ecological restoration and allows visitors on day trips or short stays.
- Rangitoto, Motutapu, and Motuihe/ Te Motu-a-Ihenga are all managed by DOC in association with local trusts and mana whenua. Several historic sites are located across these islands, including WW2 era gun emplacements and bunkers.
- As one of Auckland's most iconic locations, Rangitoto sees significant numbers of visitors accessing the island for day trips or to stay in one of the heritage baches located along the southern coast. This is enabled through regular ferry services to two piers on the island; the eastern pier (in Islington Bay) also provides access to Motutapu, where the islands touch.
- Both Motutapu, and Motuihe/ Te Motu-a-Ihenga have restoration programmes to enhance their native biodiversity values. Most of Motutapu is covered with pasture, however revegetation efforts are showing progress in several areas. These islands are popular with visitors and contain campsites and hiking tracks as well.
- Within this unit are eight 'Category A' heritage features identified in the AUP:OP: Motukorea fish trap; Rangitoto ships' graveyard; Motukorea stone working area/midden; Sunde site; Home Bay stone working area; Administration Bay stone working area; John Stubbs salt ponds site and remains of salt manufacturing works; Hulks of SS Rotomahana, steam tug Karori, schooner Clio, and scow Rover.
- Five 'Category B' heritage features have been identified in the AUP:OP: Rangitoto beacon, Rangitoto saltwater swimming pool and seawall, Tea House Cottage, Detention Cells, Cemetery
- Additionally, 37 heritage features have been identified in the HGI:DP including Sanford Homestead, Rākino, Rangitoto Hall (including tennis court), 33 baches on Rangitoto island (individually listed), Fortress Observation Post Complex (including fire control post, wireless room, RDF station, WAACs guardroom, 30-53 engine room B), Swimming Pool.

- Rangitoto Island is regionally significant as it exhibits all stages of vegetation succession following a volcanic eruption and is largely classified as pōhutukawa scrub/forest. There are more than 200 species of native species and flowering plant species found growing on the island, including several threatened species (Esler, 1991) (Auckland Council, 2024). Other important ecological features and values include:
    - Areas of oioi-coastal needle grass on lava flows on the coastal margins of the island – some of the best examples of this saline ecosystem type in the region.
    - Supports many native fauna, including seabirds, shorebirds, lizards, and cryptic wetland birds.
- Islington Bay and Gardiner Gap (located between Motutapu and Rangitoto) are hotspots for coastal avifauna (iNaturalist, n.d.).
- Motutapu Island is also mammalian pest-free and is administered by DOC. There are small remnants of pōhutukawa and broadleaved coastal forest found across the island. Motutapu hosts a diverse array of animal species comparable to those found on Rangitoto Island.

- Motuihe Island/Te Motu-a-Ihenga is another small island administered by DOC. There are many coastal avifauna records at the Motuihe Wharf, including a colony of white-fronted tern. Shore skink, tuatara, moko skink, and copper skink are also found on Motuihe Island (Department of Conservation, n.d.b).
- Motukorea/Browns Island contains a small amount of remnant coastal forest. Variable oystercatcher utilise the island as an important nesting site, particularly along the southern section and Folko's Bay (iNaturalist, n.d.). New Zealand dotterel and little penguin also nest along the coastal environment of the island. There are several threatened vascular plants found on the island, including sand spurge and Geranium solanderi.
- Maria Island is one of the few breeding sites in the region of spotted shag and white-faced storm petrel.
- Tarahiki Island is classified as pōhutukawa treeland and the biggest and most important breeding area for spotted shag within the Hauraki Gulf (and potentially within New Zealand). Tūrepo and several other coastal birds are also found on this island.
- Ponui Island is a large island with remnant forest fragments dominated by pōhutukawa and broadleaved species. There are also wetlands classified as raupō reedland within the lower lying areas of Ponui.
- White-fronted tern and red-billed gull also breed at Te Kawau Bay, a small islet to the north of Ponui.
- Scully Reef, located to the north of Bryants Bay, supports many nesting white-fronted tern, Northern New Zealand dotterel, and spotted shag.
- Pakihi Island and Karamurama Island are largely classified as exotic forest with some small areas of coastal broadleaved forest and pōhutukawa treeland.

Who have we heard from?

Feedback was received via Social Pinpoint and 'AK Have You Say' survey, through community events and direct engagement with resident groups including the Rakino Ratepayers' Group

What is happening?

Respondents are concerned with the impacts of coastal erosion, storm events, and inundation/ flooding upon the unit area. Several effects of these hazards have been observed or experienced:

- Inundation of the wharf and carpark area at Rakino.
- Impacted roading and beach access.
- Accretion of sediment.
- Fallen trees.

