



Ngā mahere whakaurutau mō te takutai

Shoreline Adaptation Plan

Whatipu to South Head Te Korowai-o-te-
Tonga Peninsula

Volume 3: Adaptation Strategies

August 2025, Version 1.0

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Volume 3: Adaptation Strategies

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Reviewed and recommended for issue by:

Name: Natasha Carpenter

Position: Head of Coastal Management, Engineering, Assets & Technical Advisory

Approved for issue by:

Name: Paul Klinac

Position: General Manager, Engineering, Assets & Technical Advisory

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Front Cover

Shoreline Adaptations Plan area overview map for Whatipu to South Head. Prepared for Auckland Council by Tonkin + Taylor 2025.

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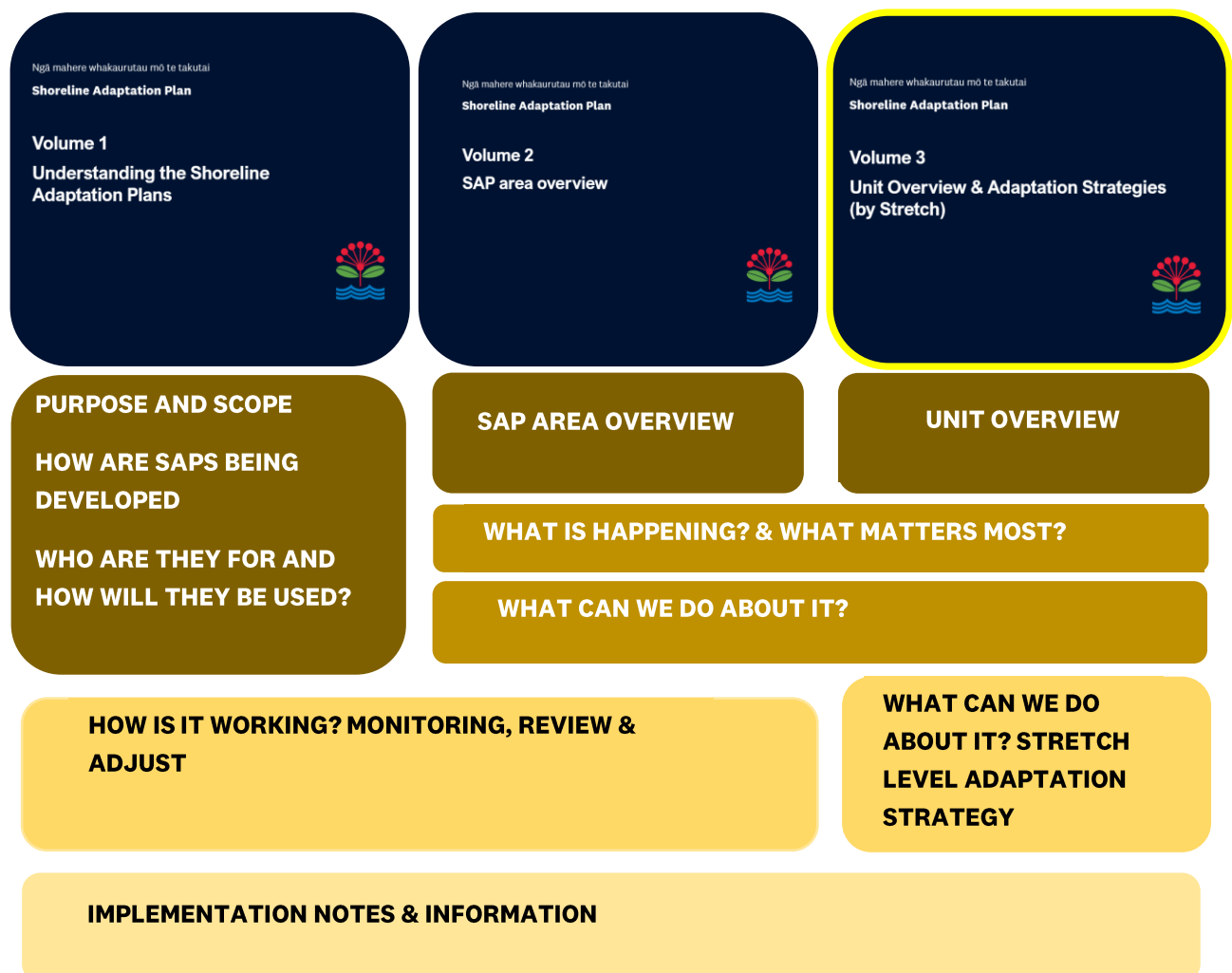
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Quick Reference

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
Accretion	Accretion occurs when sand or gravel is deposited along the coast allowing beaches to build up and grow seaward (prograde). Sediment can be deposited by waves and currents or brought to the coast by rivers and landslides.
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.

Term	Definition
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.
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, public-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 SAP Program can be found in *Volume 1: Understanding Shoreline Adaptation Plans*. Twenty separate SAPs make up Auckland's ~3200 km of coast as follows (also see Figure 1-1):

- 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
- Orakei to Tahuna Torea
- Pahurehure Inlet
- Pākiri to Matheson Bay
- Snells Beach to Orewa
- Tamaki Estuary
- Ti Point to Sandspit
- Waiheke Island and inner Gulf Islands
- Waimanawa Little Shoal Bay mini SAP
- Waitemata Harbour West
- Weiti Estuary to Devonport Peninsula
- Whangaparāoa
- Whatipu to South Head

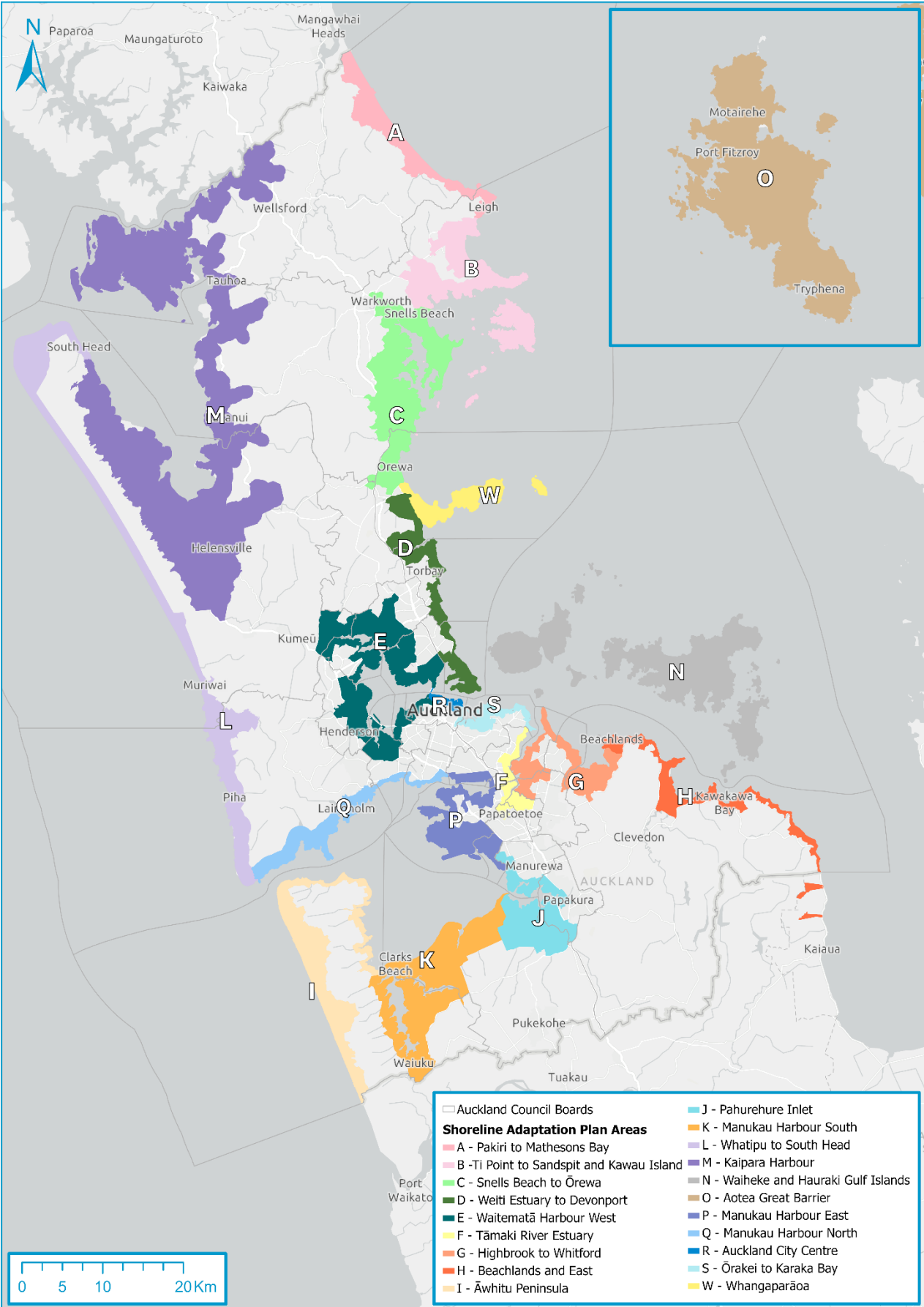
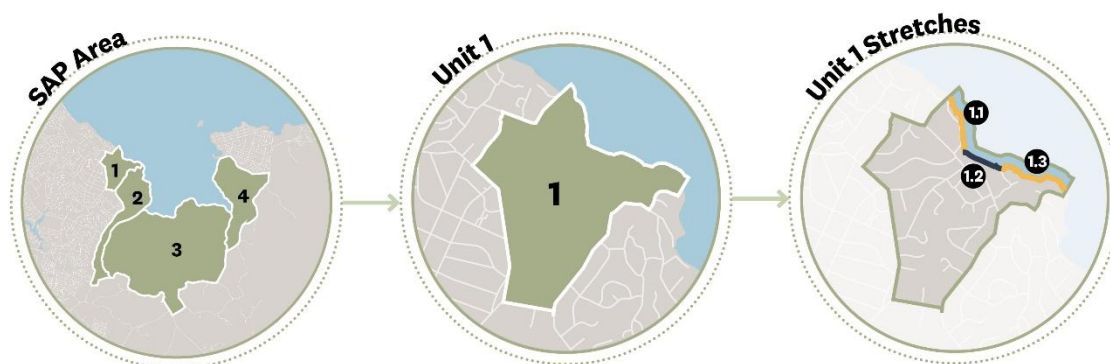


Figure 1-1: Regional overview of Shoreline Adaptation Plans

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.

	 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.



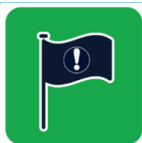
Maintain

- 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.



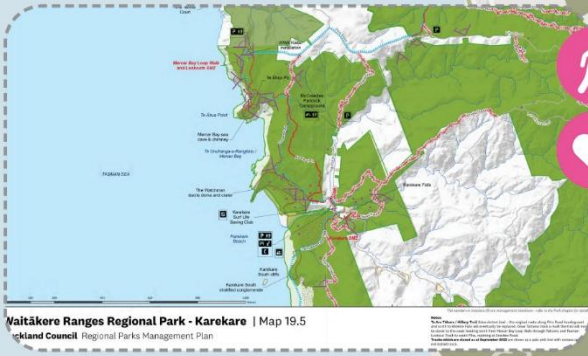
Adaptation Priority Area

- 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 hazardscape and social, cultural or ecological values are present which requires further adaptation planning to determine a management response.



Unit 1

Whatipū to South Head



Community feedback communicated a strong need to repair and maintain roading connections and car parking, whilst managing drains/culverts, with emergency access to Karekare Beach a high priority, particularly for the surf club (need to maintain stream around surf club to reduce the impact of flooding in Karekare valley)



Karekare community experienced significant damage in the 2023 storm events, including sustained loss of road access and significant damage and loss to many private properties and Auckland Council facilities (roads and walking tracks).

Community concerns, experiences, and coastal hazards relating to the 2023 storm events which cut off roading access, tracks and beach access throughout the area

Feedback highlighted loss of access to the Whatipū Caves, the lower Whatipū Campground becoming unusable, and the loss and disappearance of shoreline areas, e.g. at Kakamatua River

Coastal wetlands are located behind the dunelands, including endangered species

Active dunelands that expand across the entire unit. The duneland contains critically endangered species

Community expressed a desire for the restoration of habitats which support wetlands and bird species including dotterel, little blue penguins and petrels

Te Toka Tapu a Kupe (Ninepin Rock) and Te Toka-tapu-o-Kupe - The Sacred Rock of Kupe are both identified as cultural sites of significance



**NOTE: Maps may be updated to improve wayfinding and accessibility*



Unit 1: Whatipu and Karekare

This unit is located within the Waitākere Ranges Local Board Area; it begins at the north-eastern end of Whatipu Beach, just to the west of Paratutae Island. The unit includes the vast coastline of Whatipu, the settlement of Karekare and ends at the northern end of Tāhoro / Union Bay.

The Karekare community experienced significant damage as a result of the impacts of the 2023 storm events, including sustained loss of road access, damage and loss to many private properties and Auckland Council assets (including roads and walking tracks). Recovery efforts are ongoing at the time of writing this report¹.



Figure 1-1: Karekare Beach (Source: Auckland Council)

What is happening? Coastal context and hazardscape

The coastline for Unit 1 is characterised by high-energy beaches and extensive mobile sand dunes, transitioning into native saltmarsh and wetland habitat further inland. The sand dunes are unique in Tāmaki Makaurau / Auckland and are a landform of national significance including overlays for Outstanding Natural Features, Landscapes and Natural Character.

A fulsome discussion around low, moderate and high scenarios for (climate) change and how each is considered to inform the selection of coastal adaptation pathways can be found in *Volume 1: Understanding the Shoreline Adaptation Plans*. Land instability and wild fire and beyond the scope of the shoreline adaptation plan programme.

Coastal erosion and accretion

At Whatipu and Karekare beaches, the high-tide positions have moved seaward over time due to observed patterns of significant sand accretion. At Whatipu, since the 1930s, the high-tide mark has

¹ <https://www.aucklandcouncil.govt.nz/recovery-extreme-weather-disasters/Pages/default.aspx>

extended more than 1 km seaward of its original position at the base of the cliffs. These accreted dunes are unique in Tāmaki Makaurau / Auckland and are a landform of national significance.

The trends in sand accretion are noted to be variable across Auckland west coast beaches and influenced by a range of factors including incoming sediment supply from the Manukau Bar. Research has identified that trends appear to be slowing and as a result, current trends in sand accumulation are not considered to be ‘long-term’ but decadal (Blue & Kench, 2017).

The area is subsequently still considered to be susceptible to coastal erosion with ongoing sea-level rise and changes to sediment availability over time (Auckland Council, 2024), as outlined in Figure 1-2. The identification of the ASCIE is based on a regional scale assessment and provides a conservative or ‘first pass’ appraisal of the natural hazard extent to which it is susceptible. A more detailed assessment would be required to quantify exposure and risk of localised, site-specific land or assets. However, the regional study is appropriate for high-level adaptation planning.

The ASCIE lines that indicate the area susceptible to coastal instability and erosion along the open west coast vary between the soft beach/dune coast extents and the harder cliffed headlands that intersperse them. As indicated above and in Volume 2, it is noted that the beach areas within Unit 1 are currently displaying accretionary trends. In terms of the impacts of these current accretionary trends on long-term ASCIE predictions, the current pattern is considered to be a ‘medium term fluctuation’ (for which an allowance is made within the ASCIE prediction methodology). Further information regarding the ASCIE methodology and the parameters used can be accessed in the [Auckland Council Technical Publication here](#).

Some of the key features of this coastline are depicted below:



Karekare Beach (Source: GeoMaps, Auckland Council)

Accretion: At Karekare Beach, sediment accretion has resulted in a significantly increased high-tide beach width. Aerial imagery from 2000 (left) and 2025 (right) demonstrates the sand accretion and the changing alignment of the Company Stream discharges to the coast, where the channel now aligns to the north where it crosses the beach beyond The Watchman.



Stream channel in proximity to Karekare Surf Lifesaving Club (source: Auckland Council)

Stream impoundment: The Karekare Stream mouth is highly dynamic; influenced by both catchment input, resulting stream flow and beach sand levels across which the stream mouth discharges. Significant beach accretion has occurred at Karekare over the last 20 plus years. There is currently an extensive width of ‘dry high tide’ beach space, and a wide upper beach berm for the stream mouth to discharge across. As a result, the stream mouth has been constricted. An effect of the stream mouth constriction is the impoundment of upstream water levels. This results in a wider and deeper stream channel, or ‘lagoon’, adjacent to the Karekare Surf Lifesaving Club building and back to the road bridge.

Mechanical intervention: Maintaining an increased stream mouth channel via mechanical intervention to lower impounded upstream water levels has been considered in the past. This would be problematic given the extensive dry, high-tide beach area and would likely only provide short-term benefit due to the highly dynamic nature of the beach and ongoing accretionary processes.

Coastal inundation

Low-lying land around Whatipu Beach is mapped as exposed to coastal inundation from the low change scenario. However, this area is dynamic, has undergone significant accretion over time (see above) and includes a complex vegetation mosaic of saline and freshwater ecosystems. While the extent of inundation is predicted to increase with ongoing sea-level rise, the relationship between sediment availability (in terms of the current phase of sand accretion), and sea-level rise needs to be better understood to quantify this and timeframes for change.

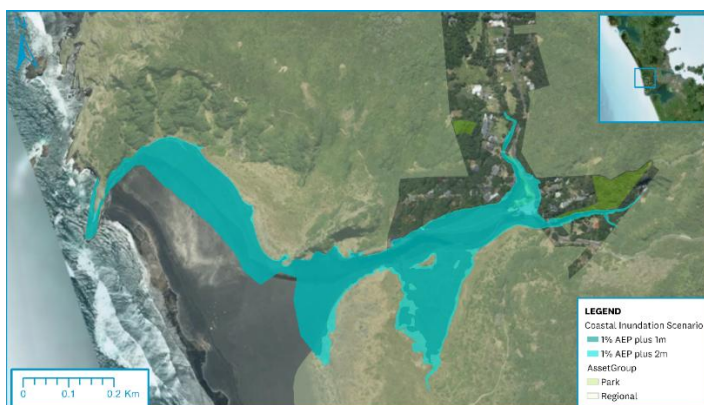
At Karekare, the extent of coastal inundation is also projected to increase with ongoing sea-level rise but again will be influenced by the current trend of sand accretion at this location. Under a high change scenario, coastal inundation is modelled to reach up Company Stream towards the carpark. This is a highly dynamic system and the location of the coastline and sand levels will influence the impact and extent of coastal inundation under future climate scenarios.

