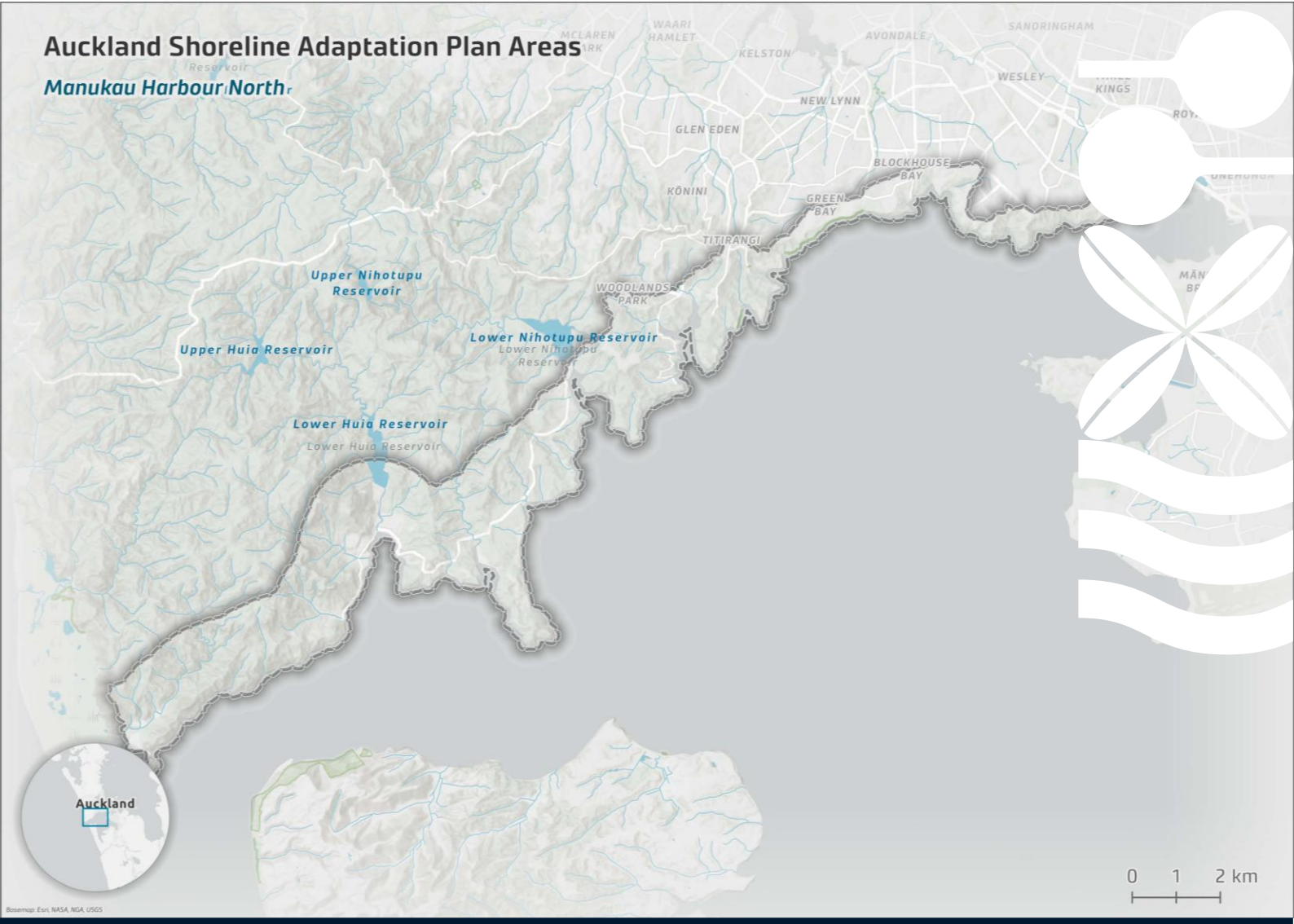

Ngā mahere whakaurutau mō te takutai

Shoreline Adaptation Plan

Manukau North

Volume 3: Adaptation Strategies

2025

August 2025, Version 1.0

aucklandcouncil.govt.nz

Shoreline Adaptation Plan

Manukau North

Volume 3: Adaptation Strategies

August 2025

Auckland Council

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Front Cover

Shoreline Adaptations Plan area overview map for Manukau North. Prepared for Auckland Council by Tonkin + Taylor 2023.