An improvement to the area was also observed as a result of the native tree planting programme.

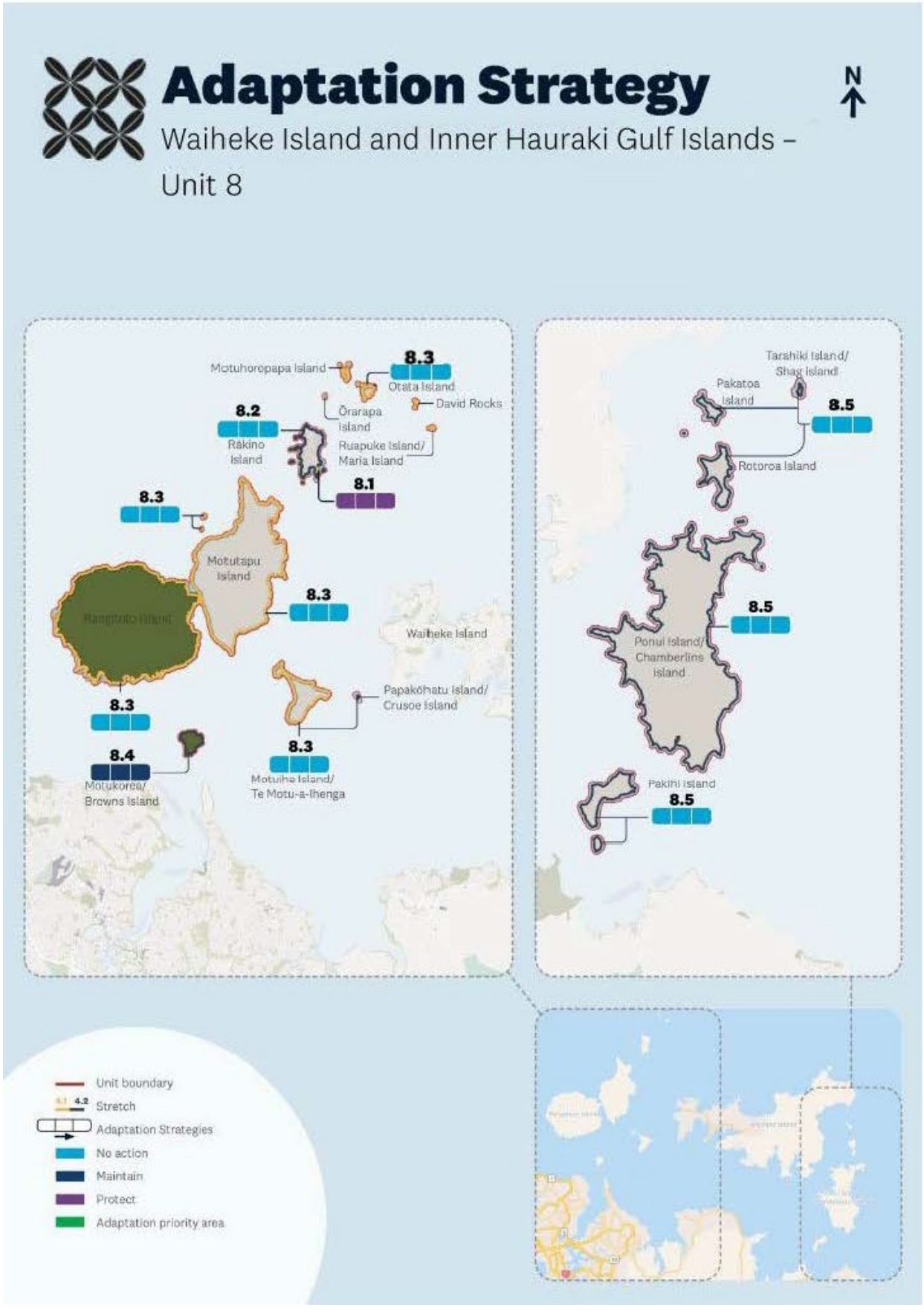
What matters most? Community aspirations or outcomes

- Feedback for the islands was limited, where responses were received, feedback highlighted importance of access to the sea for fishing / gathering kai moana and enjoying marine and birdlife, including nature watching.
- Value is also found in 'history and heritage structures'. One respondent identified the importance of maintaining roads (Rakino).