Whatipū Beach: The Whatipū biodiversity focus area covers an extensive area of sand dunes. The area is buffered by the marine environment on the seaward side and transitions through a range of saline, freshwater and forest ecosystems.



(Source: Andrew Macdonald, Biospatial Ltd. 2019)

Karekare: Map showing the exposure under the moderate (1% AEP plus 1 m sea level rise) and high (1% AEP plus 2 m sea-level rise) change scenario.



Coastal Inundation map (Source, Auckland Council GeoMaps)

Catchment flooding

Figure 1-2 shows the extent of catchment flooding across the unit within a 1% AEP event, showing areas of low-lying land.

Karekare is exposed to catchment flooding, due to the low-lying nature of this coastal section, the presence of the Karekare Stream and the wide catchment of this area. Overland flow paths and floodplains exist around Whatipu Stream, Pararaha Stream, Karekare Stream and Company Stream in this unit. The flood plain for the lower Karekare catchment is shown in the figure below. This flood plain model shows a 1% AEP event (sometimes referred to as a '1 in 100 year' storm)².

The flood mechanism which results in the identification of floodplain above the blue line (to the east and west of this stream channel) is flood flows (rainfall events) activating flood plains along the stream where stream bank capacity is exceeded. Put simply, the water being collected by the catchment (area upstream) is greater than that which can be accommodated within the stream banks. This disparity between upstream catchment versus downstream area is not due to any backwater effects from the lagoon, beach sand accretion or sea level.

² The model which generated this flood plain area assumes future rainfall adjusted for climate change of 2.1 degrees and sea level of 2.72 m RL (mean high water spring plus 1 m sea-level rise).

Flood plain areas which are higher up the catchment (areas above the blue line in the figure above) or higher than the 6.2 m RL (NZVD2016) contour/ land elevation, are associated with stream flow and are not affected by sand accretion nor sea-level rise.

Current sand levels in the lagoon are above the mean high water springs level (1.7 m RL versus 1.4 m RL (NZVD2016), respectively), therefore during rainfall events, the stream continues to discharge to the coast.

Catchment flooding within wider areas of Unit 1 (Figure 1-2) is identified below in the graphic, showing areas of low lying land in proximity to the coast and low-lying areas.

Karekare floodplain area: The low-lying area of the 1% AEP modelled flood plain extends from Karekare Beach to about 6.2 m RL as shown by the blue highlighted contour line in the figure to the right.

The flood plain area higher up the catchment is associated with stream flows.



Modelled floodplain during a 1% AEP event at Karekare (Source: Auckland Council)

Karekare flood impacts



Photo of flooding taken at a private residence on Karekare Road, 31st August 2021 (Source: Auckland Council)

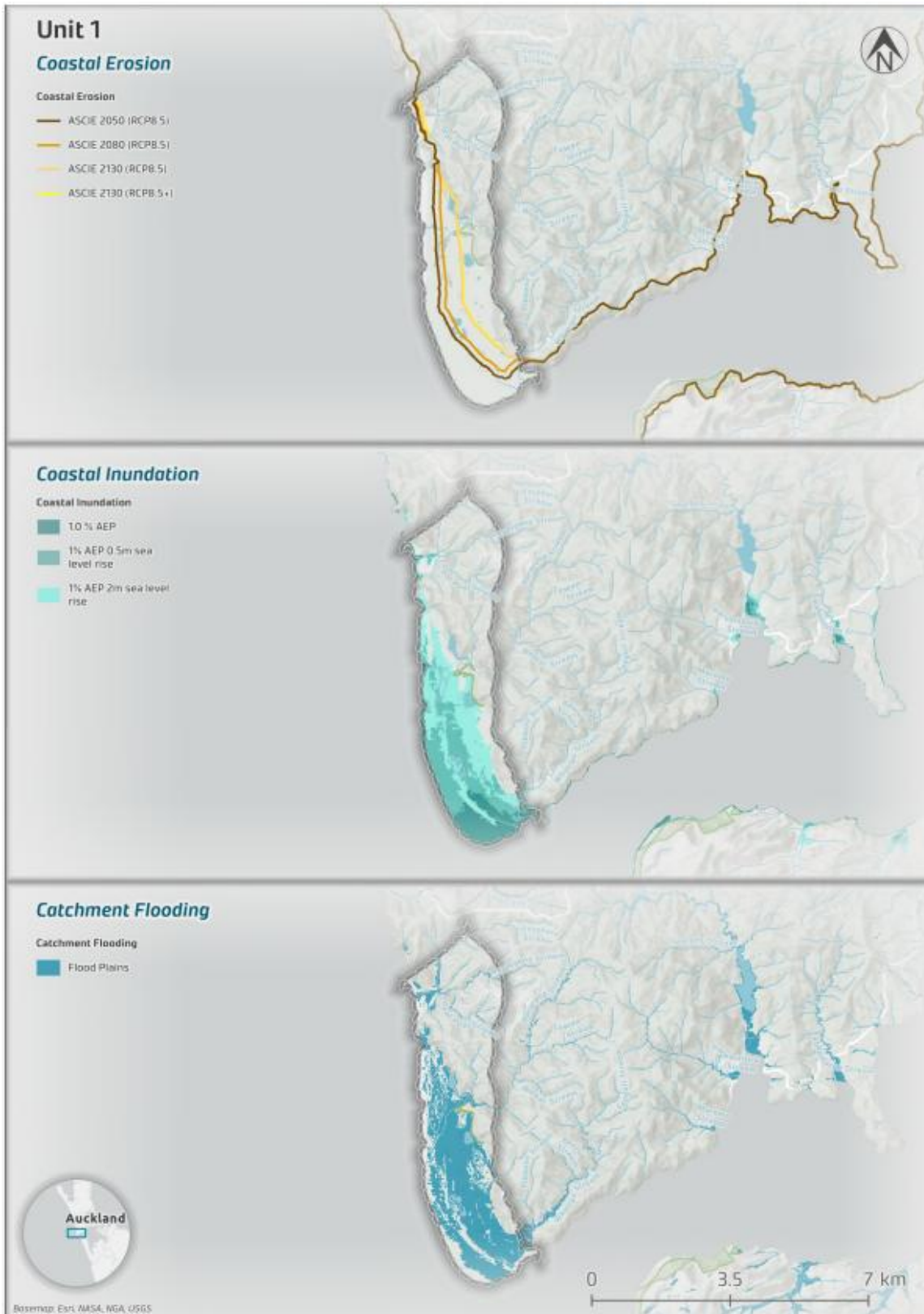


Figure 1-2: Coastal Hazardscape for the Whatipu to Karekare Unit. reflecting coastal erosion susceptibility for 2050, 2080 and 2130 considering RCP4.5 and RCP8.5 emission scenarios, coastal inundation for 1%AEP storm surge for present day and with 0.5 m, 1 m and 2 m sea-level rise and the identification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

This unit includes both infrastructure and properties impacted by the 2023 storm events. Decisions on the future use and management of land acquired by Council are being dealt with separately under the Council's storm-affected land-use policy^{3,4}. SAPs, as living documents, will be updated as decisions are made on the land.



Risk assessment

The risk table below 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. Series 2).

The table 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.

Auckland Council-owned land in Unit 1 is at 'very high' risk in the short, medium, and long-term from both coastal erosion and coastal inundation⁵. However, reflecting the rural character and limited Council-owned assets within this unit, risks to community facilities, transport infrastructure and water infrastructure assets remain relatively low (Tonkin + Taylor, 2023).

Council-owned land			Council Community facilities			Transport infrastructure			Water infrastructure		
Park and reserve land, 1282 ha			Park amenity structures, car parks, 0.13 ha Buildings, wharves, 4 (No.)			Bridges, 124 m ² AT roads, 4.3 km			Water pipes, 0.04 km		
Short	Medium	Long	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Coastal erosion and susceptibility											
Very high	Very high	Very high	None	None	Low	None	None	None	None	None	None
Coastal inundation											
Very high	Very high	Very high	Low	Low	Moderate	Low	Low	Low	Low	Low	Low
Key											
None			Low			Moderate			High		Very High

³<https://ourauckland.aucklandcouncil.govt.nz/media-centre/2025/april/storm-affected-land-use-policy-approved/>

⁴ <https://ourauckland.aucklandcouncil.govt.nz/news/2025/03/storm-recovery-update-20-march-2025/>

⁵ Subject to the limitations of current understanding of sand accretion outlined previously

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 over changing climate scenarios:



- Waitākere Regional Park, covering a substantial portion of the area.
- Pararaha Valley campground at Whatipu and Tunnel Point campground at Karekare.



- Auckland Council assets are limited within this unit, with water and transport infrastructure generally located away from the coastal hazards area.
- Auckland Council-owned assets include toilets and parking areas at Whatipu Caves, Tunnel Point and at Karekare Reserve.



- The regional park has an extensive network of open walking tracks including the Whatipu Cave Track, Gibbons Track and Muir Track.
- Karekare Road, Watchmans Road, Lone Kauri Road.

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 over changing climate scenarios:



- There are two identified cultural features within this unit, both in Stretch 1: Te Toka Tapu a Kupe (Ninepin Rock) identified as a *site of significance to Mana Whenua* and Te Toka-tapu-o-Kupe - The Sacred Rock of Kupe (Heritage ID 312).
- Specific cultural values and outcomes for this unit will be developed through ongoing involvement with local iwi, Te Kawerau ā Maki, noting high level values and aspirations have been identified in Volume 2.
- Ongoing engagement with Te Kawerau ā Maki to understand the cultural landscape of the coast and ensure alignment with cultural values in coastal management will take place in the implementation of adaptation strategies.



- Key social infrastructure within Unit 1 includes (but is not limited to) Karekare Surf Life Saving Club and Karekare Fire Station.
- Council-owned land and assets include the Pararaha Valley campground, Tunnel Point Campground and Whatipu Lodge and campsite (leasehold on reserve land). This infrastructure is all located near the coast, noting Pararaha Valley campground features Pararaha Bridge, an important social asset for coastal connectivity along the coast.
- Within the unit is the Waitākere Regional Park which provides a network of open tracks for walking, running, and tramping. The Comans Track begins to the north of this unit and provides access to the regionally significant Mercer Bay Loop Walk.
- Within this unit there are 11 identified 'Category B' heritage features listed in the Auckland Unitary Plan. The Karekare War Memorial is located within Stretch 1.3.
- Recognition of the Waitākere Ranges Heritage Area Act (2008) is of relevance to this unit, noting that this area is of great interest to Te Kawerau ā Maki and highlighted in community feedback.



- Unit 1 contains a wide range of threatened and/or vulnerable species and indigenous ecosystems.
- Active dunelands that expand across the entire unit. Areas of coastal turf (SA5 – Critically Endangered) are located in the foredunes which grade into spinifex, pīngao grassland (DN2 – Endangered), large dune plains (DN5 – *Critically Endangered*) and a small area of dune slack (DN5.2 – *Critically Endangered*).
- Coastal wetlands are located behind the dunelands, including raupō reedland (WL19 – Endangered), *Machaerina* sedgeland (WL11 – *Critically Endangered*), and coastal lakeshore turf (WL15.1 – *Critically Endangered*). Areas of oioi restiad rushland (WL10 – *Endangered*) border the Karekare Stream.
- Unit 1 is utilised by a variety of threatened native avifauna, including shorebirds, cryptic wetland birds and seabirds which are found across the entire area.



Who have we heard from?

Feedback was received via digital platforms Social Pinpoint and ‘AK Have Your Say’, along with community submissions from Friends of Regional Parks and the Waitākere Ranges Protection Society, along with individual submissions from residents in Karekare. Key themes in community feedback are discussed further below.

Community Hui: Karekare (25 August 2024)

The community hui for Karekare was organised by the local community in collaboration with the Waitākere local board, Ward Councillors and hosted at Karekare Surf Club. A presentation was provided by Auckland Council followed by questions and discussion with those in attendance.

Key topics for discussion included but were not limited to: sand accretion, transparency of technical information, language used in adaptation planning, central government roles and responsibilities in coastal adaptation, road networks and infrastructure, catchment flooding, scope of SAPs, community input and engagement, monitoring coastal change and the need for ongoing community involvement in this discussion.

What is happening? Community experience of hazards

- The storm events of 2023 resulted in damage to private property and infrastructure, with communities cut off by damage to roading access, beach access and the closure of tracks throughout the area. Impacts noted in community feedback included that the functionality of numerous assets had been impacted, including the loss of access to the Whatipu Caves and the lower Whatipu campground becoming unusable.
- The Waitākere Ranges Local Board identified the importance and value of the Hilary trail which traverses many of the coastal units located in this SAP area and has been impacted by 2023 storm events.
- Several concerns were identified including the sand build-up at Karekare Beach (affecting beach access and lagoon drainage), landslides (impacting road and walking track access), management of natural coastal processes and the management of development.
- Sand accretion vs erosion: A key issue identified in community feedback was the observation that sand is building up rather than eroding the coast and how this is impacting longer term projections being used in adaptation planning. The community wished to see more commentary on coastal accretion processes, monitoring and understanding between how coastal accretion may mitigate some hazards (e.g. erosion) but potentially exacerbate others (e.g. flooding due to blocked stream mouths).

What matters most? Community values and uses

- The social and cultural significance of the area was acknowledged, in particular: Māori cultural significance, the historic railway and wharf remains at Whatipu, and the maintenance of Whatipu as a Scientific Reserve.
- The community expressed a desire for the restoration of habitats which support wetlands and bird species including dotterel, little blue penguins and petrels.
- A range of recreational values including fishing, surfing and enjoyment for being outdoors in natural landscapes.

What can we do about it? Community feedback and aspirations

- Community feedback sought the need for ongoing discussion on adaptation planning, including a need to consider private and community land and assets. With strong community concern with any reference to managed retreat (wording identified in consultation documents and no longer included in this plan)
- Prioritise public access to and along the coast and maintenance of the coastal edge. Commentary that road access within this unit is highly vulnerable to weather events, noting that most of these beaches are served by a single access road. These roads are vital for the permanent communities and businesses that have developed nearby as well as visitor access. Additionally, essential power and telecommunications infrastructure are located within these road corridors. Feedback also highlighted the importance of protecting car parking, the surf club and associated infrastructure.
- A desire for further management of the lagoon, noting current water levels have impacts on beach access for surf lifesaving functions.
- Flood risk for communities remains a concern, however it was noted that risk appetites (of residents in Karekare) may be locally nuanced due to the nature of the environment and the experience of past weather events. Feedback identified a need for building greater resilience in anticipation of future events and climate change impacts.
- Recognition that local residents actively support and operate a wide range of volunteer organisations, including surf lifesaving clubs, Search and Rescue (S.A.R.), volunteer fire brigades, the Coast Guard, ratepayers associations, etc. and that many of these groups rely on Council-owned land and buildings for their activities.
- Calls for further engagement, including between technical experts and local residents. Through implementation, there is a strong desire for community-led solutions and greater trust in local knowledge and lived experience, particularly in shaping realistic and cost-effective responses. Aspirations that future strategies for this area must integrate sand accretion trends, flood risk, and emergency access planning.
- Feedback highlighted the impact of flooding in the valley and the need for regular maintenance of the stream and culverts. Many residents called for consideration of practical interventions such as regular stream dredging, raising access roads, improving bridge and surf club access to support emergency vehicle access. It is noted these activities would be subject to appropriate consents.

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



1.1: Whatipu Beach to Karekare

Stretch 1.1 begins at the entrance to Manukau Harbour at Whatipu Beach and continues to the southern end of Karekare Beach. It encompasses Whatipu Scientific Reserve, Waitākere Regional Park, Taranaki Bay, Pararaha Bay, Cowan Bay, Whakaruro Bay and Paratahi Island.

Whatipu Scientific Reserve, owned by DOC and managed by Auckland Council, is located at the southern section of this stretch and contains one of the largest active duneland systems in the region and in Aotearoa New Zealand.

Scenarios for change					
Low		Moderate		High	
No action		No action		No action	
Explanation					
No action in relation to coastal defences to support the ongoing preservation of this highly naturalised coastal area which has numerous statutory overlays including Significant Ecological Areas and Outstanding Natural Features, Landscapes and Character. Community feedback acknowledged the need to leave some natural areas of the coastline untouched and preserve these values.					
Implementation Notes					
No action does not preclude ongoing environmental management of this highly important ecological area. No action does not preclude the ongoing maintenance and management of tracks (noting continued access to and along the coast was a key theme in community feedback). Social: Community feedback highlighted the walk through the Whatipu Scientific Reserve provides spectacular views over the coastal dunes and wetlands. Additionally, feedback highlighted coastal infrastructure supporting coastal connectivity (i.e. Pararaha foot bridge) and the need to recognise this infrastructure in coastal management. Cultural: This stretch also includes a wāhi tapu site, recognised as a site of significance to local iwi, and a cultural heritage area (Te Toka Tapu a Kupe / Ninepin Rock), identified with Schedule ID (090) by Auckland Council in 2024. Ongoing engagement with Te Kawerau ā Maki will be required. Ecology: Relatively high numbers of threatened and bird species roost in the mobile sand areas and feed in the surrounding waters and intertidal areas making up the stretch of coast between Whatipu and Karekare, with both marine and coastal ecosystems making up a significant component of the Waitākere ecological district. Ongoing consideration of supporting natural environments and ecological values is supported via a no action approach, supporting a natural coastal edge.					

1.2: Karekare Beach

Stretch 1.2 commences at the southern end of Karekare Beach and encompasses the Waitākere Regional Park, Karekare Beach area culminating at the west of Karekare surf club. The small settlement of Karekare is located within this stretch. Karekare Stream discharges to the beach at this location and Karekare Surf Lifesaving Club is located on the northern side of the stream (Figure 1-3).



Figure 1-3: Karekare Surf Club and the adjacent Karekare Stream (Source: <https://archipro.co.nz/project/karekare-surf-club-106-architects>)

Scenarios for change					
Low ⁶		Moderate		High	
Maintain		Adaptation Priority		Adaptation Priority	
Explanation					
Maintain under the low to moderate climate change scenario provides for the ongoing maintenance of assets and management of risk to Regional Park land including carparking, beach and walking track access and associated facilities. Maintain also provides for current accretionary processes currently observed for this coastal stretch. Adaptation priority under the moderate and high climate change scenario provides for further proactive engagement with communities, iwi and other stakeholders to consider how risk to Council-owned amenities with increasing risks from coastal hazards can be managed. The need for development of local signals, triggers and thresholds with respect to coastal change (including the current, medium-term accretionary phase), is identified along with the need for collaborative approaches to monitoring to inform this. Adaptation planning acknowledges the highly dynamic nature of this environment (including the discharge of the Karekare Stream) and significant ecological, social and cultural values.					