Contents

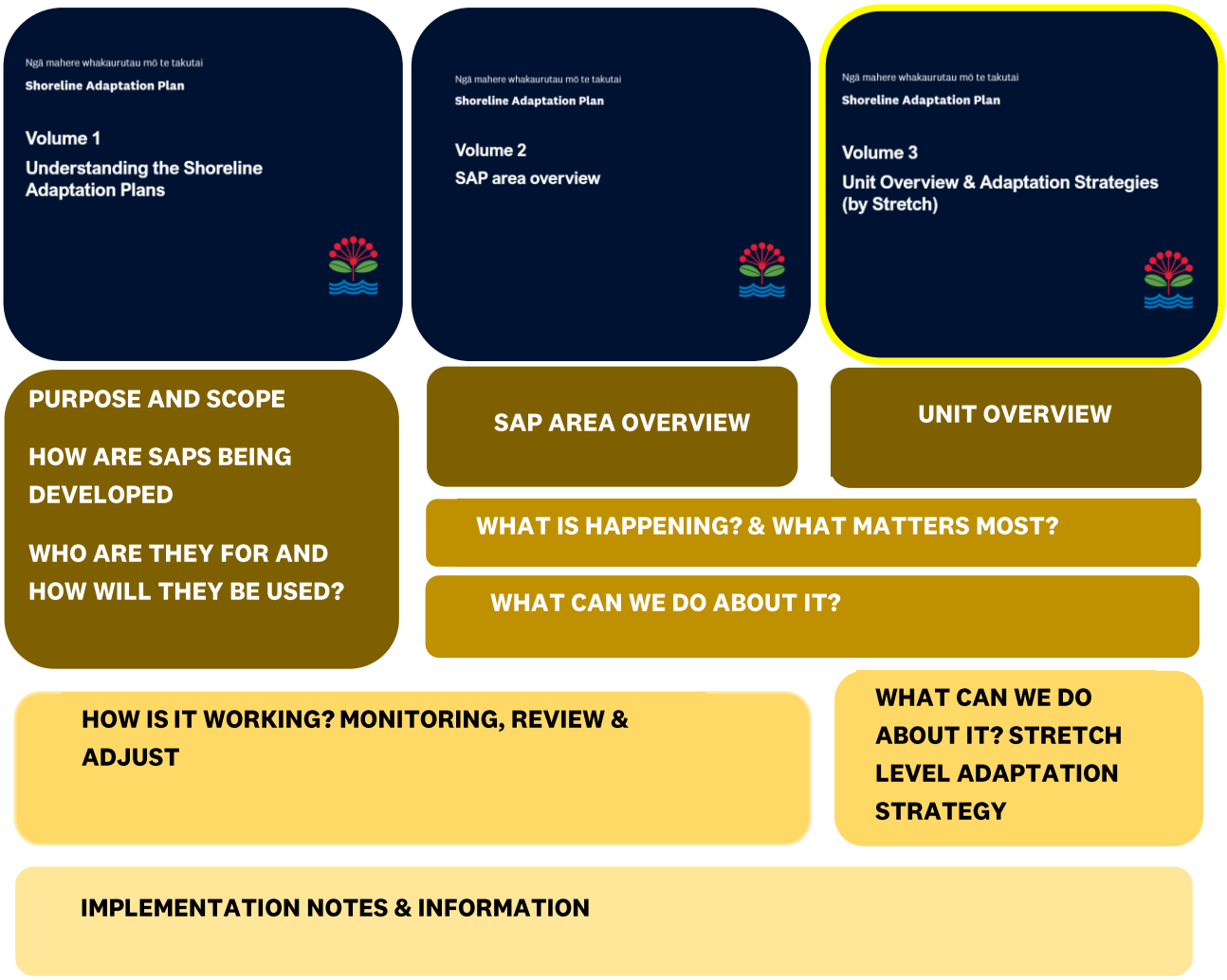
Figures

Table

Quick Reference

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

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



Glossary

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

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

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

Shoreline Adaptation Plan Areas

Tāmaki Makaurau, Auckland, is a coastal city, bounded to the east and west by the South Pacific Ocean and the Tasman Sea. The region has around 3,200 km of dynamic coastline and encompasses three major harbours: the Kaipara, Manukau and Waitematā. 