What can we do about it? Community feedback and aspirations

- A greater emphasis on local involvement, particularly in the protection and enhancement of coastal spaces and ecosystems through revegetation and pest control.
- Views were expressed for Council to adopt an approach of minimal intervention, as the most practicable option to return to natural processes and ecosystem features.
- Feedback emphasised the importance of considering impacts on private property, and of local involvement in the adaptation process.
- Some respondents specifically supported a 'hold the line' approach, suggesting that this could be complemented with new protective infrastructure such as retaining walls.
- Support was identified for relocating or replacement of the highly valued Sandy Bay Wharf Community Hall if retreat from the current location is considered.
- Local board feedback identified the strong 'interest' that council has in supporting ecological outcomes, cultural aspirations and supporting outcomes for the inner Gulf Islands.

What can we do about it? Adaptation strategy summary for Unit 8



8.1: Rākino Island Wharf

This stretch is the shortest stretch in the unit and includes the wharf and passenger ferry terminal area at Sandy Bay at the south-eastern point of Rākino Island. This wharf provides a critical connection for the residents of the island and the mainland, noting the presence of private wharves at Home Bay and Pohutukawa Bay, and anchorage at Woody Bay. Sandy Bay is low-lying and contains a (closed) community hall and toilets, as well as a small section of South Pacific Road.

The Rākino Hall is an Auckland Council community facility moved to Rākino Island in the early 1960s from Motuihe Island where it had been a WWII Navy barracks, the hall partly sits on a reclamation. The reclamation includes a seawall and foundation for the hall. The reclamation and associated structures also form the island's public wharf managed and maintained by Auckland Transport.

Scenarios for change		
Low	**Moderate**	**High**
Protect	**Protect**	**Protect**
Explanation		
The community hall and wharf were previously damaged by coastal hazards. Community engagement confirmed the high value of this facility and the need to explore options for risk management for the hall and associated uses. **Protect** supports need to manage risk to this important transport connection, maintain wharf infrastructure and support the community connections and uses provided by the community hall. Inundation risk is projected to increase requiring risk management through design and location of assets. Implementation of options for management of this risk remain ongoing and the strategy of protect is considered to support a range of options being considered and confirm the importance of these uses within this general coastal area on Rākino island.		
Implementation Notes		
• **Community:** Engagement with the Rākino residents and ratepayers supported retention of the hall and community uses within the general coastal area. Varied views were expressed in relation to options proposed to manage risk to the hall and associated facilities. • **Cultural:** Sites and landscape of significance to mana whenua were identified for Rākino (refer to Volume 2). Engagement with iwi will be required to support implementation.		

8.2: Rākino Island

This stretch extends around the remainder of Rākino Island. Council assets include a limited road network, toilet facilities located inland, and waste management facilities located within road reserve areas. This stretch also includes a vehicular boat ramp enabling vehicle access to the island.

Photo Rākino island. Source Rakino Ratepayers https://www.rra.nz/rakino/

Scenarios for change		
Low	**Moderate**	**High**
No action 	**No action** 	**No action** 
Explanation		
No action is reflective of the limited Auckland Council land and assets exposed to coastal hazard risks within the northern areas of the island.		
Implementation Notes		
• **No action** does not preclude the management of the (vehicle ferry) boat ramp at Home Bay and associated refuse facilities within road reserve areas.		

8.3: Central Islands

This stretch incorporates Rangitoto, Motutapu, Motuihe/ Te Motu-a-Ihenga, Motukaraka, Papakohatu / Crusoe Island, and The Noises Ruapuke / Maria Island & David Rocks. Auckland Council land and interests within these islands is limited. Key features, assets and infrastructure (owned by others) located within island areas includes:

- Rangitoto has two piers which are serviced by ferries – one at the southernmost point and another on the eastern coast in Islington Bay, near the connection to Motutapu.
- Motutapu can be accessed from a pier at Home Bay on the eastern coast.
- Rangitoto and Motutapu are popular with visitors and contain a network of hiking tracks. A campground is located at Home Bay and an Outdoor Education Camp is present at Administration Bay on the north-west coast.
- Motutapu has a restoration programme to enhance the native biodiversity values of the island.
- Motutapu is managed by DOC in association with Ngāi Kai Te Tāmaki as mana whenua. It is guided by the Rangitoto and Motutapu Islands: Island Operating Procedure and the Te Motutapu a Taikehu Heritage Management Plan.
- Rangitoto Island is managed by the DOC as a public reserve in partnership with its tangata whenua iwi, with its management guided by a Conservation Management Plan
- Motuihe/Te Motu-a-Ihenga is managed by DOC in association with mana whenua and the Motuihe Restoration Trust. It contains a wharf and pier, campsite, and several walking tracks.
- Multiple cultural heritage and historic sites are located across the central islands.