⁶ This scenario also accounts for current trends in beach accretion and their impacts at this stretch.

Implementation Notes

- **Management:** Reflecting the significant natural values of this stretch, a preference for nature-based solutions is recommended to preserve a natural and resilient coastal edge.
- **Social:** The Karekare Surf Life Saving Club is located on the northern side of Karekare Stream and is accessed via an easement across Regional Park land. Emergency vehicle access across the stream to the beach is restricted when stream levels are high. Alternative access options and mitigations have been investigated in the past. Maintain provides for ongoing collaboration between Auckland Council and Karekare Surf Club to explore longer term access options for ATV and IRB access to the coast.
- **Road infrastructure:** Extreme weather events in 2023 caused damage in this stretch. Recovery efforts by Auckland Transport, the asset owner, are ongoing including slip repairs at Karekare Road and removal of stockpile fill material from Pōhutukawa Glade. Progress updates of works are [available here](#).
- **Storm-affected land:** This stretch includes properties impacted by the 2023 storm events. Refer to the unit discussion for further information.

1.3: Tāhoro Union Bay to Hinerangi Pou

Stretch 1.3 begins at Tāhoro Union Bay and culminates at Hinerangi Pou. It encompasses the Waitākere Regional Park and Comans Track begins in this stretch. The fronting Karekare dunes are an important ecosystem supporting a range of flora and fauna.

Scenarios for change					
Low		Moderate		High	
No action		No action		No action	
Explanation					
No action is identified across all climate change scenarios due to the location of assets (primarily the track network) being set back from the coastal edge.					
Implementation Notes					
- No action does not preclude the ongoing maintenance and management of tracks (noting continued access to and along the coast was a key theme in community feedback). - No action does not preclude ongoing environmental management. - Cultural: Te Kākāwhakaara (The Watchman) Pā is located at Karekare, and the cultural significance of the area was acknowledged in community feedback. Engagement with Te Kawerau ā Maki will be required.					



Unit 2

Whatipū to South Head



Unit 2: Piha

This unit is located within the Waitākere Ranges Local Board area, commencing at Hinerangi Pou in the south and includes the coastal settlement of Piha, culminating at Te Waha Point in the north. It includes Mercer Bay (and the popular Mercer Bay Loop walk) and several near-shore islands / rock features around Piha including Te Piha / Lion Rock, Taitomo Island and Nun Rock.

Within the Piha areas of the beach and community are commonly or locally known as Piha and North Piha or North Piha Beach. Lion Rock is the marker that separates the two places. For the purposes of this report the area south of Te Piha / Lion Rock is referred to as Piha (south) or stretch 2.3 while the area north of Marine Parade North is identified as North Piha (as part as the end of North Piha Road).

The Piha community was significantly affected by the 2023 storm events and prior flood events (such as those experienced in 2018). This impacted road access and caused significant damage and loss to many private properties and Auckland Council facilities (camping facilities, roads and walking tracks). 2023 storm recovery efforts are ongoing.



Figure 2-1: Flooding and land instability as a result of Cyclone Gabrielle at South Piha (source: Newsroom)

What is happening? Coastal context and hazardscape

Piha Beach which covers the northern half of this unit is approximately 2.7 km long and defined by headlands at either end that extend 300-500 m seaward from the beach. Piha Beach is backed by a substantial dune system over most of its length, the total width of which varies from approximately 20 m to more than 200 m. Piha is a dynamic environment, with high energy beaches, mobile sand dunes and rocky shorelines.

Te Piha / Lion Rock is located adjacent to the stream mouth of the Piha Stream which discharges to the coast. This significant feature is commonly used to divide the beach into the areas generally known as ‘South Piha’, ‘Piha’ and ‘North Piha’, as indicated by the naming of Council’s various reserves.

The area is exposed to a range of natural hazards, with a history of significant catchment flooding including the events of 2018 and 2023. In 2023, the Auckland Anniversary weekend floods and Cyclone Gabrielle caused widespread damage along the Waitākere coastline, including Piha, resulting

in landslides, flooding and property damage (NZ Herald, 2023). This unit includes properties impacted by the 2023 storm events. Decisions on the future use and management of land acquired by Council are being dealt with separately under the Council's storm-affected land-use policy^{3, 4}. SAPs, as living documents, will be updated as decisions are made on the land.

A fulsome discussion around low, moderate and high scenarios for (climate) change and how each is considered to inform the selection of coastal adaptation pathways can be found in *Volume 1: Understanding the Shoreline Adaptation Plans*. Land instability and wild fire and beyond the scope of the shoreline adaptation plan programme.

The exposure of the unit to coastal hazards is summarised in Figure 2-2 and further discussed below.

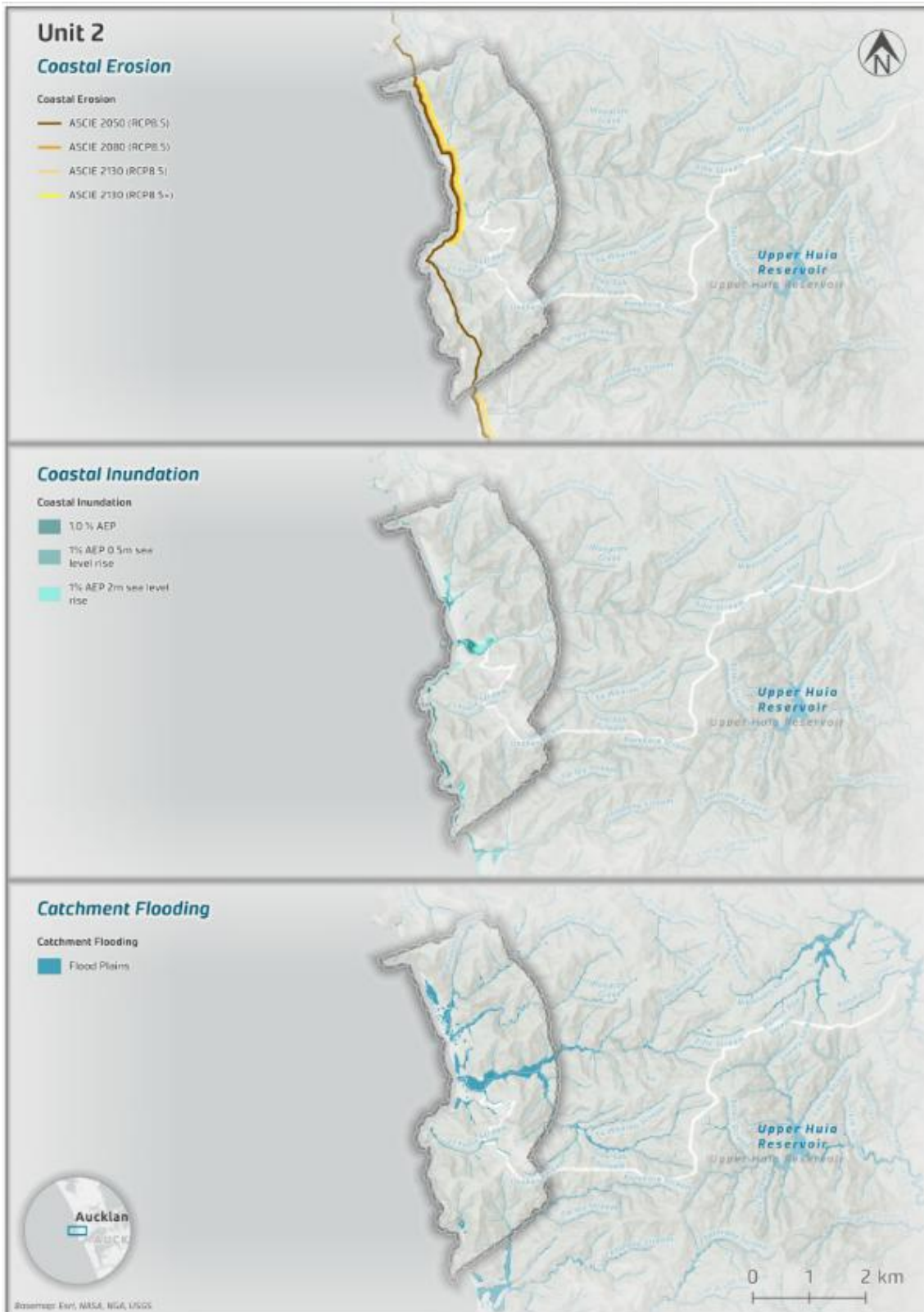


Figure 2-2: Coastal hazardscape for the Piha Unit reflecting coastal erosion susceptibility for 2050, 2080 and 2130 considering RCP4.5 and RCP8.5 emission scenarios, coastal inundation for 1%AEP storm surge for present day and with 0.5 m, 1 m and 2 m sea-level rise and the identification of flood plains.

Coastal accretion and erosion

Extensive dune establishment and management has occurred at Piha since the 1990s. Currently, the dunes are in an accretionary phase, resulting from the supply of windblown sand across the increasingly wide high-tide beach area, as demonstrated by Figure 2 3 below.

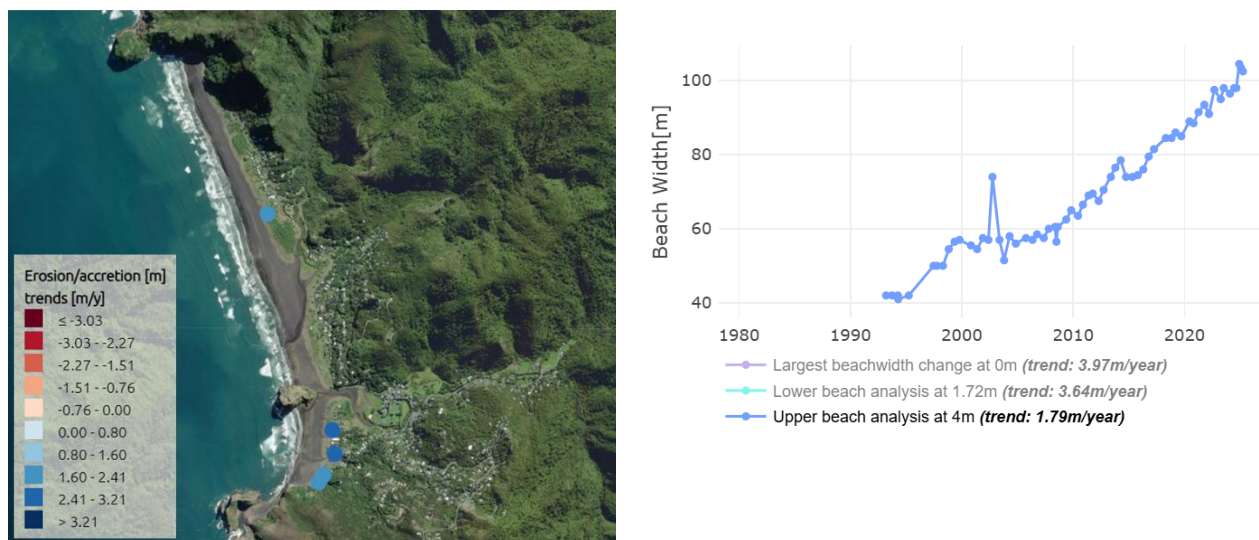


Figure 2-3: Auckland Council beach monitoring locations at Piha Beach (left) showing overall trends in accretion, and trends in beach width for profile 2 at South Piha (right). (Source: Auckland Council Beach Monitoring Programme)

Noting the net south to north littoral transport of sand along Auckland’s open west coast, the trends in sand accretion are similar to that described in Unit 1 (Whatipu to Karekare), with current trends in sand accumulation predicted to be decadal (Blue & Kench, 2017). In terms of the impacts of these current accretionary trends on long-term ASCIE predictions, the current pattern is considered to be a ‘medium term fluctuation’ for which an allowance is made within the ASCIE prediction methodology. More can be accessed in the [Auckland Council Technical Publication here](#).

This high energy coastline is subsequently still considered to be *susceptible* to coastal erosion and instability with ongoing sea-level rise and changes to sediment availability over time (Auckland Council, 2024). Subsequently, under the moderate to high climate change scenario, the cliffs in South Piha and the sandy beached area will be susceptible to coastal erosion and instability.

Coastal areas within Unit 2 are currently displaying accretionary trends. The images below illustrate the history of sand dune development at Piha Beach and other key features impacted by coastal processes.

Moana Stream: The Moana Stream in 1991 following training of the stream in the 1980s and prior to construction of the seaward dunes present today.



Moana Stream in 1991 (Source: Economos, 2013)

Moana Stream/ Piha South: Dune construction in 1991 across the seaward margin of Moana Stream.



Dune construction in 1991 (Source: Economos, 2013)

Piha dunes and Piha Surf Lifesaving Club beach access at Marine Parade South:

Management of the accessways, dune height and windblown sand into the carpark have been managed in the past by Auckland Council to preserve view shafts and ATV access to the beach for emergency response.



Marine Parade South Carpark (Source: Auckland Council)

Te Piha (Lion Rock): Te Piha is a culturally significant site and includes a historic plaque. The landform is highly exposed to coastal processes and catchment flooding, located at the mouth of the Piha stream discharge to the coast. Historically, an informal access track provided access to the summit of Te Piha. However, due to landslides, this access has been disestablished.



View of Piha Stream, Lion Rock, Taitomo Island and the Nun Rock (Source Auckland Council)

Stream realignment: Mechanical realignment of the Marawhara and Wekatahi stream mouths is undertaken as an operational activity by Council when established triggers are met to mitigate erosion of the adjacent sand dune that provides a buffer to the Marine Parade North Road. This is the main roading connection serving the northern areas of Piha.



Coastal inundation:

Coastal inundation in moderate and high climate change scenarios is predicted to impact low-lying land alongside the Piha Stream (including the Piha Domain and Seaview Road), and alongside the Marawhara and Wekatahi Streams. This could impact the usage activities that can be undertaken on what is predominantly reserve land, over time.

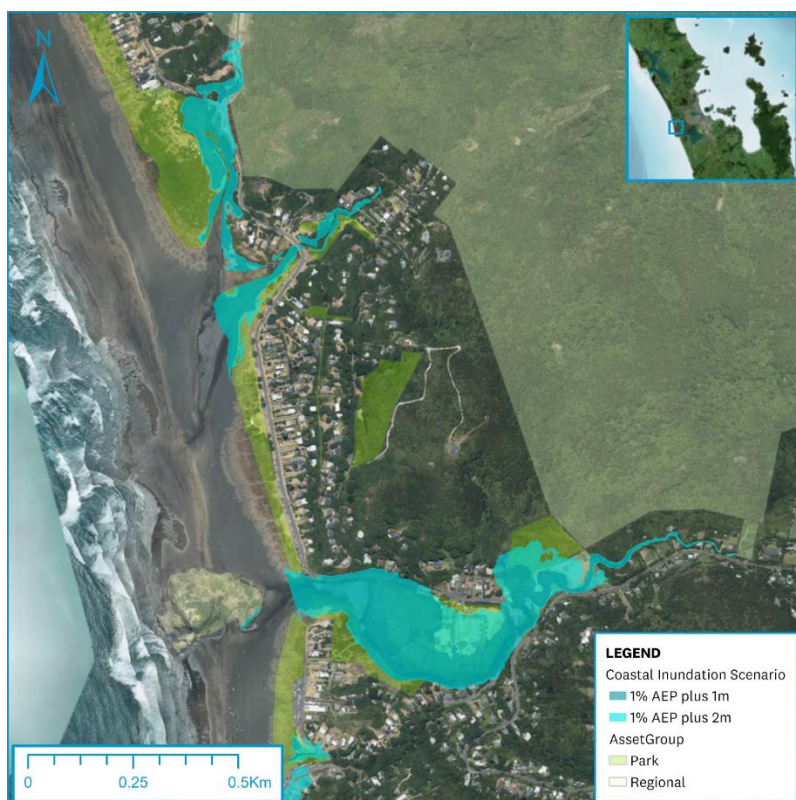


Figure 2-4: Moderate and high coastal inundation scenario at Piha.

Coastal inundation impacts within the wider unit area are more limited due to the topography of the coastline south of Piha and north of the beach area as represented in Figure 2-2.

Catchment flooding and stream alignment

Catchment areas within the western Waitākere Ranges discharge to the coast at Piha Beach. Overland flow paths and floodplains exist around the Piha, Melville, Marawhara and Wekatahi streams in this unit. Refer to the Auckland Council [‘flood viewer’](#) to interrogate the location of floodplains, overland flow paths and flood-prone areas in detail.

Figure 2-2 shows the overall extent of flood plains in the Piha Unit 2 area. Low-lying land around Piha Stream (located within the southern area of the Piha unit) is identified as exposed to coastal inundation under present-day sea levels. The extent of inundation will increase with sea-level rise in the medium-term and long-term where coastal water levels will impact on the ability for catchment flood flows to discharge to the coast. Inundation risk is also indicated for the Marawhara and Weketahi streams (located to the north of the unit) along with limited areas of flooding in North Piha. Management of this is discussed further below.

Flood events, historically and notably in 2018 and in 2023 have had a significant impact on the community of Piha and Auckland Council land and assets located within this area. The management of risk to activities located within flood hazard areas has resulted in the relocation of activities (such as camping) and further assessments are being undertaken to better understand the risk and potential mitigations. Activation of flood plains along Piha Stream has resulted in impacts on private properties on Glen Esk Road and on Council-owned land and community uses and facilities located within lower catchment areas. Responses have included:

- The purchase of flood impacted properties, by Auckland Council Healthy Waters in 2017/2018 and more recently as part of the central governments flood risk management framework.
- Restriction of uses at Piha Mill campground.
- Restriction of camping activities within low-lying areas of the Piha campground.
- Ongoing exploration of options to manage the risk (both flood waters and erosion of the stream bank) to Piha Gallery or relocation of that use

Further examples of current management measures for catchment flooding are illustrated below (non-exhaustive list):

Piha lagoon and stream discharge to

the coast: The highly dynamic beach sand levels at the mouth of the Piha Stream means that mechanical opening of the stream lagoon can be rapidly reversed by natural processes.