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 the Shoreline Adaptation Plans.* Twenty separate SAPs make up Auckland's ~3200 km of coast as follows (also see Figure 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
- Ōrākei to Tahuna Torea
- Pahurehure Inlet
- Pākiri to Matheson Bay
- Snells Beach to Ōrewa
- Tāmaki Estuary
- Ti Point to Sandspit
- Waiheke Island
- Waimanawa Little Shoal Bay mini SAP
- Waitematā Harbour West
- Weiti Estuary to Devonport Peninsula
- Whangaparāoa
- Whatipu to South Head

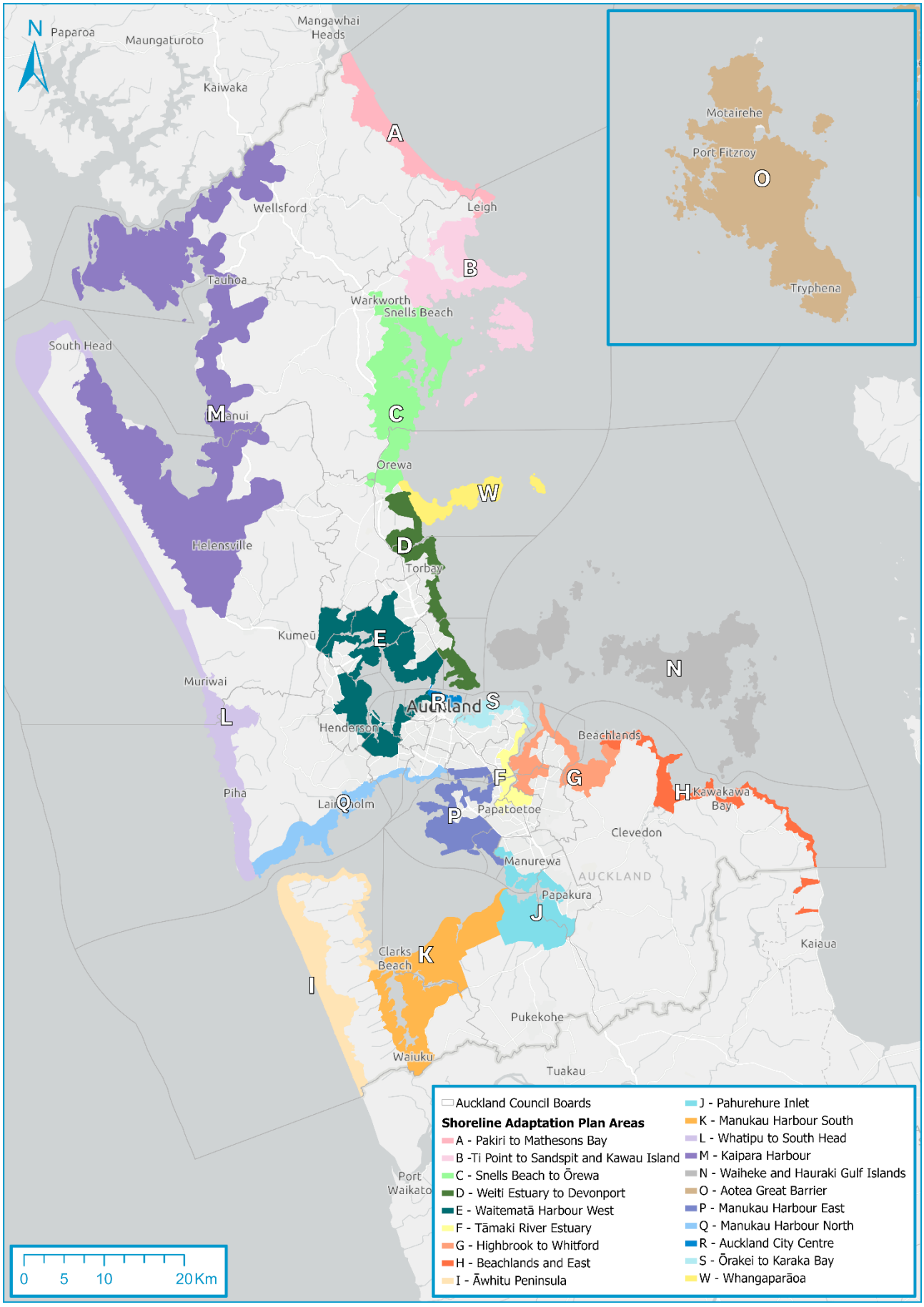
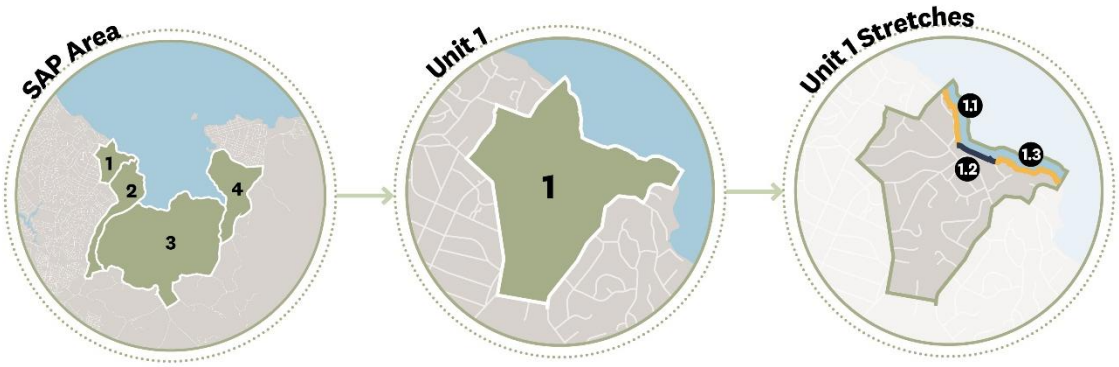