Scenarios for change		
Low	**Moderate**	**High**
No action	**No action**	**No action**

Explanation

No action is reflective of the limited Auckland Council land and assets located on these islands. This does not prevent Auckland Council support and advocacy for ecological restoration activities and support for cultural and historic heritage features and landscapes.

Implementation Notes

- **Coastal access:** Wharves and coastal access points on several of these islands are managed by DOC including wharf facilities.
- **Ecology:** These islands, islets and rocky outcrops are important for a variety of threatened seabird species, both native and migratory. Maria Island is one of the few breeding sites in the region of spotted shag and white-faced storm petrel. There is a colony of white-fronted tern that roost on the Motuihe wharf on Motuihe/Te Motu-a-Ihenga.
- **Ecology:** Rangitoto is characterised by regionally rare ecosystems that have been engendered by the volcanic eruptions, including pōhutukawa forest and oioi-coastal needle grass on lava flows. There are several native species that utilise the coastal environment, including shorebirds, skinks, seabirds and cryptic wetland birds.
- **Cultural**: Ngāi Tai Ki Tāmaki hold a statutory acknowledgment which includes Motutapu Island Recreation Reserve and Motuihe Island Recreation Reserve. Engagement with mana whenua is required to further understand the cultural values associated with these sites and how this may impact adaptation strategies.

8.4: Motukorea / Browns Island

Motukorea / Browns Island forms a Regional Park. It is one of more than 50 islands in the Hauraki Gulf Marine Park and became Auckland's newest regional park, and its first island public reserve, in February 2018. There is no wharf or pier with the island only accessible directly from the sea by smaller vessels.

Motukorea / Browns Island includes two scheduled heritage sites and recognised for its archaeological and cultural landscapes significance. There are several iwi statutory acknowledgements associated with Motukorea, including Ngāi Tai ki Tamaki, Te Ākitai Waiohua and Ngāti Paoa.

Motukorea / Browns Island Regional Park - Aerial view taken from above Bucklands Beach with Rangitoto Island in the background.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Maintain** 	**Maintain** 
Explanation		
Maintain provides for the ongoing management of risk while responding to the unique values of the motu. Coastal inundation and coastal erosion and instability risk are anticipated to increases into the future. Consideration of future management options may be required although no hard structures are anticipated through this approach.		
Implementation Notes		
• **Ecology:** Northern New Zealand dotterel, little penguin, and variable oystercatcher are known to nest along the coastal environment of the island. There are several threatened vascular plants also found there. • **Management:** Any provision of future assets should be located outside of the coastal hazard exposure zone. Management outcomes for this island (and regional park) are identified in the Regional Park Management plan 2022.		

8.5: Southeast Islands

This stretch includes the islands to the south-east of Waiheke Island, located within the Waiheke Local Board area. It includes Pakatoa Island, Tarahiki Island/Shag Island, Frenchmans Cap, Rotoroa Island, Ponui Island/Chamberlins Island, Pakihi Island (Sandspit Island), and Karamuramu Island.

These islands are largely in private ownership, with no Auckland Council land. They are primarily used for private accommodation and farming, exceptions being Karamuramu Island and Rotoroa Island. Piers or wharves are present on Pakatoa, Rotoroa, Ponui, and Karamuramu Islands. These are all private/non-Council assets. Council interest and collaboration is identified for Rotoroa in the form of maintaining harbour access, supporting ecological restoration and the maintenance of walking tracks located within the island.

Scenarios for change		
Low	**Moderate**	**High**
No action 	**No action** 	**No action** 
Explanation		
No action is reflective of the limited Auckland Council land and assets located in this stretch.		
Implementation Notes		
• **No action** does not preclude advocacy for ecological and cultural outcomes and asset-specific measures as needed to maintain paths. • **Management:** Rotoroa Island is held by the Rotoroa Island Trust as a wildlife/conservation sanctuary which is open to visitors and is in the process of being actively revegetated and restored. Two paths on Rotoroa are identified as Auckland Council assets; these have sections exposed to inundation, but this is being managed by the Rotoroa Island Trust. • **Local Board feedback** identified strong support for council interest in supporting ecological outcomes, maintaining walking tracks and supporting access to Rotoroa island in collaboration with the management Trust.		

8.6 All other islands

Islands located within the inner Hauraki Gulf which may not have been otherwise identified in maps or stretch description are included in this stretch.

Scenarios for change		
Low	**Moderate**	**High**
No action 	**No action** 	**No action** 
Explanation		
No action is reflective of the limited Auckland Council land and assets located on these islands. This does not preclude Auckland Council support and advocacy for ecological restoration activities and management of risk to cultural and historic heritage features and landscapes.		

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