For this reason, Council has not invested in proactive management of the lagoon discharge. Water quality monitoring for the lagoon is an ongoing exercise with improvement in water quality remaining a community and Council objective.

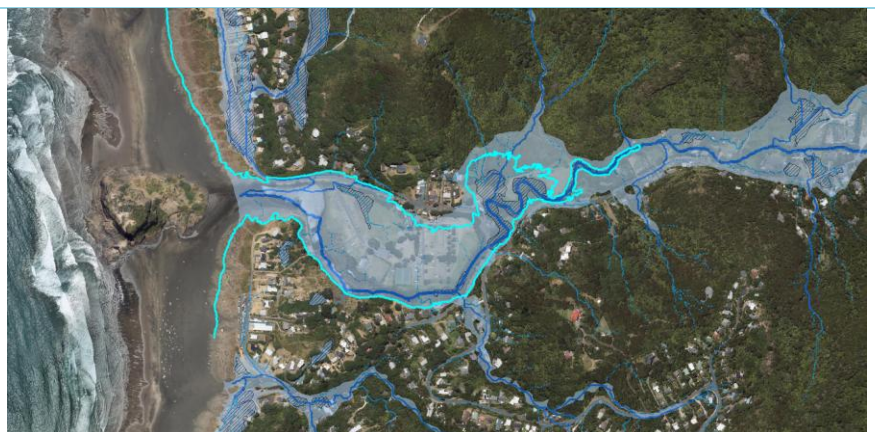


Piha Lagoon, viewed from car park area (upper), Piha Stream mouth, post flood event August 2021 (lower)

Piha stream discharge and flood

impacts: Council has installed water level gauges and cameras at the Seaview Road bridge and at the Lagoon footbridge. This allows Council to monitor the relationship between rainfall, flood water level and the impacts of sand accretion.

Flood plains higher up the catchment than 5 m RL (shown with the blue line) are not impacted by sand accretion but relate to the stream activating its associated flood plain areas.



Les Waygood Campground: Following a severe flood event in June 2020 that impacted the Les Waygood Campground, a flood risk assessment of this activity was undertaken. Auckland Council Healthy Waters recommended this site no longer be used for overnight camping. Summer camping associated with the North Piha Surf Club operations has since been relocated to the higher ground on the adjacent back dune area.



Site of the previous Les Waygood Campground (Source: Auckland Council)

Marawhara catchment was impacted by the 2023 storm events. Recovery efforts have seen the reinstatement of walking tracks within this catchment. Associated infrastructure services are impacted by flood flows within this catchment, which can impact water supply to Council toilets and private dwellings.



Marawhara stream post 2023 flood events. (Source: Auckland Council)

North Piha: The image to the right shows flooding to some residential properties and the road during Cyclone Gabrielle. (source: Auckland Council 2023).

There are ongoing issues of road flooding due to soakage through sand being reduced following siltation and landslides which occurred during Cyclone Gabrielle.



Risk assessment



The risk table below 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. Series 2).

Risk from coastal erosion is 'very high' for Auckland Council-owned land and 'high' for Auckland Council community facilities within this unit. The coastal erosion risk rating is 'moderate' for transport infrastructure assets in the short term, increasing to high-risk in the medium-term (Tonkin + Taylor, 2023).

Risk from coastal inundation is generally moderate in the short to medium-term with the exception of Auckland Council community facilities which have a 'high' risk rating in the medium-term (likely a reflection of the fact that there are a number of community facilities in proximity to the coast (Tonkin + Taylor, 2023).

The table 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, 717 ha			Park amenity structures, carparks, 2 ha Buildings, wharves, 45 (No.)			Bridges, 160 m ² AT roads, 14 km			Water pipes, 2 km		
Short	Medium	Long	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Coastal erosion and susceptibility											
Very High	Very High	Very High	High	High	High	Moderate	High	High	Low	Low	Low
Coastal inundation											
Moderate	Moderate	Moderate	High	High	High	Moderate	Moderate	Moderate	Low	Low	Low
Key											
None			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 (non-exhaustive list) that may be impacted by coastal hazards (inclusive of catchment flooding) over changing climate scenarios.



- Waitākere Ranges Regional Park
- Piha Domain
- Piha Road Reserve
- North Piha Strand

	• Piha Esplanade Reserve • Ranger Depot Glen Esk Road • Amenities blocks and playground • Piha Library (leasehold with Piha Library and PO Buildings owned by Piha community groups) • Piha Bowling Building (leasehold) • West Coast Gallery and old schoolhouse • Piha Domain (Cookhouse located within campground are as well as the former Radio House from Piha Radar Station)	• Les Waygood reserve • Les Waygood Community Centre (leasehold) • Les Waygood Reserve (toilet and changing block)
	• Water treatment shed (Piha Mill Camp). • Wastewater pump shed (Piha Domain) and effluent disposal field - part of a wastewater system that was recently upgraded to address pollution issues in the Piha Lagoon.	• Permacrete Vault (Mercer Bay). • Les Waygood Park includes an effluent disposal field for the United North Piha Surf Club.
	• Many walking tracks (i.e. the Mercer Bay Loop walk, the Whites Track, Marawhara walk and Maungaroa) are located within the unit, with community feedback highlighting 2023 storm-related damages and subsequent track closures. • Marine Parade South, Glen Esk Road, Seaview Road, Marine Parade North, North Piha Road	

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 over changing climate scenarios.



- There is one cultural feature identified within Unit 2: Te Unuhanga o Rangitoto (Heritage ID 1627) located in Stretch 4.
- Whakaari Pā, Te Piha / Lion Rock (Island pā) and Taitomo Island Pā are also included within this unit, each of which are of high cultural significance to local iwi (Te Kawerau ā Maki).
- Taitomo Island itself is in a coastal area of spiritual significance associated with the primary guardian taniwha of the Waitākere coastline, Paikea. Whilst not Council-owned/ managed, reference to Taitomo Island has been included here to acknowledge the significance of the coastal landscape to Te Kawerau ā Maki.
- Specific cultural values and outcomes for this unit will be developed through ongoing involvement with local iwi, Te Kawerau ā Maki, noting high level values and aspirations have been identified in Volume 2.
- Ongoing engagement with Te Kawerau ā Maki to understand the cultural landscape of the coast and ensure alignment with cultural values in coastal management will take place in the implementation of adaptation strategies.



- Unit 2 hosts a range of Council-owned, leasehold and public social infrastructure including but not limited to: Piha Surf Lifesaving Club, United North Piha Lifeguard Service and tower,

Piha Memorial RSA, Piha Fire Station, Piha Domain Motor Camp, Piha Bowling Club, Piha Library, Piha Gallery, Bowling Club and Piha Community Preschool.

- The Council toilet block located within the Les Waygood Reserve utilises a connection to a private water supply associated with the Marawhara Stream.
 - Along the eastern margin of the unit area, the Waitākere Regional Park provides a network of tracks for walking, running, and tramping. Waitākere Regional Park encompasses well-known coastal walking tracks such as the Mercer Bay Loop Walk (Auckland Council, 2016).
 - Memorial plaques from WW1 WW2 and to the Kawerau people are located on Te Piha / Lion Rock (listed in the Auckland Unitary Plan) and the area has a rich European historic heritage in the form of maritime features, settlements (Piha Mill) and early beach and surf culture and settlement.
 - Within this unit there are 22 identified 'Category B' heritage features listed in the Auckland Unitary Plan
 - Recognition of the Waitākere Ranges Heritage Area Act (2008) is of relevance to this unit, noting that this area is of great interest to Te Kawerau ā Maki and highlighted in community feedback.
- 
- Coastal forest dominated by pōhutukawa and broadleaf species (WF4 – *Endangered* and CL1 – *Vulnerable*) is located along the entire unit – particularly large remnants are found to the north of Piha and on Te Piha / Lion Rock.
 - A large area of spinifex, pīngao duneland (DN2 – *Endangered*) covers the coast to the north of Te Piha / Lion Rock. A small mosaic of dune plains (DN5 – *Critically Endangered*) and coastal turf (SA5 – *Critically Endangered*) is located to the south of Kaiwhare Point.
 - Wetland vegetation surrounds the Piha Stream, including *Machaerina* sedgeland (WL11 – *Critically Endangered*) and oioi, restiad rushland (WL10 – *Endangered*).
 - Taitomo Island and Nun Rock are covered in a regionally rare ecosystem – iceplant, glasswort herbfield/loamfield (SA7 – *Critically Endangered*).
 - There are several permanent watercourses within this unit, notably the Piha Stream and Glen Esk Stream. Lamprey (*Threatened – Nationally Vulnerable*) have been recorded within these two streams and the wider Piha catchment. All permanent watercourses support the migrational pathways and spawning habitat of native freshwater fish.



Who have we heard from?

Feedback was received via digital platforms Social Pinpoint and 'AK Have Your Say', along with community submissions from the Waitākere Ranges Heritage Protection Society, Piha Residents and Rate Payers' Association and individual submissions from residents in Piha. Key themes in community feedback are discussed further below.

Community hui: Piha (25 August 2024)

The community hui for Piha was organised by the Waitākere local board and community and hosted at the Piha Bowling Club. A presentation was provided by Auckland Council followed by questions and discussion with those in attendance.

Key matters raised included linkages to other work/projects being undertaken by Auckland Council (including Recovery and Flood Resilience), coastal processes, hazard mapping and identification, the need for a better understanding of accretionary processes at Piha to be conveyed, the function of catchments including stream discharge to the beach/coast and the management of flood risk in upper catchment areas, proactive management of catchment

flooding risks and its impacts (including to local connections, features and places), emergency services, roading and transport and the management of regional and local park assets.

What is happening?

- Community concerns and experience of natural hazards featured highly in the feedback, in relation to restriction of access to Piha and other coastal areas and impacts on walking access. Feedback specifically referred to the Hillary Trail and local well-used tracks and trails. There were also concerns raised regarding management of stream mouths at Piha.
- Commentary on flood ponding occurring along North Piha Road, impacting access and private land.
- Observations that sand accumulation is currently occurring along much of the open west coast, with the coastline gradually extending seaward. There was concern that the risks of inundation and erosion had not duly considered this process in the selection of draft adaptation strategies.
- Concern that a combination of sand accretion and sea-level rise is likely to have a compounding negative effect, particularly in the stream valley. There was a high level of concern for the impact of sea-level rise in this unit, such as the potential for saltwater encroachment further inland. Concern that sand may exacerbate the impact of major flood events when combined with rising sea levels.

What matters most? Community uses and values

- There was strong support for the preservation of natural environments and the species which reside there, including conservation efforts focusing on native biodiversity (such as pest control initiatives and restoration of natural flora and fauna).
- Natural and cultural landscapes: Piha Beach and Lion Rock are described as iconic and irreplaceable landmarks highly valued for their landscapes and cultural values.
- Community feedback supported by the Waitākere Ranges Local Board also identifies the arrival of dotterel, nesting on Taitomo, Te Waha and other cliff faces. Community initiatives are undertaking monitoring of little blue penguins with nesting boxes at Kohunui Bay.
- The Waitākere Ranges Local Board identified the importance and value of the Hillary trail which traverses many of the coastal units located in this SAP area and has been impacted by 2023 storm events.

What can we do about it? Community feedback and aspirations

- Community feedback sought the need for ongoing discussion on adaptation planning, including a need to consider private and community land and assets. With strong community concern with any reference to managed retreat (wording identified in consultation documents and no longer included in this plan)
- Community feedback expressed a need to protect/ proactively manage infrastructure at Piha including roads, bridges and car parking, with a need to adapt to changing coastal conditions.
- Feedback sought increased dune management strategies to maintain natural coastal processes including further coastal monitoring and management of accretion. This reflects the community's desire for proactive and science-informed planning to govern future implementation actions and ongoing engagement/ education for communities to better understand dynamic coastlines. Since engagement, Council's [coastal monitoring portal](#) has launched and provides a key opportunity for communities to engage with coastal datasets and the establishment of signals, triggers and thresholds for implementation.

- Acknowledge the complexity of community uses on Council land and the reliance on Council infrastructure for community services (the interface between private land/ assets and Council land and services).
- A desire for the ongoing protection of Lion Rock, which is regarded as a key landmark and symbol of Piha.
- Greater collaboration with local groups and organisations was sought from multiple parties, and the need to address several issues (beyond the immediate scope of the SAP Programme such as private land use planning) in a collaborative manner, including community, iwi and local authorities.
- Aspirations for improving accessways/ walking tracks to support volunteer pest control groups, with feedback highlighting a lack of short access tracks from Piha to service traps on Te Waha Point, where endangered grey-faced petrels, Oi and other sea birds are known to roost.
- Advocacy to consider the Waitākere Ranges Heritage Area Act (objectives and purpose) in planning – support has been captured under by the identification of policy in Volume 2.
- Aspirations to develop an implementation plan that outlines priority actions for Council, asset owners, infrastructure providers, local communities, and iwi to undertake collaboratively in the near term. This plan would help prioritise immediate works and guide the next phase of actions required following storm events.
- Manage stream mouths/ outlets to keep channels away from roads (i.e. Piha Stream and Marawhara) aim to ensure that this doesn't impact on flooding further up the catchment.

2.1: Te Unuhanga o Rangitoto / Mercer Bay

This stretch extends from Hinerangi Pou to Tasman Lookout, encompassing Waitākere Regional Park and well-known coastal walking tracks including Mercer Bay Loop Walk and Tasman Lookout Track. The stretch is characterised by rocky coastal cliffs that are covered in pōhutukawa-dominated forest. A Māori heritage area (Te Kawerau ā Maki), Te Unuhanga o Rangitoto, is located in this stretch.

Scenarios for change			
Low		Moderate	
High			
Maintain		Maintain	
Maintain			
Explanation			
Maintain is identified over all climate change scenarios to signal the need for the ongoing maintenance and management of risk (primarily from coastal erosion and instability) to the significant and highly valued coastal walkway (noting the provision of continued access to coastal walkways was identified through community feedback).			
Implementation Notes			
• No interventions to hold the shoreline are anticipated along this stretch given the identified values, dynamic nature of the coastal edge and practicality of options along this frontage. • Cultural: Ongoing engagement with Te Kawerau ā Maki is required regarding the management of Te Unuhanga o Rangitoto.			

2.2: Taitomo Island and Te Piha/Lion Rock

Stretch 2.2 includes both Taitomo Island and Te Piha / Lion Rock. Both islands provide habitat for seabirds and marine mammals and both are significant cultural features (island Pā) for Te Kawerau ā Maki. Taitomo Island remains in iwi ownership.

Taitomo Island is identified as being home to a critically endangered herbfield ecosystem type. Te Piha / Lion Rock is identified within the Regional Park area and includes walking access tracks at the base of the rock.

Scenarios for change					
Low		Moderate		High	
Maintain		Maintain		Maintain	
Explanation					
Maintain is identified over all change scenarios to reflect the management intentions in the Regional Parks' Management Plan. This includes managing the plaques on Te Piha / Lion Rock in accordance with the 'Lion Rock Plaques Heritage Assessment 2012'. Intentions also include restoration of the coastal vegetation and protection of nesting penguins, taking into account the archaeological sites.					
Implementation Notes					
• Cultural: Continue to work with Te Kawerau ā Maki on the protection and interpretation of the area. • Maintain notes the need to work with Te Kawerau ā Maki and the community regarding the future provision of walking/access tracks while managing ongoing safety risks and erosional trends. • Taitomo Island does not have any Council-owned land or assets. As such, the strategy of maintain does not explicitly apply to this island but does not preclude ongoing activities to support ecological and cultural outcomes.					

2.3: Piha Beach South (Piha Beach)

This stretch commences to the south of Piha Beach at the Tasman Lookout and continues to the northern side of Seaview Road (where it intersects with Marine Parade North) landward of Te Piha / Lion Rock. It includes key roading connections, multiple community uses (subject to leases on Council land and located within private landholdings), emergency management facilities (not Council-owned) and Piha Surf Lifesaving Club. The area has significant cultural value to Te Kawerau ā Maki, includes several threatened wetland ecosystem types and supports a variety of native species.

Scenarios for change					
Low ⁷		Moderate		High	
Maintain		Adaptation Priority		Adaptation Priority	
Explanation					

⁷ This scenario also accounts for current trends in beach accretion and their impacts at this stretch.

Scenarios for change		
Low ⁷	Moderate	High
Maintain in the low climate change scenario provides for ongoing dune management, including the current trends in beach accretion. Maintain provides for the ongoing management of land and assets, including ensuring resilient design as assets are renewed or exposed to hazard risk. This includes the management of activities within the Regional Parks' landholdings, Piha Wetlands' landholdings and Piha Domain. Adaptation priority is identified in the moderate to high climate change scenario. This is due to the highly dynamic nature of the catchment. Coastal processes and climate change impacts, including sediment availability and sea-level rise has the potential to alter accretion and erosional processes over time and will continue to be monitored through Council's coastal monitoring programme. The transition to adapt signals the need to undertake further engagement and collaboration with communities, iwi and other stakeholders. This may include a need to consider a change in the way that Auckland Council land is used, and the location and design of assets/ land uses to manage risk. Collaborative development of locally relevant signals triggers and thresholds will support future timing of adaptation actions.		
Implementation Notes • Maintain supports continued collaboration with Piha Surf Lifesaving Club to manage dunes and safe beach access. • Social: Multiple community uses are located within this stretch. Collaboration with lease holders, third party asset owners, emergency services, communities, iwi and other major asset owners to implement adaptation strategies for this stretch. • Monitoring coastal processes and climate change: Shoreline change, stream levels and water quality to continue to be monitored. Impacts on local areas, assets, services and uses will support the development of signals, triggers and thresholds for change and implementation of further adaptation actions. • Storm-affected land: This unit includes properties impacted by the 2023 storm events. Refer to the unit discussion for further information.		

2.4: Piha Beach North (North Piha)

This stretch commences at the start of Marine Parade North where it turns the corner from Seaview Road and culminates at the end of North Piha Road. It includes the northern area of Piha Beach, along with the Marawhara, Whakatai and Wekatahi stream outfalls to the coast. Council-owned land includes Les Waygood Reserve, North Piha Esplanade Reserve and a portion of the Waitākere Ranges Regional Park. There are several informal accessways to the beach from Piha Esplanade, as well as some carparking areas.

Scenarios for change		
Low ⁸	Moderate	High
Maintain 	Adaptation Priority 	Adaptation Priority 
Explanation		

⁸ This scenario also accounts for current trends in beach accretion and their impacts at this stretch.