Figure 1: Regional Overview of Shoreline Adaptation Plans

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.

Table 1: Shoreline Adaptation Plan climate change scenarios

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

Auckland Council's adaptation strategies

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

No Action

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

Maintain

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

Protect

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

Adaptation Priority Area

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

Unit 1
Manukau North

Transpower's critical infrastructure lines run through this coastal margin

The community expressed concern about the damage to the Waikōwhai boardwalk and coastal walking tracks during the 2023 storm events.

Taylors Bay Road Reserve is a valued community park, play space and coastal connection. The reserve is exposed to flooding and coastal inundation

The local community is actively involved in protecting the environment though volunteer work on predator control

The community noted the impact the 2023 storm events had on Onepoto/Grannys Bay, noting the change from a peaceful scenic area to an altered landscape that was less accessible and enjoyable

The Onehunga Bay to Waikōwhai Path connects Taumanu reserve to Te Ākinga/ Bamfield Reserve and includes a boardwalked section over the Manukau Harbour. This walkway is highly valued by the community

NOTE: Maps may be updated to improve wayfinding and accessibility

Mt Albert Rd
Pah Rd
Richardson Rd
Belfast Reserve
Belfast St
Carlton St
Frederick St
Te Ākinga/Bamfield Reserve
Hillsborough Reserve & Cemetery
Goodall Street
Hoskings Avenue
Onehunga Bay to Waikowhai Path
Hillsborough Bay
Onepoto/ Grannys Bay
Te Tapere/ White Bluff Terrace
Pourewa/Kingswood Reserve
Taylors Bay Road Reserve
Ambury Regional Park

Unit boundary
1.1 1.2 Stretch
Walking tracks
Informal recreation park
Auckland Council owned land

0 500m 1km

Unit 1: Hillsborough

This unit includes the coastline from the southwestern motorway in the east (Orpheus Drive, Onehunga) to Wesley Bay and Pourewa / Kingswood Reserve in the west. Hillsborough Road runs along the northern boundary. The unit contains three coastal stretches which are all within the Puketapapa Local Board area. The area is predominantly residential with sections of esplanade reserve and a couple of larger reserve areas.