Scenarios for change		
Low ⁸	Moderate	High
Maintain in the low climate change scenario supports consideration of activities and assets within Council-owned land to manage risks and the need to consider the management of safe access via roading connections in localised flooding events. Maintain supports options to manage risk to land use such as at the Les Waygood Reserve and the active management of the Wekatahi and Marawhara stream mouths. The need for adaptation priority is proactively signalled under the moderate to high change scenario to allow for further engagement and discussion in relation to the appropriate management of risks to Council-owned land, assets and leases within those landholdings. Rates of shoreline change, and frequency of flooding may be explored as signals and triggers for further adaptive actions, noting the dynamic and high energy environment which has both erosional and accretional trends.		
Implementation Notes • Management: Maintain provides for continued actions by asset owners (including Auckland Transport and Healthy Waters and Flood Resilience, and Parks and Community Facilities) to manage risk and maintain interventions, such as pumped stormwater networks. • Community feedback: This stretch connects to highly valued coastal access tracks (e.g. Whites Track, Marawhara Walk), which may require further consideration in implementing adaptation strategies to maintain access to these highly values assets. • Storm-affected land: This unit includes properties impacted by the 2023 storm events. Refer to the unit discussion for further information.		

2.5: Kohunui Bay & Te Waha Point

Stretch 2.5 commences at the northern extent of North Piha Road and culminates at the Te Waha Point look out (pā site) at the end of Unit 2. The stretch is predominantly coastal forest. The Laird Thompson Track is located within this stretch, however, this track is closed following the storm events of early 2023.

Scenarios for change		
Low	Moderate	High
No action 	No action 	No Action 
Explanation No action supports the retention of a natural coastal edge over all change scenarios. Note that this plan does not specifically consider land instability hazards.		
Implementation Notes		

Scenarios for change		
Low	Moderate	High
• No action does not preclude the ongoing management and maintenance of tracks. Should coastal hazard risk to the walking tracks be identified, proactive realignment in this dynamic and ecologically significant area of coast is recommended. • Cultural: The Te Waha Pā is located within the stretch. Engagement with Te Kawerau ā Maki will be required in relation to this area. • Community feedback: Aspirations for Laird Thomson Track (which is currently closed as a result of damage sustained during the storm events of early 2023) to be reinstated as a route for experienced trampers/ walkers and volunteer pest-control groups.		



Unit 3

Whatipū to South Head



Bethells Beach Surf Lifesaving Patrol club



Strong community support to repair, noting work taking place

The Waitakere River mouth discharges onto Te Henga / Bethells Beach. This river mouth and associated lagoon area is highly dynamic. There was significant flooding of the Waitakere river during the 2023 storm events with damage to private land, natural environments, access and the Bethells Beach Surf Lifesaving Club

Mokoroa Stream



Te Henga Wetland



Waitakere River

Bethells Rd



Waiti Stream



Te Henga Walkway



Rocky shallow reef and rocky shore at Te Henga which host a diversity of marine fauna



Landmark island pā Te Ihumoana



Ihumoana Island

Te Henga / Bethells Beach sits within the heartland of Te Kawerau ā Maki, with it noted that there are aspirational plans for a marae to be positioned at Te Henga in the near future (the coastline and seaway of Awa Kauwhaia are of considerable significance to Te Kawerau ā Maki)



Te Henga / Bethells beach

Bethells Beach Cafe is a popular meeting place for locals



Wahirua Bay

Pareoha Bay



Anawhata Stream



Community feedback communicated a strong need to proactively manage roading connections, car parking facilities, river flood risks (monitor blockages for outlets), protect wetlands and dune and weed maintenance - keeping the coast as natural as possible, while providing for essential services in an appropriate manner

The closure of the Lake Wainamu and Te Henga walkways was identified as having significant impacts on local residents use and that of visitors



Paikea Bay

Rose Track



Anawhata Rd

Kohunui Bay

- Unit boundary
- 3.1 3.2 Stretch
- Walking tracks
- Informal recreation park
- Regional park
- Auckland Council owned land

0 500m 1km

*NOTE: Maps may be updated to improve wayfinding and accessibility



Waitākere Ranges Regional Park - Anawhata | Map 19.3
Auckland Council Regional Parks Management Plan

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



Unit 3: Te Henga/ Bethells & Anawhata

This unit is located within the Waitākere Ranges Local Board area; it begins at the headland at the northern end of Kohunui Bay and extends northward ending at Raetahinga Point. The unit is inclusive of Whites Beach, Anawhata Beach, Waitākere Bay and O'Neill Bay.

What is happening? Coastal context and hazardscape

This unit is characterised by high energy beaches, mobile sand dunes, rocky shorelines and high coastal cliffs. Te Henga / Bethells Beach is backed by residential development, set back from the beachfront by an extensive dune field.

Associated with both the river mouths at Te Henga (Bethells) Beach and Anawhata Beach, the upstream tidal lagoon features transition to native saltmarsh and wetland habitat. The Waitākere River mouth discharges onto Te Henga / Bethells Beach and is highly dynamic. The Te Henga wetland, which transitions into the coastal environment, is the largest freshwater wetland on the Auckland mainland.

Figure 3-1 outlines the coastal hazardscape for coastal erosion and instability, coastal inundation and catchment flooding across the unit. Each hazard is described in more detail in the following sub-sections.

This unit includes properties impacted by the 2023 storm events. Decisions on the future use and management of land acquired by Council are being dealt with separately under the Council's storm-affected land-use policy^{9,10}. SAPs, as living documents, will be updated as decisions are made on the land.

A fulsome discussion around low, moderate and high scenarios for (climate) change and how each is considered to inform the selection of coastal adaptation pathways can be found in *Volume 1: Understanding the Shoreline Adaptation Plans*. Land instability and wild fire and beyond the scope of the shoreline adaptation plan programme.

⁹<https://ourauckland.aucklandcouncil.govt.nz/media-centre/2025/april/storm-affected-land-use-policy-approved/>

¹⁰ <https://ourauckland.aucklandcouncil.govt.nz/news/2025/03/storm-recovery-update-20-march-2025/>

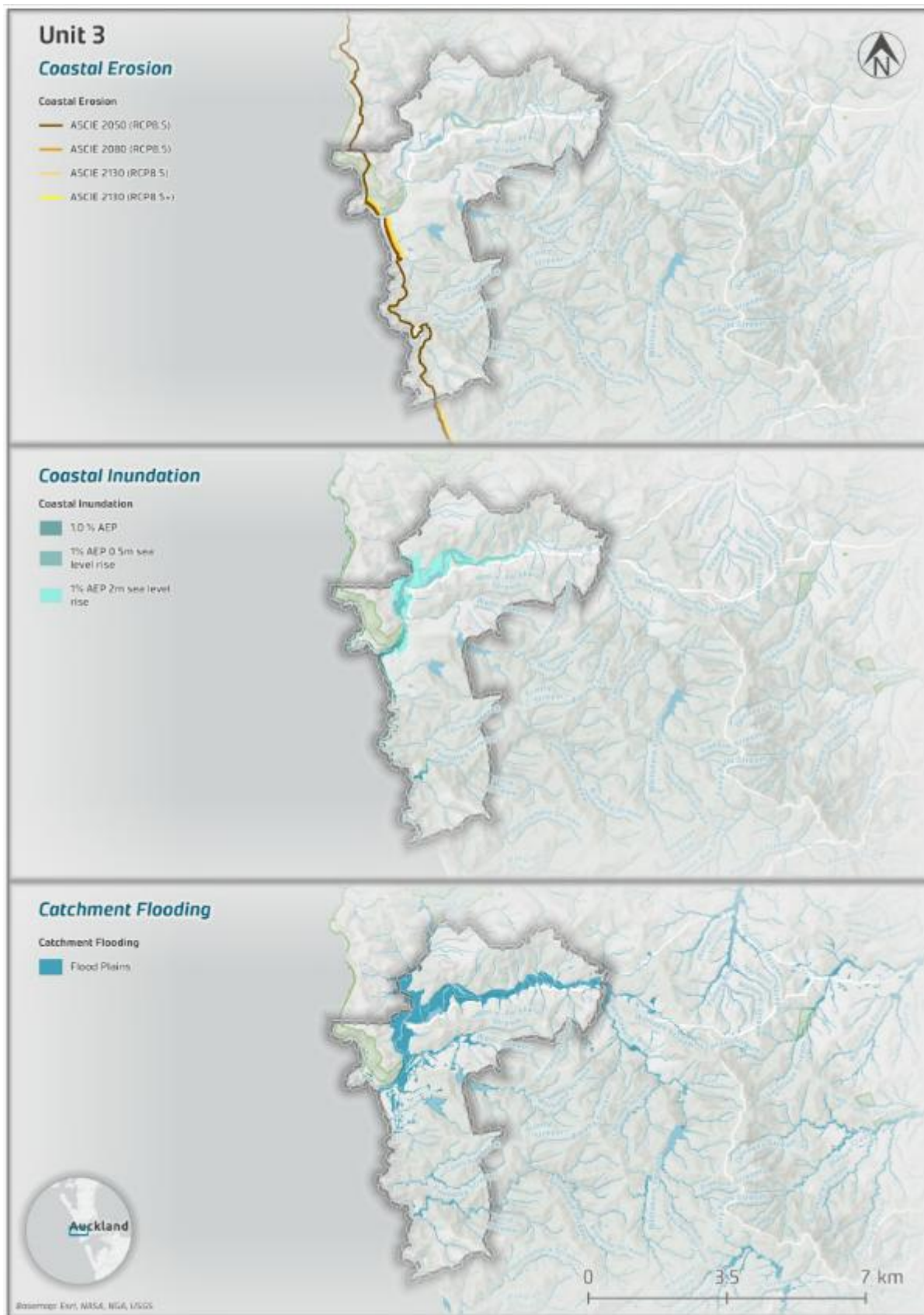


Figure 3-1: Coastal hazardscape for the Te Henga/Bethells Unit. reflecting coastal erosion susceptibility for 2050, 2080 and 2130 considering RCP4.5 and RCP8.5 emission scenarios, coastal inundation for 1%AEP storm surge for present day and with 0.5 m, 1 m and 2 m sea-level rise and the identification of flood plains

Coastal erosion and accretion

As previously discussed for Units 1 and 2, the unit of Te Henga/ Bethells is currently experiencing an accretionary trend. These trends are predicted to be medium-term (decadal). As a result, in the long term, the area is still considered to be susceptible to coastal erosion with ongoing sea-level rise and changes to sediment availability over time (Auckland Council, 2024), as outlined in Figure 3-1.

The ASCIE lines that indicate the area susceptible to coastal instability and erosion along the open west coast varies between the soft beach/dune coast extents (e.g. Te Henga/ Bethells) and the harder cliffed headlands to the south of the unit. Further information regarding the ASCIE methodology and the parameters used can be accessed in the [Auckland Council Technical Publication here](#).

Alongside coastal processes, geological and landform factors may influence general land stability. While land instability is not specifically considered in this report, it is noted the landslides occurred in 2023 which have altered the landscape, impacted road access, access ways, private and Crown land areas, including north of Te Henga and O'Neils Beach areas. Impacts on the Muriwai Te Henga Walkway are addressed in Unit 4. Community identification of hazards and feedback is addressed in sections below.

Coastal change: As demonstrated by aerial imagery for Te Henga/ Bethells including dune progradation and widening of the lagoon area before the stream mouth.



Te Henga/ Bethells 2000 (left), 2025 (right) (Source: Auckland Council)

Accretion: While there are currently no Auckland Council dune monitoring profiles at Te Henga/Bethells, trends in accretion are demonstrated by the recent analysis of aerial photography and satellite imagery completed by the Aotearoa coastal change project.



*Analysis of rates of coastal change at Te Henga/ Bethells
(Source: <https://coastalchange.nz/>)*

Coastal inundation

Southern areas of this unit's coastline are exposed to limited coastal inundation due to the topography, with areas of inundation identified at Anawhata south of Te Henga (Figure 3-1). This coastline is dynamic and predominantly natural in character, with access tracks and assets primarily set back from the coastal edge and areas of potential coastal inundation.

At Te Henga / Bethells, extents of the Waitākere River are exposed to coastal inundation under present-day sea levels. The extent of inundation will increase with sea-level rise under the moderate to high change scenario to reach the Te Henga wetland as demonstrated in Figure 3-2.

As indicated for Units 1 and 2 previously, the relationship between current accretionary processes, sediment availability and sea-level rise will be key to the extent of future coastal inundation that is realised.



Figure 3-2: Map showing moderate and high coastal inundation scenarios at Te Henga/Bethells Beach

Catchment flooding and stream bank erosion

Overland flow paths and floodplains exist around Anawhata Stream, Waitākere River and Taimana Stream in this unit.

Flood events in 2021 and 2023 resulted in significant erosion of the sandy riverbanks and dunes bordering the lagoon and river mouth. This resulted in damage to Bethells Road causing temporary loss of vehicle access, damage to the Bethells Beach Surf Lifesaving Patrol clubrooms and flooding of private property. Overall, the flood events have formed a significantly wider downstream river channel, resulting in higher stream flow velocities during extreme rainfall events. Subsequently, erosion of the stream banks and adjacent dunes continues, and has been compromising beach access for the public and Surf Lifesaving Patrol, requiring ongoing operational response. Key impacts are depicted below:

Flood extent: Te Henga wetland and Waitākere River flooding inundating Bethells Road, cutting off access to Bethells Beach, August 2021.



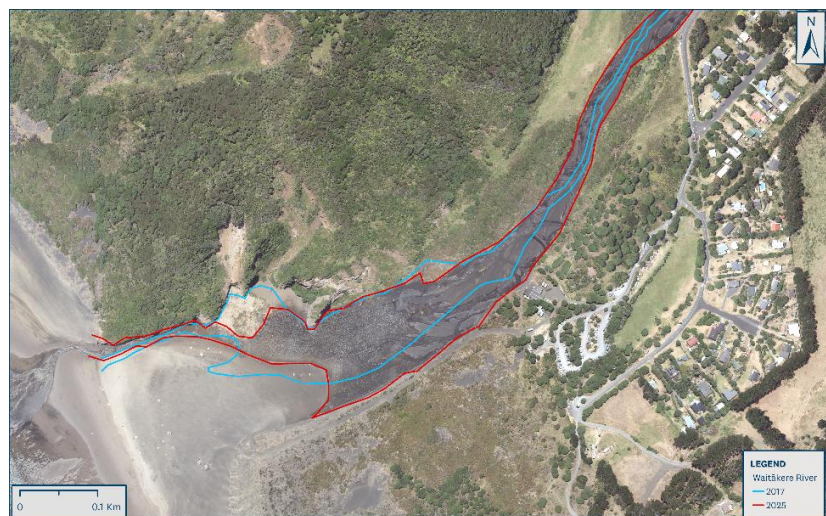
Flood extent at Te Henga as a result of the 2021 flood event (Source: Peter Quilter)

Flood damage: The Waitākere River and impacted Bethells Road following the August 2021 flood event. Source: Peter Quilter (Tonkin & Taylor)



Waitākere River post the 2021 flood event (Source: P Quilter)

Stream changes: Comparison of Waitākere River and lagoon edge at Te Henga/Bethells Beach showing the widening and stream bank erosion that has occurred following recent, significant flood events.



Lagoon edge comparison 2017 (blue line) and 2025 (red line) (Source: Auckland Council GeoMaps)

2023 Storms: Damage to the Bethells Beach Surf Lifesaving Patrol Club caused by high river flows at the Waitākere River outlet Council and resulting erosion of the sandy river banks during Cyclone Gabrielle.



Bethells Beach Surf Lifesaving Club following Cyclone Gabrielle (Source: Auckland Council)

Beach Access: The previous beach accessway has been lost to stream bank erosion and the widened lagoon post heavy rainfall, July 2025. (Auckland Council).



Restricted beach access following heavy rainfall (Source: Auckland Council)



Risk assessment

The risk table below 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. Series 2).

The table 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.

Risk from coastal inundation to Auckland Council community facilities (such as the Te Henga Bethells Beach toilets and carpark – which are low lying and located directly south of the Waitākere River) is moderate in the short term, increasing to high risk in the long-term (Tonkin + Taylor, 2023).

Environmental assets in this unit are at very-high risk of coastal erosion, with Auckland Council-owned land at high-risk in the short term. Transport infrastructure and water infrastructure are not at risk from coastal erosion.

Council-owned land			Council Community facilities			Transport infrastructure			Water infrastructure		
Park and reserve land, 479 ha			Park amenity structures, carparks, 0.8 ha Buildings, wharves, 11 (No.)			Bridges, 238 m ² AT roads, 18 km			Water pipes, 2 km		
Short	Medium	Long	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Coastal erosion and susceptibility											
High	High	High	Low	Low	Low	None	None	None	None	None	None
Coastal inundation											
Moderate	Moderate	Moderate	Moderate	Moderate	High	Low	Low	Moderate	Low	Low	Low
Key											
None			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.



- Waitākere West Regional Park
- Bethells Road Esplanade
- Te Henga Park
- Te Henga Recreation Reserve



- There are park facilities at Anawhata (i.e. Kuataika Swing Bridge), Lake Wainamu, Te Henga / Bethells Beach.
- There are several Auckland Council accommodation facilities located in or adjacent to this unit around Anawhata including Keddl House, Craw Homestead and Craw Campground, as well as additional utility buildings and a water pump shed at Anawhata.



- Key walking access and tracks include the Anawhata Beach Track and Whites Track. The Te Henga Walkway is partially located within this unit, sections of the walking connection are closed due to storm damage. The walkway includes for Council and DOC landholdings.
- There are limited roads located within this unit; main connections include Anawhata Road and Bethells Road.



- The Te Henga Pilot is a 12-month initiative to test partnership-led, place-based adaptation planning exercise with Te Kawerau ā Maki. It will build on the SAP by supporting mana whenua leadership, community involvement, and coordination across Council projects. Insights will inform Auckland's Regional Adaptation Framework.

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 over changing climate scenarios.



- Te Henga / Bethells Beach sits within the heartland of Te Kawerau ā Maki, noting that there are aspirational plans for a marae to be positioned at Te Henga in the future. At the northern end of Te Henga is the landmark island pā Te Ihumoana (Ihumoana Island), and beyond at Awa Kauwahaia (O'Neill Bay) stands the small island and pā known as Motu Kauwahaia.
- The coastline and seaway of Awa Kauwahaia are of considerable significance to Te Kawerau ā Maki. Te Henga is also the location of Parawai Pā and Waiti village, each historic Te Kawerau ā Maki settlements¹¹. There are several pā sites within the area which are also listed as heritage features (see 'Social Context' below).
- Specific cultural values and outcomes for this unit will be developed through ongoing involvement with local iwi identified in Volume 2. Guiding objectives and outcomes which have informed the development of adaptation strategies have also been identified here.



- The Bethells Surf Lifesaving Club was damaged during Cyclone Gabrielle, and the club is currently working through Land Owner Approval and Resource Consents for a new building within a preferred location of the park. Council staff are working in collaboration with Bethells Surf Life Saving Club.
- The Te Henga Coastal Walkway has previously been a very popular, regionally significant walkway connecting Bethells Beach with Muriwai Beach. This track is currently closed following the storm events of early 2023.
- The Waitākere Ranges Local Board identified the importance and value of the Hilary trail which traverses many of the coastal units located in this SAP area and has been impacted by 2023 storm events.
- At Bethells Beach, the Bethells Beach Café (run out of a mobile caravan) operates and is a popular meeting place for locals (Waitākere Ranges Local Board, 2015).
- Recognition of the Waitākere Ranges Heritage Area Act (2008) is of relevance to this unit, noting that this area is of great interest to Te Kawerau ā Maki and highlighted in community feedback.
- Historic cottage on to the Anawhata Farm.

¹¹ Te Kawerau ā Maki and the trustees of Te Kawerau iwi settlement trust and the crown. Deed Of Settlement Document.



- Waitākere rock is at Te Henga.
- Three duneland areas consisting of spinifex, pīngao grassland (DN2 – *Endangered*) – the first is located at Anawhata Beach, the second along Te Henga / Bethells Beach and O’Neill Bay.
- The largest freshwater swamp on the mainland of Tāmaki Makaurau / Auckland – Te Henga Wetland, which includes several wetland ecosystem types (*Machaerina* sedgeland – *Critically Endangered*, raupō reedland – endangered, and manuka, tangle fern, scrub, fernland – *Critically Endangered*).
- Threatened and/or vulnerable freshwater features include several permanent watercourses, including Lake Kawaupaka, Lake Waataru and the Waitākere River. Migrational pathways of native freshwater and spawning habitat occur in all permanent watercourses within this unit.
- Marine features within this unit that are vulnerable to climate change hazards include areas of exposed rocky shallow reef and rocky shore which host a diversity of marine fauna. Bull kelp is recorded within these ecosystems between O’Neill Bay to Piha – the only known occurrence within the region.



Who have we heard from?

Feedback was received via digital platforms Social Pinpoint and ‘AK Have Your Say’, along with community submissions from the Waitākere Ranges Heritage Protection Society, Friends of Regional Parks and individual submissions from Te Henga and Anawhata residents. Key themes in community feedback are further discussed below.

Community hui: Te Henga Bethells (20 August 2024)

The community hui for Te Henga was supported by the Waitākere Ranges Local Board and hosted at Matuku Link, Te Henga. Key topics for discussion included addressing sediment accretion, managing sand migration from Lake Wainamu, improving river management (particularly in areas with invasive/ exotic vegetation), undertaking regular river clearance to maintain natural flows and reduce blockage, the need for ongoing monitoring of the Waitākere Dam.

What is happening?

- Community concerns and experience of natural hazards were related to the landslides at Te Henga, loss of road access and the impacts on the community and surf club.
- The closure of the Lake Wainamu and Te Henga walkways was identified as having significant impacts on residents use as well as that of visitors.
- Damage from storms (Cyclones Hale and Gabrielle) resulted in slips and canopy loss.
- Active restoration efforts: Native replanting, weed control, track drainage and maintenance (via Te Henga Restoration Group).
- Stream-driven flooding was exacerbated by dam failure at Lake Wainamu, causing major sand mobilisation.
- The Waitākere Ranges Local Board identified community concerns for willows clogging river flows.

What matters most? Community values and uses

- Key community uses and activities identified included surfing and swimming, as well as dog walking, horse riding and diverse outdoor sports.

- The continued safety of the roading connection to Te Henga and the need to support safe use of the beach (through provision of surf lifesaving facilities/service) through asset management and maintenance were identified.
- The use of walking tracks to and along the coast were highly valued, noting many commented on the need to reinstate the Te Henga walkway.
- Natural landscapes and ecological values - the value of the wild west coast to communities was identified, and a desire to keep it as natural as possible, while providing for essential services in an appropriate manner.
- Environmental degradation: The destruction of dunes by human activity was a concern as the community values and understands its importance for a climate-resilient coastal system. Management of the dunes, including planting, was valued. The longstanding efforts of community groups in this space was highlighted.

What can we do about it? Community feedback and aspirations

- Environmental feedback focused on protection of dunes and wetlands, with support for planting, weed and pest control and the need to support natural systems under increasing pressure from climate, human uses and weather events.
- Community feedback sought the need for ongoing discussion on adaptation planning, including a need to consider private and community land and assets. With strong community concern with any reference to managed retreat (wording identified in consultation documents and no longer included in this plan)
- Support for community-led conservation and restoration effort and to work with locals to identify and resolve future coastal hazards risk.
- Mitigate riverbank damage: Enforce rules along Waitākere River corridor. Feedback highlighted the need to prevent hydrological blockages to ensure lakes and river outlets remain clear to mitigate flood risk (proactively manage streams, wetlands, and catchment zones alongside natural coastal processes).
- Implications for public and private land and infrastructure: Feedback highlighted the need to discuss the potential consequences of the proposed adaptation strategies, particularly their impact on private property.
- More specific aspirations for infrastructure related to infrastructure maintenance (i.e. repairing potholes in car parks, improving drainage), flooding resilience initiatives, and supporting/ reinstating important walkways and key infrastructure to support recreation and access to and along the coast.

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



3.1: Anawhata

Stretch 3.1 starts at Te Waha Point Lookout and continues to the southern end of Te Henga Bethells Beach. The popular beaches of Whites and Anawhata are located within this stretch, and coastal walkways such as Whites Track.

The only known regional occurrence of bull kelp is found amongst the rocky nearshore waters and a large intact duneland system is also located to the northern end of this stretch.

Scenarios for change		
Low	Moderate	High
No action 	No action 	No action 
Explanation		
No action reflects the natural, undeveloped character of this dynamic coastal area.		
Implementation Notes		
• No action: does not preclude the management and maintenance of walking tracks located within this stretch. • Community feedback: A network of tracks provides access to the northern and southern ends of Whites Beach and popular fishing spots, offering excellent opportunities for recreation. The strategy of no action does not preclude provisions to ensure public safety, e.g. raising awareness of coastal hazards such as instability. • Ecology: Anawhata Beach supports high intertidal ecological values, with features such as keystone rock and the sandy bay itself supporting a range of species (bright sponge gardens are found on the point at the north end of the beach). Consideration of ecological values is supported via a no action approach by preserving the natural coastline.		

3.2: Te Henga

Stretch 3.2 commences at the southern end of Te Henga / Bethells Beach and continues to the northern bank of the Waitākere River, including the upper wetlands and catchment area of the Waitākere River. A section of Waitākere Regional Park is within this stretch, as are two esplanade reserves and the Te Henga Park Reserve. This stretch includes the main road access to Te Henga / Bethells Beach and the main parking, access and associated parks facilities for the beach itself.

SAPs do not directly respond to land instability susceptibility when identifying adaptation strategies. Significant damage, associated with land instability, occurred to eastern sections of the Bethells Road through the 2023 storm events (and in other storm events) and flooding of sections of the road has been experienced in upper catchment areas, impacting roading access.

Scenarios for change			
Low		Moderate	High
Maintain		Adaptation Priority	
Explanation Maintain in the low change scenario provides for management of risk to Council land and facilities and the uses supported by these assets. This includes the maintenance of safe access to the beach, currently located alongside the Waitākere Stream mouth. Maintain anticipates the planned localised relocation and redevelopment of the surf lifesaving club (leasehold land, non-Auckland Council asset) within the park area and ongoing management of risk to the Bethells Road where localised protection (utilising hard engineered solutions) approaches have been established for sections of the Bethells Road alignment and bridge to maintain the road in its current alignment. In the moderate to high change scenarios, risk from both coastal inundation (with sea-level rise) and catchment flooding is predicted to increase, coupled with a highly dynamic coastline which will affect future rates of beach accretion versus erosion. Areas of Council-owned land, roading connections and the community uses they support will be increasingly impacted by natural hazards. Adaptation priority signals the need to respond to this increasing hazard risk. Determining the thresholds and preceding triggers for adaptation in collaboration with iwi, communities, asset owners and other stakeholders will be required to support implementation of future adaptation actions.			
Implementation Notes • Work programmes: The Te Henga Pilot is a 12-month initiative to test partnership-led, place-based adaptation planning with Te Kawerau ā Maki (refer to unit context for further information). • Social: Significant community interest in implementation of the adaptation processes, including opportunities for community participation and leadership. • Monitoring coastal processes and climate change: Shoreline change, frequency of flooding and the associated impacts on land and assets should be monitored to support the development of signals, triggers and thresholds for change and implementation of further adaptation actions. • Cultural: The Te Henga / Bethells stretch is of significant cultural value to Te Kawerau ā Maki. The iwi have expressed current ambitions for a marae, management of urupā and the ability to access cultural lands and sites, alongside environmental outcomes and managing the impacts of the 2023 storm events. Implementation of adaptation actions shall include engagement with Te Kawerau ā Maki. • Ecology: The wetland area holds significant ecological values and habitats (refer to 'Unit 3 Ecological context' for further detail). • Collaboration: Multiple community uses are located within this stretch, collaboration with leaseholders, third party asset owners, emergency services, communities, iwi and other major asset owners and stakeholders to implement adaptation strategies for this stretch.			

3.3: Ihumoana and Kauwahaia Islands

This stretch includes the Ihumoana Island (privately owned) and Kauwahaia Islands (privately owned). Both islands support many seabirds. Kauwahaia Island is covered in the critically endangered petrel scrub ecosystem.

Scenarios for change		
Low	Moderate	High
No action 	No action 	No action 
Explanation		
Ihumoana Island and Kauwahaia Islands are undeveloped nearshore islands. Reflecting that there is no Auckland Council-owned infrastructure, land, or assets a strategy of no action is recommended.		
Implementation Notes		
• Ecology: A variety of coastal and sea birds breed on the islands and feed in the surrounding waters, noting the marine ecosystem in this stretch supports a rich array of biodiversity. A no action approach supports a natural coastal edge.		

3.4: Waitākere River to Taetahinga Point

Commencing north of the Waitākere River and continuing to Raetahinga Point, this stretch includes O'Neill Bay. O'Neill Bay is popular with surfers, fishers and beachgoers and is accessible on foot from Bethells Beach / Te Henga. With no formal access way, O'Neill Bay is accessed by crossing the Waitākere River and following an informal track over a sand dune. The Te Henga Walkway runs through this stretch and previously provided an alternative accessway to O'Neill Bay but has been closed since the storm events of February 2023 (Department of Conservation, 2024).

Scenarios for change		
Low	Moderate	High
No action 	No action 	No action 
Explanation		
No action responds to the nature of Auckland Council-owned and managed assets within this stretch.		
Implementation Notes		
• Collaboration: The coastal walking access between Te Henga / Bethells Beach and O'Neill Bay is informal and is not maintained by Auckland Council. This access will remain dynamic with natural beach and dune responses to sea-level rise and coastal processes. • No action does not preclude collaboration between Auckland Council and other asset owners/managers communities, users and iwi in response to management of risks as required.		



Unit 4

Whatipū to South Head



The wellbeing benefits that access to the beach and coast provides people was recognised. Many expressed a deep emotional connection to the beach and the use of this area for health and wellbeing practices



Muriwai Beach



Muriwai Surf Lifesaving Club



Numerous community facilities make up the social landscape of Muriwai

The Muriwai gannet colony is located within this unit and the unit is home to regionally unique ecological habitats and values



Collins Bay

Powell Bay



Kirikiri Bay

Te Waharoa Bay

O'Neill Bay

Te Henga Walkway



Muriwai Regional Park - Five Mile Strip | Map 8.2
Auckland Council Regional Parks Management Plan



Muriwai Regional Park - Beach | Map 8.1
Auckland Council Regional Parks Management Plan

Unit boundary

4.1 4.2 Stretch

Walking tracks

Informal recreation park

Regional park

Auckland Council owned land

**NOTE: Maps may be updated to improve wayfinding and accessibility*

Unit 4: Muriwai (Te Oneone Rangatira)

This unit is located within the Rodney Local Board area, it begins at the southern end of Te Waharoa Bay and continues north, culminating at the northern end of the Muriwai Regional Park (5 Mile Strip). It includes the coastal settlement of Muriwai, the Muriwai Regional Park and associated assets, which host a number of community uses and are highly popular both regionally and nationally.

The unit is home to regionally unique ecological habitats and values including the Muriwai gannet colony. The lava formations visible within areas of this coastline are also identified as ‘*outstanding natural features*’.

The Muriwai community experienced significant damage in the 2023 storm events. This included loss of life, and significant damage and loss to many private properties and Auckland Council facilities (water treatment, roads and walking tracks). Recovery efforts are ongoing.

What is happening? Coastal context and hazardscape

The coastline is characterised by the Maukatia (Māori) Bay coastal cliff system and rocky shorelines, before the high-energy Muriwai Beach which is backed by mobile sand dunes. The Muriwai Regional Park backs much of this coastline before the Woodhill Forest.



Figure 4-1: Restored dunes, southern end of Muriwai Beach (Source Aidan McLean)

A fulsome discussion around low, moderate and high scenarios for (climate) change and how each is considered to inform the selection of coastal adaptation pathways can be found in *Volume 1: Understanding the Shoreline Adaptation Plans*. Land instability and wild fire and beyond the scope of the shoreline adaptation plan programme.

Coastal erosion:

The projected coastal erosion and instability, coastal inundation and catchment flooding extents for this unit are shown on the following page.

The open west coast beach and dunes are highly dynamic in response to coastal processes and sand supply. The dunes are predicted to be exposed to coastal erosion with ongoing sea-level rise. However, future trends will be determined by future rates of sea-level rise and sediment availability.

Coastal inundation and catchment flooding:

Due to the elevation of the coastline within the southern areas of this unit coastal inundation exposure is limited. Coastal inundation is identified as impacting areas within Stretch 4.5 around the Ōkiritoto Stream/ Waimanu Awa discharge to the coast.

Overland flow paths and floodplains exist around Muriwai Beach Domain Recreation Reserve and Muriwai Regional Park in this unit. With areas of floodplain also identified within the catchment of the Ōkiritoto Stream/ Waimanu Awa.

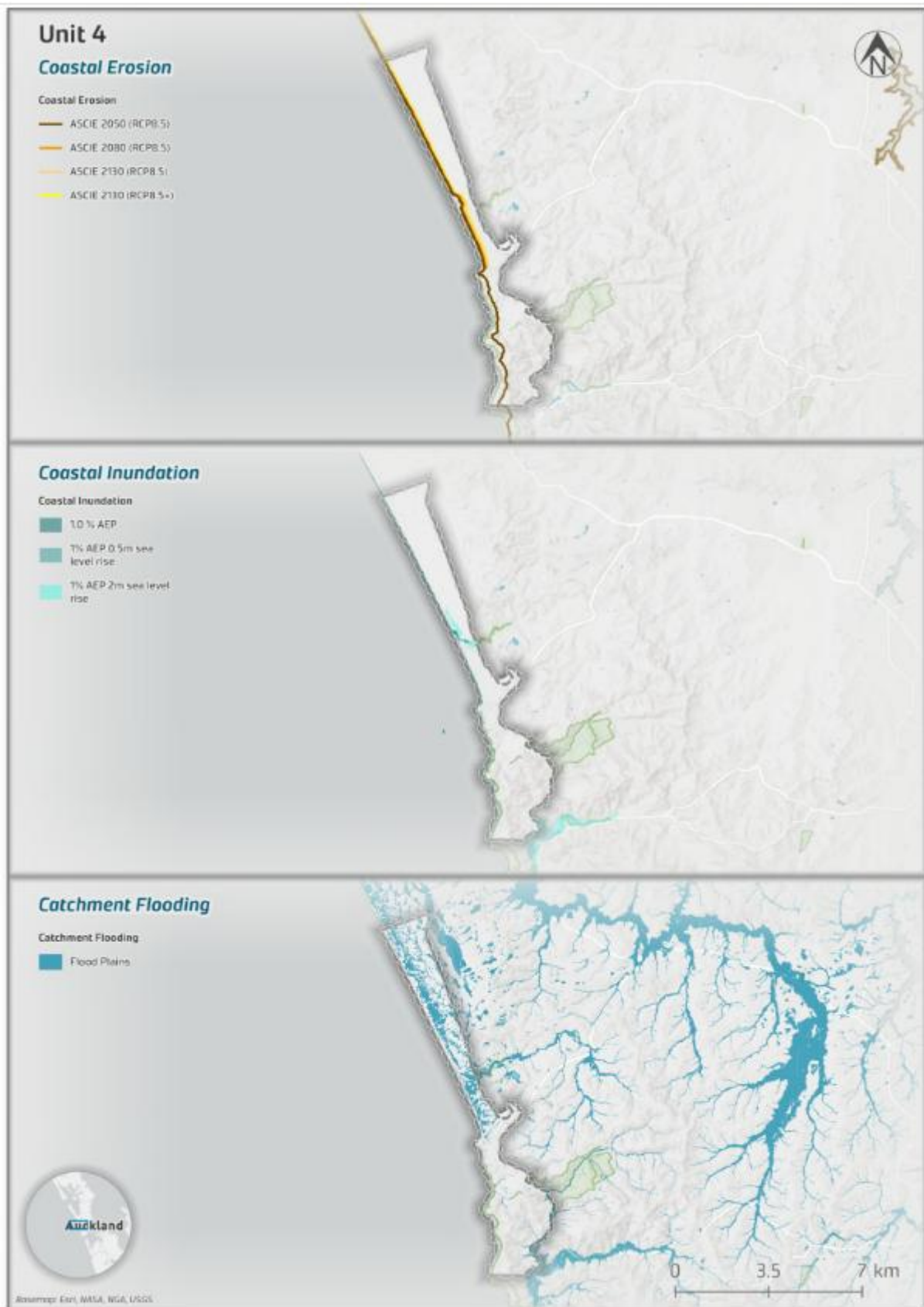


Figure 4-2: Coastal hazardscape for the Te Oneone Rangatira Muriwai Unit reflecting coastal erosion susceptibility for 2050, 2080 and 2130 considering RCP4.5 and RCP8.5 emission scenarios, coastal inundation for 1%AEP storm surge for present day and with 0.5 m, 1 m and 2 m sea-level rise and the identification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

Some of the key features of this coastline are depicted below.