What is happening? Coastal context and hazardscape

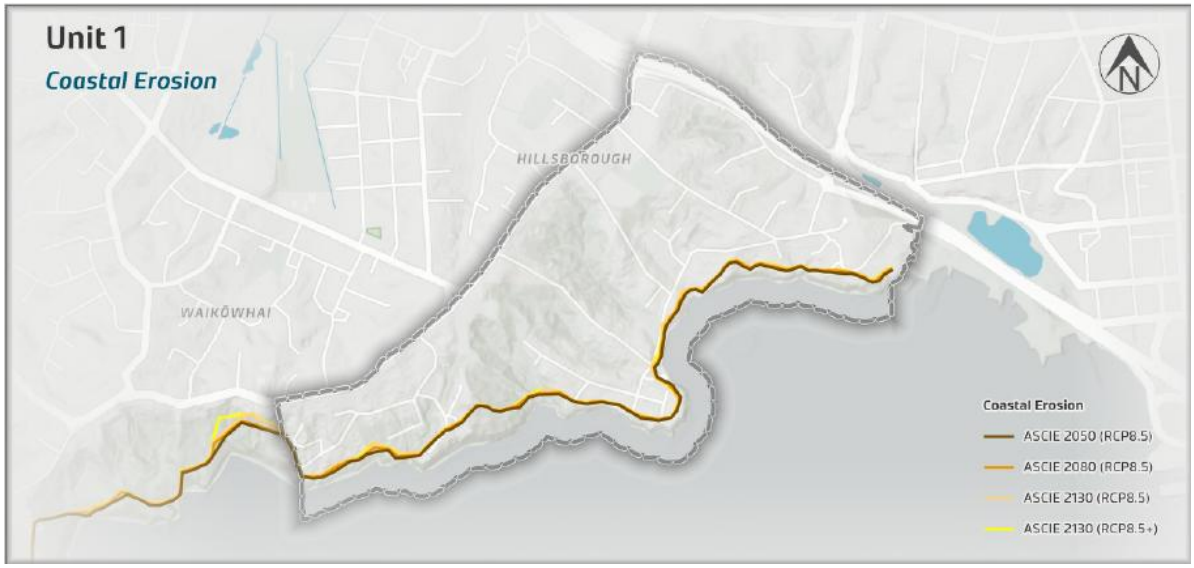
Unit 1's coastal landform is generally steep, with a low-lying area and small beach at Taylors Bay situated between two rocky headlands within the wider Hillsborough Bay. The steep coastal cliffs (15 -25 m high) formed in East Coast Bays Formation sediments with variable volcanic content, are generally well vegetated but with some more exposed steep faces. Cliffs are fronted by an intertidal area that extends out into the Wairopa Channel. The intertidal area is narrow (<35 m), except within Hillsborough Bay where it is up to 300 m wide. In places, the wave-cut platform is exposed, otherwise the foreshore consists of very fine sediment.

This is an inner harbour shoreline with low wave-energy. Wave conditions are subsequently fetch-limited and dominated by locally generated, shorter period wind-waves. Wave conditions experienced along the Manukau Harbour shoreline are highly dependent on water levels, with depth limiting and friction losses occurring as the waves propagate across the wide intertidal flats.

At the eastern end of the unit, a 400 m long raised pedestrian boardwalk is located out from the toe of the cliff and provides a pedestrian connection from Taumanu Reserve to near the end of Rendcomb Place. It is currently closed due to recent 2023 storm damage (landslip).

Coastal erosion and instability

Auckland Council's reserve network in this unit is subject to coastal instability and erosion risk. The reserve from Onepoto / Grannys Bay to Taylors Bay Road Reserve falls entirely within the predicted ASCIE for the short, medium and long term, as do some private properties along this shoreline. The ASCIE distance for the shoreline from Onepoto / Grannys Bay along Te Tapere / White Bluff Reserve



narrows to –25 m in places. At Taylors Bay Road Reserve, the beach, carpark and turning area, park amenities (including pathway) and part of Frederick Street are within the longer-term ASCIE areas. As is the Watercare pumping station in the middle of Hillsborough Bay. The ASCIEs here (parallel to Frederick Street) are –10 to –20 m wide. From the Watercare site to Taumana Reserve, the ASCIEs widen to 30 m to 40 m+.