A period of shoreline erosion began in the 1960s, and erosion management measures have since been employed. The southern carpark was realigned landwards approximately 40 m previously (completed in 2009). Dune restoration works have been completed at the southern end of Muriwai Beach, involving dune reshaping, removal of weed species and historic debris, and ongoing seasonal dune planting. The adjacent Muriwai Surf Club was relocated to a more landward location within the Regional Park shortly after this.



Erosion at the southern end of Muriwai Beach (Auckland Council, 2008)

A rock revetment seawall and gabion baskets owned by Auckland Transport exists on the seaward edge of the bank supporting the edge of Motutara Road. This provides vehicle access to the beach for emergency services and authorised vehicles from the Muriwai Surf Club and Muriwai Sports Fishing Club (Auckland Council, 2024).



Looking south-west along the end of Motutara road access to Muriwai Beach, (Auckland Council, 2018)

Ōkiritoto Stream/ Waimanu Awa.



View south from Ōkiritoto Stream (Auckland Council, 2019)

A cross-section of the ecosystems at Muriwai Regional Park (Five Mile Strip) including active dunes, coastal sedge, and native forest and scrub.



Five Mile Strip (Andrew Macdonald, Biospatial Ltd 2018)



Risk assessment

The risk table below 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. Series 2).

Auckland Council-owned land and community facilities are at high risk of exposure to coastal erosion. There is also a high-risk from coastal erosion susceptibility to culture and heritage features (i.e. Constable Māori Reserve). Transport infrastructure (e.g. Waitea, Coast, and Motutara Roads) is at moderate-risk from coastal erosion susceptibility, whilst water infrastructure is at low-risk.

Auckland Council-owned land is at high risk from coastal inundation in the short, medium, and long-term. Community facilities (e.g. Muriwai Beach Motor Camp and Muriwai Regional Park facilities) are at no risk in the short term, with the risk increasing to high-risk in the long-term. Transport and water infrastructure are at low-risk from coastal inundation over these time periods.

The table 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, 485 ha			Park amenity structures, car parks, 5 ha Buildings, wharves, 31 (No.)			Bridges, 0 m ² AT roads, 13 km			Water pipes, 14 km		
Short	Medium	Long	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Coastal erosion and instability											
Very high	Very high	Very high	Very high	Very high	Very high	Moderate	Moderate	Moderate	Low	Low	Low
Coastal inundation											
High	High	High	None	Moderate	High	Low	Low	Low	Low	Low	Low
Key											
None			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.



- Muriwai Regional Park
- Constable Road, Muriwai



- Muriwai Village green facilities
- Workshop Ranger Office and associated buildings
- Play facilities
- Toilet facilities



- Maukatia/Māori Bay Pump Shed

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 over changing climate scenarios.



- There is one identified cultural feature within Unit 4; this is a post-European Māori Graves site (Heritage ID 1669).
- Specific cultural values and outcomes for this unit will be developed through ongoing involvement with local iwi identified in Volume 2. Guiding objectives and outcomes which have informed the development of adaptation strategies have also been identified here.



- Social infrastructure in proximity to Muriwai Beach includes a holiday park, fire station and a small neighbourhood centre including a café. Recreational facilities near the beach include Muriwai Surf School, Muriwai Golf Club and a playground at the end of Motutara Road.
- Muriwai Surf Club and an associated lifeguard tower are also located towards the southern end of the beach. Muriwai Community Nursery is located to the east of the Surf Club.
- Muriwai Village Green includes sports fields, tennis courts and a skatepark.
- Muriwai Beach and Maukatia Māori Bay (to the south) are both very popular with surfers and fishers. The two beaches are both accessible by road/walkways and are connected via a headland track
- The gannet colony is a popular vantage point and attraction for visitors
- In early 2023, Cyclone Gabrielle caused extensive damage to the Muriwai area. Flooding, landslides and other storm damage resulting in loss of life, road closures, property damage and damage to the Muriwai water treatment plant (Watercare, 2023, 1 News, 2023). Recovery efforts are ongoing.
- Recovery efforts following severe weather events in areas such as Muriwai along the Whatipu to South Head coastline have led to a focus on climate adaptation, particularly through community-led initiatives and infrastructure improvements, with a focus on emphasis on catchment management, flood and landslide resilience
- Volunteer conservation groups (including the Muriwai Environment Action Community Trust and others) are highly active in this unit, undertaking a variety of conservation activities in the Muriwai Beach residential and surrounding rural and coastal areas. Groups including the

Muriwai Community Action Trust, Pest Free Muriwai Project and Ring Fence Muriwai Project, collaborate with multiple parties, including iwi, DOC and Auckland Council.

- The Muriwai Community Association is highly active in this unit, involved in initiatives such as Restore Muriwai, Muriwai Neighbourhood Net, Muriwai Emergency Management Plan (through the Rodney Local Board).
- Relevant to this unit is the Rodney Local Paths (Greenways) long – term plan (2019), setting out proposed greenway networks for the Muriwai, Woddhill, Waimauku, and Taupaki area.



- Coastal forest largely dominated by pūriri, pōhutukawa, and broadleaf species within the southern section of the unit and pockets of dune forest located within the Muriwai township.
- Five Mile Strip is situated within Muriwai Regional Park on Auckland's west coast. It extends out along the sand dunes for around 6.5 km north from the southern side of Okiritoto Stream. This stretch of coast is highly significant from an ecological perspective, with sand dune ecosystems a national priority for protection.
- Several mainland and offshore seabird colonies, including the regionally important gannet colony located on Ōtakamiro Point.
- There are several permanent watercourses within Unit 4, most notably Ōkiritoto Stream, all of which support spawning habitat and migrational pathways of native freshwater fish.
- Threatened and/or vulnerable marine features include an area of exposed shallow reef in this unit. Marine mammals occur along the entire unit but commonly utilise the rocky environment within parts of this unit as a haul-out zone.



Who have we heard from?

Feedback was received via digital platforms Social Pinpoint and 'AK Have Your Say', along with community submissions from the Muriwai Community Association and the Muriwai Environment Action Community Trust. Key themes in community submissions/ feedback included but were not limited to:

What is happening?

- Community concerns and experience of coastal hazards focused primarily on the impacts of the 2023 storm events, including the loss of life, private homes, access and services.
- The Waitākere Ranges Local Board identified the importance and value of the Hilary trail (sections of which form a part of the Te Henga walkway) which traverses many of the coastal units located in this SAP area, connecting (historically) in the north to Muriwai and has been impacted by 2023 storm events.
- Storm impacts also noted included beach closures and water quality issues, and the ongoing closure of access to areas such as the Muriwai Gannet Colony and bush walking tracks.
- Erosion, after storm events, was observed in dune areas, with commentary highlighting changing landscapes as a result of coastal hazards and climate change (sea-level rise).
- Limited access points to and along the coast, with commentary highlighting road closures and slips.
- Concerns with damage to active dunes, within northern areas of the unit, compromising the role of dunes as natural barriers providing protection to natural habitats and ecosystems.
- The need for consideration of all natural hazard risks when implementing adaptation planning, including land instability and wildfire hazards, noting the plantation forestry located within the wider unit area.

What matters most? Community values and uses

- Environmental feedback identified the need to support environmental outcomes for the ‘Five Mile Strip’ and scenic reserves within the Muriwai Park.
- The wellbeing benefits that access to the beach and coast provides people was recognised. Many expressed a deep emotional connection to the beach and the use of this area for health and wellbeing practices.
- Access to the coast to gather kaimoana was also identified as a social and cultural matter of importance with diverse views on the modes (including vehicle) and location of coastal access which should be enabled.
- The community identified a range of coastal activities and uses that were highly valued. These included walking, swimming, surfing, horse riding, dog walking, dirt biking and four-wheel driving.

What can we do about it? Community feedback and aspirations

Support for coastal adaptation strategies for this unit was relatively high, with the following key themes in feedback:

- Maintaining coastal walkways to and along the coast; improving/ supporting additional coastal access points and infrastructure (i.e. toilet facilities along the coast).
- Advocacy for environmental education and protection, noting commentary on the ecological significance of this unit, with feedback highlighting the Five – Mile Strip Reserve and the Toheroa beds which were noted as being ecologically, culturally and historically significance, with commentary that such ecosystems should be considered in coastal management.
- Exploration for managing vehicle access to beaches, noting mixed commentary on the impacts of vehicles, with commentary highlighting the risk to natural coastal ecosystems and the species that they support (particularly around the Five Mile Strip Reserve and motoring vehicle activities on the Muriwai/ Te Oneone Rangatira Beach ‘road’).
- Road closures: mixed views on opening/ closing Rimmers Road as an access point to the coast, closing beach road access tracks (e.g. “the cut”).
- Submissions (from the Muriwai Environment Action Community Trust) highlighted the challenge of population growth around the Muriwai area, with a need to focus on managing natural ecosystems (particularly around the Five Mile Strip Reserve).
- Advocacy for improved management of public use at the Five Mile Strip Reserve, with an emphasis on fostering greater awareness and respect for the coastal environment. The Muriwai Environment Action Community Trust advocated that a new priority for protection of wildlife needs to be added to the ecological management plan for the reserve, with a change in the reserve’s status from the lowest - Recreational Reserve, to the highest - Scientific Reserve, whilst still catering for recreational uses within the reserve.
- Advocacy for ongoing community engagement and education (highlighted in the submission from the Muriwai Community Association, with a need to recognise and support community-led resilience and restoration efforts. Additionally the Muriwai Community Association highlighted concern over the risk of wildfires around Muriwai, with advocacy to consider this in future planning.
- Advocacy to weave climate mitigation initiatives into climate adaptation, noted this was highlighted in submissions (i.e. from the Muriwai Community Association), with a focus on nature-based solutions.
- Where feasible, retain existing assets and services within Muriwai Regional Park, recognising the vital role these regional park facilities play in supporting community use and functioning as part of the area's social infrastructure.

- Support for investment in resilience infrastructure, for Muriwai, particularly in water, wastewater, power, and communications systems.
- Recognize the role of social infrastructure as a refuge and source of safety during extreme weather events (i.e. Muriwai Surf Club and Muriwai Golf Club) now and in the future.

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



4.1: Te Waharoa to Maukatia Bay (south)

This stretch commences south of Te Waharoa and continues to the southern boundary of the Muriwai Regional Park (Collins Bay). Constable Road runs through this stretch, and Constable Road Reserve is adjacent to this. The Te Henga Walkway traverses several land parcels, including DOC land and Constable Road, Muriwai, located within the southern portion of this stretch. The full walkway connection has been closed since the 2023 storm damage, however a short section at the northern end, accessed from Constable Road, has since been reopened.

Scenarios for change					
Low		Moderate		High	
Maintain		Maintain		Maintain	
Explanation					
Maintain over all change scenarios reflects the need to respond to hazard risks noting both the damage sustained to connections to and along this coastline during the 2023 storm events as well as the management intentions for this park. Significant areas of the Constable Road Reserve (and the Te Henga Walkway) are susceptible to coastal instability and erosion (noting the original full Te Henga Walkway connection is closed). Due to the dynamic nature of the coast, management of risk through design and location assets and connections is considered the most practicable approach for managing risk.					
Implementation Notes					
Cultural: The stretch holds significant value to Te Kawerau ā Maki and Ngāti Whātua ki Kaipara, including a cliff-top pā. Further evidence of Māori occupation, terraces, and middens (CHI No 4977, 4989, 5079, 7366), are also recorded at the site. The name Parihoa is significant to Te Kawerau ā Maki and is associated with the reserve. Community/ecology: There are small pockets of threatened wetland and coastal forest ecosystems located along this coastal stretch, which are actively supported by the local community. Review: the strategies for this stretch may require review and update pending further decisions on the management of assets and connections, including the Te Henga Walkway. Storm-affected land: This stretch includes properties impacted by 2023 storm events. Decisions on the future use and management of land acquired by Council are being dealt with separately under the Council’s storm-affected land-use policy. SAPs, as living documents, will be updated as decisions are made on the land.					

4.2: Maukatia Bay & Ōtakamiro Point

This stretch commences at the southern end of Maukatia Bay (Māori Bay) at the Regional Park boundary, and includes the headland at Ōtakamiro Point (Gannet Colony) located within the Regional Park. It concludes at the southern side of Motutara Road at the southern end of Muriwai Beach. It includes the Muriwai gannet colony at Ōtakamiro Point, which is a popular attraction for tourists and is accessible via walking tracks from Maukatia Bay / Māori Bay and from the southern end of Muriwai Beach. This stretch hosts several threatened and range-restricted species.

Scenarios for change					
Low		Moderate		High	
Maintain		Maintain		Adaptation Priority	
Explanation					
Maintain over the low to moderate climate change scenarios provides for the ongoing management of access to the coast at Maukatia Bay. Maintain also provides for the management of risk through design and location and alignment of accessways. This includes upgrades in the design of supporting parks road access, parking and park amenities assets and facilities to manage increasing risk from coastal hazards. Maintain supports the necessary management of access in this location to respond to hazard risk while supporting cultural and ecological outcomes. Adaptation priority in the long term signals the need for further discussion regarding the appropriate approach to maintain values and manage risk to uses and assets within this stretch due to increasing coastal hazard risk. Specific management of land instability is beyond the scope of this plan.					
Implementation Notes					
• Ecological and Community: The Muriwai gannet colony is both ecologically significant and a tourist attraction for regional, domestic and international visitors. Access to the walking tracks and lookout areas has been impacted by the 2023 storm events. • Management direction: The Regional Park Management Plan identified significant cultural values associated with the Motutara Pā and Ōtakamiro Pā. Management intentions identify a conservation plan (2002) and a directive to implement the park's classification, as a scenic reserve, through management actions. Any actions taken to adapt uses and assets to manage risk will need to observe this directive. • Storm-affected land: This area includes properties, impacted by the 2023 storm events. Decisions on the future use and management of storm-affected land is being dealt with separately under the Council's storm-affected land use policy. SAPs, as living documents, may be updated as decisions are made on the future use of land.					

4.3: Muriwai Motutara

Commencing at (and including) Motutara Road end and the developed park area (including the playground), park facilities and leased land areas (Sand Dunz café & the Surf School) adjacent to the southern end of Jack Butt lane. This stretch includes numerous facilities and both regional and local parkland, clustered mostly around the southern end of Te Oneone Rangatira / Muriwai Beach. The area is popular with residents and visitors alike, particularly for surfing and fishing. The Muriwai Playground (Motutara Road) and Muriwai Village Green park area (accessed from Coast Road) provides for community activities and the development of the Village Green is identified through community-led development plans. This stretch hosts several threatened and range-restricted ecological species.

Scenarios for change			
Low		Moderate	
High			
Maintain		Maintain	
		Adaptation Priority	
Explanation			
Maintain in the low to moderate change scenario provides for continued management of the dune areas, and ongoing consideration of the design and placement of assets. In some cases this may require localised realignment to manage hazard risk while still maintaining access. Maintain also provides for the preservation of existing protection structures such as the rock revetment which supports the Motutara Road end connection to the coast (noting continued road access to the coast was a key focus of community feedback). The Regional Parks Management Plan (2022) recognises the need to manage the impacts of coastal processes on the park, including re-alignment of parking areas and the internal park roads, and maintaining tracks and access. Considering the projected hazardscape, adaptation priority is identified in the high climate change scenario to signal the need to proactively manage risk to road assets and parks uses within this highly dynamic environment. This may mean that it is not possible to maintain all of the current activities and assets within the wider park area, at the scale currently provided. Rates of future shoreline change will determine the need for and timing of asset relocation.			
Implementation Notes			
• Management: Regional Parks as land manager Muriwai Regional Park, will monitor how coastal hazards may impact on operation of the park and supporting assets in alignment with the Regional Parks Management Plan. • Management: Auckland Transport, the asset manager of Motutara Road, will monitor how coastal hazards may impact on operation of the road and supporting assets and future implementation options. • Social: Ongoing engagement with the local community to understand how coastal hazards may impact the park and future any specific implementation actions. • Storm-affected land: This stretch includes properties impacted by 2023 storm events. Decisions on the future use and management of land acquired by council are being dealt with separately under the Council's storm-affected land-use policy. SAPs, as living documents, will be updated as decisions are made on the land.			

4.4: Motutara Pa & Oaia Island

Stretch 17 includes Motutara Island, a small rocky island located close to the shoreline which is home to a large gannet colony. There are no Auckland Council-owned infrastructure, assets, or land on the island.

Scenarios for change		
Low	Moderate	High
No action 	No action 	No action 
Explanation This stretch contains no Auckland Council-owned infrastructure, land, or assets and is reflected by a strategy of no action over all change scenarios.		

4.5: Muriwai North

This stretch commences to the north of the established car parking areas (north of the surf lifesaving club facilities and beach access) and culminates at the northern end of the '5 Mile Strip' and the Muriwai Regional Park area. It includes the Muriwai Golf Club, Coast Road and the Ōkiritoto Stream/Waimanu Awa 'arrivals area'. Walking, equestrian and vehicle access to the northern areas of the beach is provided within this stretch.

Scenarios for change		
Low	Moderate	High
Maintain 	Maintain 	Maintain 
Explanation Maintain over all change scenarios acknowledges the dynamic nature of coastal processes and the Ōkiritoto stream / Waimanu Awa and the potential for realignment of accessways (vehicle, pedestrian and horse) to the beach.		
Implementation Notes • Management: Regional Parks as land manager Muriwai Regional Park, will monitor how coastal hazards may impact on operation of the park and supporting assets in alignment with the Regional Parks Management Plan. • Ongoing dune management for ecological purposes are provided for under this strategy. The need to consider and respond to wildfire risk is noted (beyond the scope of the SAP). • Community feedback: Advocacy for improved management of public use at the Five Mile Strip Reserve, with an emphasis on fostering greater awareness and respect for the coastal environment (as set out in the unit discussion – Muriwai Environment Action Community Trust)		



Unit 5

Whatipū to South Head



Waionui Inlet



Department of Conservation
Te Papa Atawhai

Papakanui-Waionui biodiversity focus area is located at the northern end of the South Head peninsula. It includes the large Papakanui Conservation Area and other smaller areas of reserve land administered by the Department of Conservation. The biodiversity value of this area is extremely high, both on an ecosystem and species level



Mosquito Beach



Community feedback highlighted the difficulty of accessing Mosquito Bay, but this was also viewed as a way to help protect the natural environment. There was strong advocacy for keeping Mosquito Bay largely untouched, with any potential enhancements being minimal and ecologically sensitive.



Large parts of Unit 5 (including Woodhill Forest) are owned and managed by Ngā Maunga Whakahii o Kaipara. The coastal area is also part of a larger Coastal Statutory Acknowledgement Area (Ngāti Whātua o Kaipara)



Woodhill forest beach

Woodhill Forest is highly valued for its wide range of outdoor recreational activities, including mountain biking, hiking and horse treks. The extensive area now known as Woodhill Forest is an important part of the cultural landscape of Ngāti Whātua o Kaipara



Kawau Parua Inlet

Woodhill Forest

16

Twin Coast Discovery Hwy

- Unit boundary
- 5.1 5.2 Stretch
- Informal recreation park
- Auckland Council owned land

0 1km 2km

**NOTE: Maps may be updated to improve wayfinding and accessibility*

Unit 5: Te Korowai o te Tonga / South Head

This unit is located within the Rodney Local Board area and begins at the northernmost boundary of Muriwai Regional Park and ends at Te Kawau Point south of Mānūnūtahī Bay/ Mosquito Beach. The unit includes the western side of Te Korowai o te Tonga Peninsula / South Head.

What is happening? Coastal context and hazardscape

Unit 5's coastline is predominantly characterised by the extensive, high-energy Woodhill Forest Beach on the open west coast. The beach is backed by mobile sand dunes that extend into the Woodhill Forest.

At the north of the unit, the Papakanui Spit extends from South Head at the harbour entrance. This section of the Kaipara Moana (Harbour) coastline is characterised by sandy pocket beaches backed by coastal cliffs. The Papakanui-Waionui biodiversity focus area is located at the northern end of the South Head peninsula.



Figure 5-1: Looking north over the Papakanui Spit and Waionui inlet at the entrance to the Kaipara Harbour. Source: Andrew Macdonald, Biospatial Ltd 2018.

The projected area susceptible to coastal erosion and instability, coastal inundation and flooding is outlined below for the coastline of Unit 5.

A fulsome discussion around low, moderate and high scenarios for (climate) change and how each is considered to inform the selection of coastal adaptation pathways can be found in *Volume 1: Understanding the Shoreline Adaptation Plans*. Land instability and wild fire and beyond the scope of the shoreline adaptation plan programme.

Coastal erosion:

Both the open west coast beach and the Papakanui Spit are highly dynamic in response to coastal processes and sand supply. The sand dunes are currently unmanaged and naturally respond to coastal processes, with cycles of erosion and rebuilding. Please refer to Volume 2 Section 2.1 for further discussion on the trends of erosion versus accretion along the west coast from Whatipu to South head.

On the leeward side of South Head from Waionui Inlet to Mānunutahi Bay/ Mosquito Beach, the coastline transitions to steep coastal cliffs prone to weathering and ongoing coastal erosion and instability. These processes are irreversible and provide a source of sediment for the wider coastal system. However, because of the more sheltered, harbour location, predicted rates of coastal erosion are comparably lower than for the more exposed open coast.

The secluded Mosquito Beach/ Ōmokoiti Bay on the northern tip of South Head.



Mosquito Beach / Ōmokoiti Bay (Auckland Council, 2024)

Coastal inundation and catchment flooding:

Areas of coastal inundation are identified for the low-lying areas of Te Kawau Point south of Mānunutahi Bay/ Mosquito Beach, with watercourses discharging to the coast.

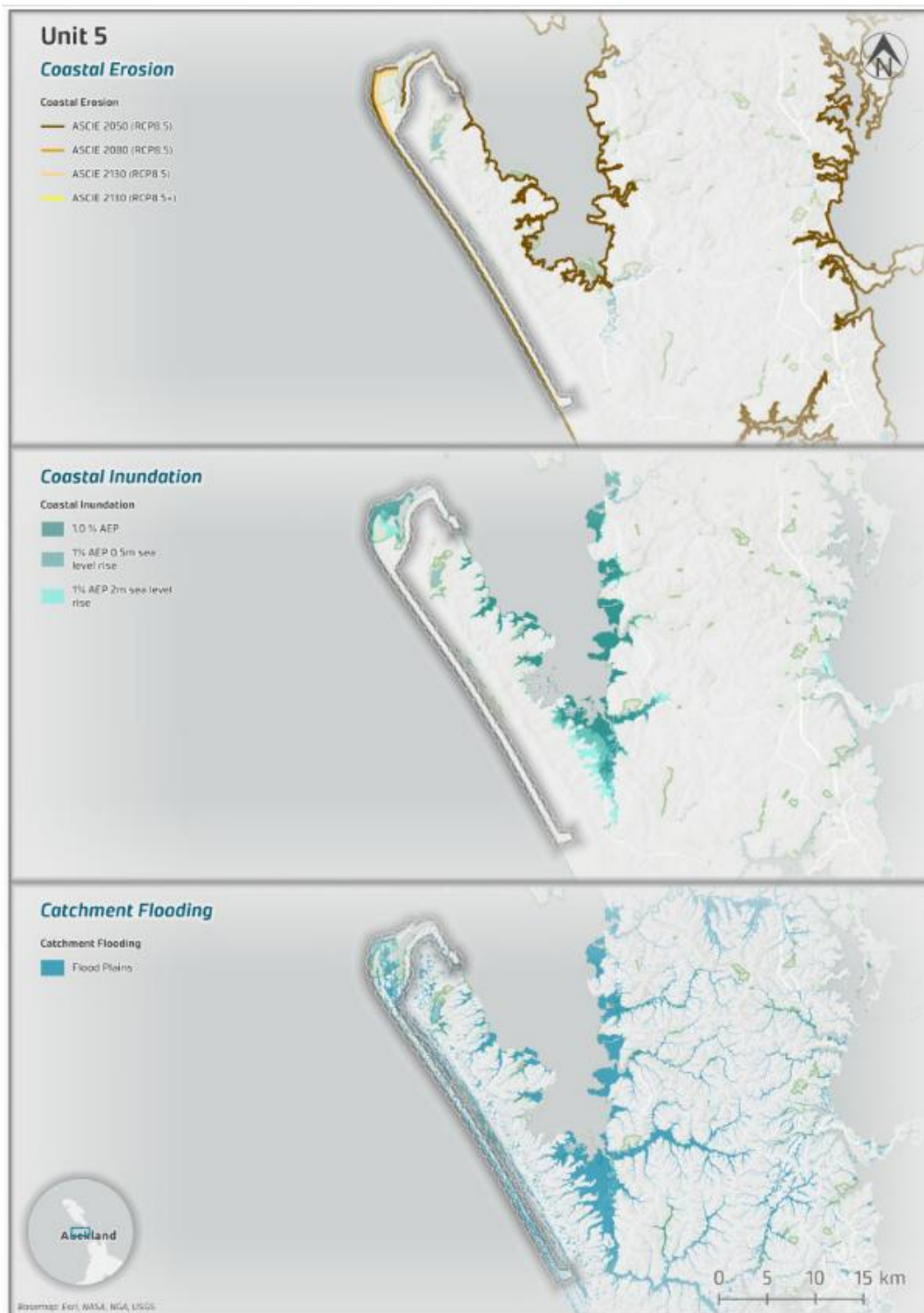


Figure 5-2: Coastal hazardscape for the Te Korowai o te Tonga / South Head Unit reflecting coastal erosion susceptibility for 2050, 2080 and 2130 considering RCP4.5 and RCP8.5 emission scenarios, coastal inundation for 1%AEP storm surge for present day and with 0.5 m, 1 m and 2 m sea-level rise and the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



Risk assessment

The risk table below 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. Series 2).

Environmental assets (including significant ecological areas) identified in the risk assessment (Tonkin + Taylor, 2023) are at a very high risk from coastal erosion susceptibility and coastal inundation in the short term. This is a result of the large undeveloped sand dune area and forested land along the coastal edge and peninsula, which are prone to erosion. Auckland Council-owned land, and cultural and heritage assets (i.e. south of Waionui Inlet) are at moderate risk from coastal erosion in the short term.

The table 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, 8 ha			Park amenity structures, carparks, 0.01 ha Buildings, wharves, 0 (No.)			Bridges, 0 m ² AT roads, 2.4 km			Water pipes, 0 km		
Short	Medium	Long	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Coastal erosion and instability											
Moderate	Moderate	Moderate	None	None	None	None	None	None	None	None	None
Coastal inundation											
Low	Low	Moderate	None	None	None	None	None	None	None	None	None
Key											
None			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.



- There is a very small area of Auckland Council-owned park land at the northern extent of Unit 5, at Mānūnutahi Bay / Mosquito Beach.



- There are no other Auckland Council-owned assets or infrastructure in this unit.

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 over changing climate scenarios.



- Large parts of Unit 5 (including Woodhill Forest) are owned and managed by Ngā Maunga Whakahii o Kaipara. The coastal area is also part of a larger *Coastal Statutory Acknowledgement Area* (Ngāti Whātua o Kaipara). There are no identified Māori heritage areas or sites and places of significance within this unit (noting this information is based on a desktop review of publicly available information and will be supplemented with engagement with mana whenua).
- Specific cultural values and outcomes for this unit will be developed through ongoing involvement with local iwi identified in Volume 2. Guiding objectives and outcomes which have informed the development of adaptation strategies have also been identified here.



- Recreational areas within this unit include the beach itself, access to kite surfing locations within the Kaipara Moana (Harbour) and the various activities enabled within the Woodhill Forest.
- Relevant to this unit is the Rodney Local Paths (Greenways) long – term plan (2019), setting out proposed greenway networks for the Muriwai, Woddhill, Waimauku, and Taupaki area.
- At the north of the unit is Papakanui Conservation area and some smaller areas of reserve land, which are co-managed by the DOC and mana whenua.
- Within this unit there are five identified ‘Category B’ heritage features listed in the Auckland Unitary Plan:
 - Te Kawau Pā
 - Ngitu Pā
 - Tipare Pā
 - Unnamed pā site
 - Undefined settlement site.



- Threatened and/or vulnerable terrestrial features within this unit include the following:
 - Vast dunelands and a large sandspit, holding notable regional and national importance as one of the most representative dune systems in New Zealand. The dunefields are comprised of dune plains and spinifex, pīngao active dunes.
 - A large intact area of dune forest to the east of the Waionui Inlet.
 - Coastal wetland ecosystems, including Machaerina sedgeland and mānuka, tangle fern, scrub, fernland.
- Presence of threatened shorebirds and seabirds. The unit is recognised as one of the four remaining breeding sites for tara iti / fairy tern (*Threatened – Nationally Critical*), the most endangered of all New Zealand’s native birds (Auckland Council, n.d.).
 - An important high-tide shorebird roost – the Papakanui Spit.
 - Populations of korowai gecko and tatahi skink.
- This unit features the large Papakanui Conservation Area and other smaller areas of reserve land administered by the DOC, located at the northern end of the South Head Peninsula. The biodiversity value of this area is extremely high, both on an ecosystem and species level. The

Papakanui dunefield and spit are recognised as an Outstanding Natural Feature in the Auckland Unitary Plan, noting that Papakanui is one of the largest and most extensive areas of sand dunes with both foredune and back dune plant communities (DN2 and DN5) in the Tāmaki Makaurau / Auckland region.

- Several threatened plants are found within the dunelands and forested areas.
- There are numerous permanent streams which discharge into the Waionui Inlet. Native freshwater fish, migrational pathways and spawning habitat are located within all permanent watercourses within the unit.



Who have we heard from?

Feedback was received via digital platforms Social Pinpoint and 'AK Have Your Say', along with community submissions from the Muriwai Community Association. Key themes in community submissions/ feedback included but were not limited to:

What is happening?

- Community concerns, experiences, and coastal hazards were focused for this unit on the maintenance of access where coastal processes and other hazards may impact on the resilience of these connections (both road and walking access).
- Feedback highlighted a concern for the resilience of track networks and in turn access to and along the coast.

What matters most? Community values and uses

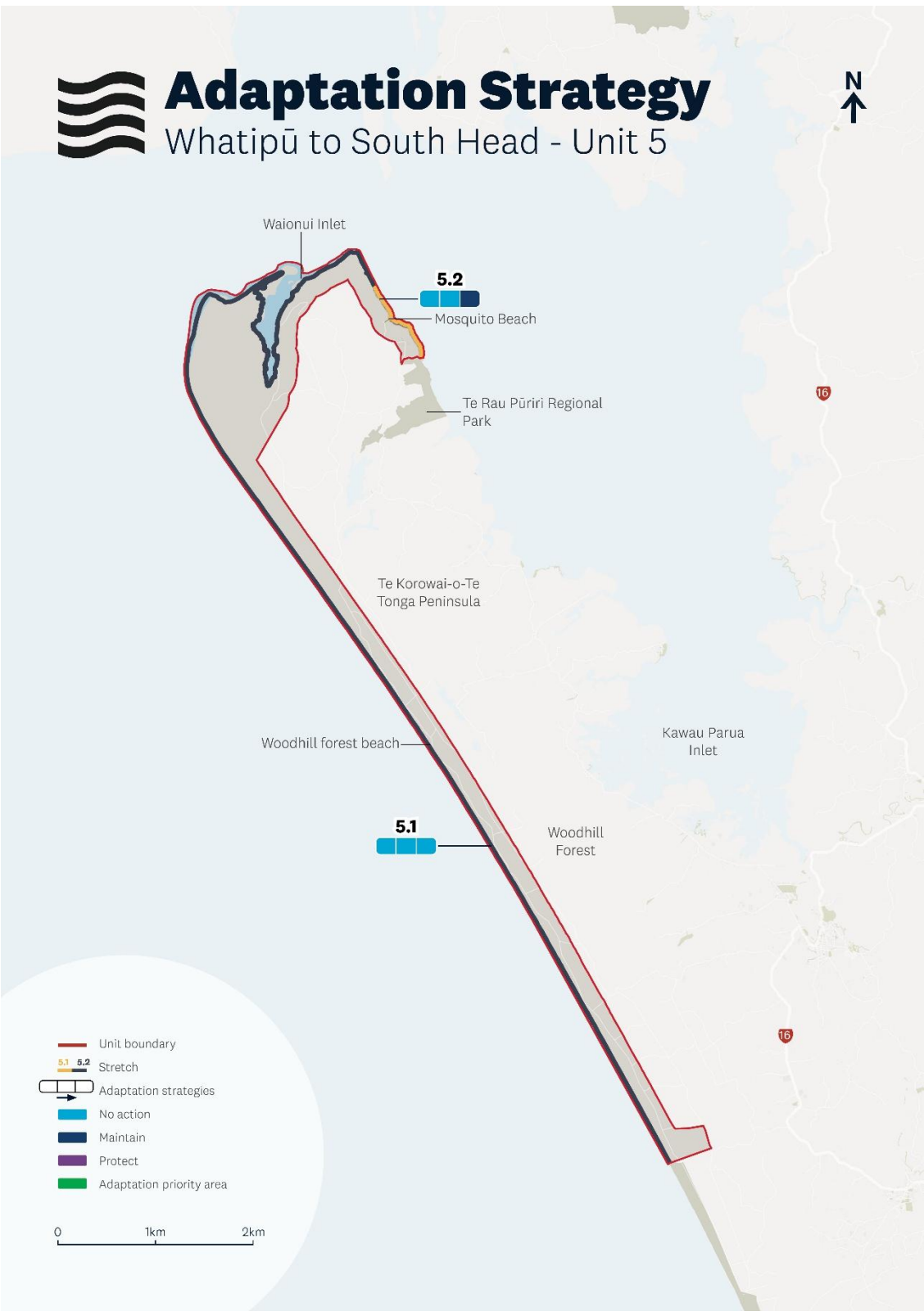
- The community identified a range of coastal activities and uses that were highly valued, including but not limited to fishing, walking, paragliding, surfing, kitesurfing, swimming and horse riding
- Access to northern areas of Te Korowai o te Tonga (South Head) to undertake paragliding and kite surfing (at Mosquito beach) was also a specific use identified for this unit.
- Strong emotional connections were also identified for the wild coastal areas of Unit 5.
- Value of distinctive landscapes and coastal features— opportunities to observe wildlife (including seals and birds).

What can we do about it? Community feedback and aspirations

- Feedback on asset management and maintenance centred on the desire for more supporting facilities to be located and provided for within the Auckland Council-owned land at Mosquito Bay.
- Supporting and maintaining ongoing access to the and coast within Unit 5 was also a key area of feedback. There was a desire for the re-establishment of the Rimmers Road access (not Auckland Council-owned land) to the coast. Discussion identified the need for increased access for northern areas of Te Oneone Rangatira Muriwai Beach for people to undertake a range of coastal activities including fishing, gathering kaimoana and access to the water.
- Environmental feedback provided an emphasis on protecting critical breeding sites for endangered species and habitats for threatened shorebirds, advocating for minimal human disturbance in wild areas. Opportunities were identified to restore bush and forest areas on South Head to enhance biodiversity and ecosystem resilience.
- Specific advocacy for greater environmental protection around Lake Kereta and Te Oneone Rangatira (north) to restore natural beauty and wildlife habitats (note: not Auckland Council land).

- The need to manage human uses, specifically vehicle access, was also identified for this unit, noting feedback highlighted a mixed view on vehicle access and the impact on natural ecosystems.
- Aspirations highlighted a strong focus on safeguarding key breeding sites for endangered species and preserving habitats for threatened shorebirds, with an emphasis on limiting human disturbance in sensitive natural areas.
- Advocacy for a commitment to restoring native bush and forest on South Head to promote biodiversity and strengthen ecosystem resilience.

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



5.2: Mānunutahi Bay / Mosquito Beach to Te Kawau Point

This stretch commences at the northwestern end of the Mānunutahi Bay at the boundary of Mosquito Bay Reserve and culminates at the unit boundary at Te Kawau Point.

Scenarios for change		
Low	Moderate	High
No action 	No action 	Maintain 
Explanation No action is identified in the low and moderate climate change scenarios. Maintain signals the need in the high change scenario, to consider the management of assets within the park in respond to increasing inundation and coastal erosion risks.		
Implementation Notes - It is noted that this stretch includes features and values of cultural, ecological and of historic heritage significance. Community feedback highlighted this area as a highly valued spot for water-based recreation, especially given the limited coastal access nearby. There was strong support for improving coastal access in ways that also respect and enhance ecological values and the natural landscape. - Placement of new assets within park areas should respond to current hazard risks and be designed and located accordingly.		

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