Coastal inundation

Coastal inundation risk is limited by the steep topography along the cliffed shoreline. However, there is a low-lying area at Taylors Bay where the carparking and road turnaround are predicted to be temporarily inundated by the present day 1% AEP storm event. With sea-level rise in the low change scenario, the extent is predicted to include most of the low-lying grass reserve area. In the moderate to high change scenario, the extent of the coastal inundation risk is exacerbated by sea-level rise to impact the entire reserve and adjacent road.

There are multiple existing coastal protection structures along this section of coastline. Some of the key features are as follows:

- A seawall around the eastern end of Taylors Bay Road Reserve
- Groynes on the beaches
- Beach renourishment was undertaken in 2008 with 1,200 m^3 imported sediment placed between the extended stormwater outfall pipe and a new low groyne headland control structure (Taylors Bay).

Catchment flooding

There are 1% AEP flood hazard areas, including flood-prone areas and overland flow paths at and near Pallister Reserve and Taylors Bay Road Reserve along this shoreline.

Management of the stormwater flooding hazards via Auckland Council's Healthy Waters Making Space for Water programme - a programme of planned flood management works across the region.

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

Figure 3: Coastal hazardscape for the Hillsborough 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:

The Onehunga Bay to Waikōwhai Path connects Taumanu Reserve (Onehunga) to Te Ākinga / Bamfield Reserve and includes a boardwalk section over Manukau Harbour.

View back to Onehunga on the Waikōwhai boardwalk (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.

Council-owned land			Council community facilities			Transport Infrastructure			Water infrastructure		
Park & reserve land: (39.1 ha) Buildings, wharves (2 No)			Park amenity structures, carparks, accessways, buildings 0.4 ha)			AT roads (11.6 km) Bridges (229.4 m^2)			Water pipes (71.9 km)		
Short	Medium	Long	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Coastal erosion susceptibility											
Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Low	Low	Moderate	Moderate	Moderate	High
Coastal inundation											
Low	Low	Low	Moderate	Moderate	Moderate	Low	Low	Moderate	Low	Moderate	Moderate
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.

- The Waikōwhai Boardwalk, a significant boardwalk connecting the Onehunga coast (Taumanu Reserve) to Te Ākinga / Bamfield Reserve.
- Taylors Bay Road Reserve (and associated park assets).
- Many of these park assets have been impacted by the early 2023 weather events. Large slips occurred in Belfast Reserve, Hillsborough Cemetery and Puke-karoro / Hillsborough Reserve, Aldersgate and Pourewa / Kingswood Reserves.

- Frederick Street pump station, recently upgraded as part of the central interceptor project.

- Fredrick Street is the only road that has some length abutting the coast.
- Taylors Bay is the predominant access to the coast.
- Pourewa / Kingswood Reserve provides access to Wesley Bay via stairs.

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.

- 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.

- This unit is part of the Waikōwhai Walkway and valued for its connecting coastal tracks. The track network has been particularly impacted by the early 2023 weather events.
- Hillsborough and Taylors Bays are used for swimming and kayaking. Taylors Bay has a sandy beach used for picnicking with a playground right on the beach and toilets in close proximity.
- The unit sits nearly entirely within the Mt Roskill urban growth area as identified in Auckland Council's Future Development Strategy 2023 (FDS), so will see greater intensification over the next 30 years.

- There are pockets of indigenous forest, including coastal broadleaved forest within the unit.
- Between Grannys Bay / Onepoto and Wesley Bay, there is regenerating broadleaved scrub/forest and cliff, pōhutukawa treeland/flaxland/rockland are present.
- Coastal terrestrial SEAs are in place for around half of the unit's coastline.

Who have we heard from?

Feedback was received via Social Pinpoint, 'AK Have Your Say' survey, community submissions, in-person public engagement events and online information sessions (webinar). The event held closest to this area took place at the Wesley Market in Mt Roskill and at the Puketāpapa Community Network Association, hosted in Mt Albert. Additional nearby events were held at Titirangi Beach Hall, EcoMatters Environmental Trust in New Lynn, New Lynn War Memorial Library, Titirangi War Memorial Hall, and the Green Bay Community House.

Further community input was received through direct communication. In Unit 1, an organisational submission was also received from Transpower.

What is happening?

The community expressed concern regarding the impact of the 2023 storm events on recreational and natural areas. The key concerns that were raised are as follows:

- **Damage to boardwalks:** Commentary on the loss of two sections of the boardwalk in Hillsborough Bay during the January floods and concern over both the physical and aesthetic impact of flood damage.
- **Impact on Onepoto / Grannys Bay:** Commentary noted a change from a previously peaceful and scenic area to one now marred by a large slip (~1 km long), likely altering the landscape and making the area less accessible or visually appealing.
- **Damage in Puke-karoro / Hillsborough Reserve:** Mention of 'big slips' between Puke-karoro / Hillsborough Reserve and the coast, further compromising the integrity of natural paths and habitats and impacting public access.
- **Flood damage at Aldersgate Reserve:** The tracks at Aldersgate Reserve being impacted during the floods adds to the narrative of widespread damage to recreational and natural areas, indicating the extent of disruption to local reserves and the challenges in maintaining or restoring access post storm events.
- **Commentary on private property damages from the 2023 weather events:** Feedback that part of Ōwairaka/Mt Albert and a number of trees many metres tall have slid into two private properties, including an award-winning home. This was highlighted both by the Puketapapa Local Board and local communities during engagement.

What matters most? Community values and uses

The community highlighted a variety of uses and value as outlined below:

- Kayaking at Hillsborough Bay.
- The importance of the coastal walkways at Onepoto / Granny's Bay and Wesley Bay for walking and running.
- Taylors Bay is a multifaceted recreational space, serving as a hub for family-friendly activities (playground, picnicking), physical recreation (walking, swimming), and water sports (kayaking). This suggests it is a popular destination for a wide demographic, from families with young children to outdoor enthusiasts.

- Volunteer work on predator control was an important initiative for environmental protection. Commentary that the local community appears actively involved in protecting the environment, which could contribute to the preservation of local wildlife and biodiversity.

What can we do about it? Community feedback and aspirations

For the Hillsborough Unit, the majority of respondents supported the long- term strategies, with more uncertainty in the short – medium term, owing to:

- Commentary on the closure of the boardwalk from Taumanu to Te Ākinga / Bamfield Reserves (now re-opened) and aspirations to maintain / reopen walkways and support coastal connections to and along the coast.
- Commentary on the need to fix/ manage tracks in Waikōwhai and Aldersgate that were washed away in the January 2023 flooding.
- Commentary that the effectiveness of volunteer-led predator control depends on sustained community involvement, resources, and collaboration with local authorities. The feedback suggests that there is a need for ongoing support for these efforts to ensure the long-term success of conservation programs.
- Ongoing engagement and collaboration with local communities and residents alike in the implementation of coastal adaptation strategies.
- Commentary from Transpower. Within Unit 1, existing National Grid assets include the 220kV Henderson – Otahuhu transmission line, Mangere – Mt Roskill 110kV line, and Penrose – Mt Roskill 110kV line. Whilst outside of scope for the SAP Programme (third party infrastructure), it is important to note that some of these assets are located below mean high water springs. Ongoing consideration and identification of Transpower assets and management intentions are advocated for.

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

Stretch 1.1: Waikōwhai Walkway

This stretch begins at the boardwalk to the northwest of Taumanu Reserve and extends along to Frederick Street Esplanade Reserve.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Maintain** 	**Maintain** 
Explanation		
A **maintain** approach under all climate change scenarios supports maintaining the coastal boardwalk, located within the coastal marine area; and providing connection from Taumanu Reserve to Te Ākinga / Bamfield Reserve. Walkway connections may occasionally be impacted by coastal inundation flooding with increasing frequency in the long term. **Maintain** also provides for weed management and restoration planting, in particular, along exposed coastal margins to manage erosion risk by slowing overland flow and provide root reinforcement to exposed soils.		
Implementation Notes		
• **Ecology:** There is future opportunity for saltmarsh restoration and enhancement at Hillsborough Bay and coastal planting to provide protection from wave overtopping. • **Management:** Management of the stormwater flooding hazards via Auckland Council's (Healthy Waters) Making Space for Water programme - a programme of planned flood management works across the region. • **Maintain** does not prevent ongoing inspection and any required repairs to maintain critical infrastructure (e.g. high-transmission powerlines; high pressure gas lines). • **Community:** Strong advocacy for supporting community connections to and along the coast, noting commentary on the Waikōwhai Walkway and the need to undertake repairs post the 2023 weather events.		

Stretch 1.2: Taylors Bay

This stretch extends along the coast from 39 Frederick Street and culminates at Taylors Bay Road Reserve.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Adaptation priority** 	**Adaptation priority** 
Explanation		
A **maintain** approach under a low climate change scenario supports the ongoing maintenance and upgrade to the locations of walkways, amenities, facilities. Where assets are replaced and renewed, the design and location in relation to coastal and catchment flooding should be considered. **Adaptation priority** under the moderate and high scenarios will be required to respond to the increasing inundation risk to the reserve. Landward relocation of playground facilities and parking areas will be required to respond to inundation risk. The management of risk to localised roading connections subject to coastal inundation and flood hazard will also be required for low-lying areas, such as Bluff Terrace.		

Scenarios for change		
Low	**Moderate**	**High**
Adaptation priority in the high scenario may not require the relocation of the main transmission wastewater pump station located within this stretch (which connects Onehunga to the western interceptor and the Māngere wastewater treatment plant). The location of this plant and the alignment of associated wastewater pipe connections are required to provide for the function of the network and are assumed to be designed appropriately in relation to hazard risk.		
Implementation Notes		
• **Management:** Auckland Transport, the asset manager, may monitor how coastal hazards may impact on the operation of roading assets and future implementation options. Additionally, Watercare, the asset manager, may monitor how coastal hazards may impact on operation of wastewater infrastructure and future implementation options. • **Maintain** does not prevent ongoing inspection and any required repairs to maintain critical infrastructure (e.g. high-transmission powerlines; high pressure gas lines). • **Ecology:** Development of the pump station has included enhanced ecological management at the site with the provision of saltmarsh to provide foraging and roosting habitat for wetland birds. • **Community:** The community noted the high value and use of coastal areas, with commentary highlighting that Taylors Bay is likely to require ongoing maintenance of highly valued assets and facilities (e.g. playgrounds, walking paths, swimming areas) to support heavy foot traffic and demand on infrastructure.		

Stretch 1.3: Onepoto | Grannys Bay & Pourewa / Kingswood Esplanade

This stretch commences to the south of Taylors Bay Road Reserve, including the coastal areas up to and including Te Tapere / White Bluff Reserve, Wesley Bay Glade, the Puke-karoro / Hillsborough reserve and a portion of Pourewa / Kingswood Reserve, culminating at the point before Wesley Bay.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Maintain** 	**Maintain** 
Explanation		
Maintain under all climate change scenarios provide for the continued connection of the Waikōwhai Coastal Walkway which has been identified by the local and wider community as an important coastal connection. This may require consideration of the walkway placement to reduce the risk of future damage from natural hazard events and site/locational specific design. **Maintain** also provides for weed management and restoration planting, in particular along exposed coastal margins to manage erosion risk by slowing overland flow and provide root reinforcement to exposed soils.		
Implementation Notes		
• **Management:** Maintain can provide for localised realignment of sections of walkway (if required) in response to coastal hazards • **Community:** Community feedback highlighted community-led conservation initiatives taking place within coastal reserves, noting a strong advocacy to maintain coastal connections and support volunteer-led predator control and ecological corridors.		

Unit 2
Manukau North

N

The community expressed that the coastal walk at Lynfield Cove is not the same as paths were damaged in the storm events

Transpower critical infrastructure (National Grid) cross this unit

Wairaki Reserve Seawall

There are two historic landfills at Waikōwhai Park

Southwestern Motorway

Keith Hay Park

Hillsborough Rd

The Avenue

Halsey Dr

Waikōwhai Park

Taunahi/ Wattle Bay Reserve

Captains Bush

Manukau Domain / Pae-mohani

Wairaki Stream Reserve

Lynfield Cove Reserve

Himalaya Reserve

Sylvania Crescent Esplanade Reserve

Taunahi/ Wattle Bay

Waikōwhai Bay

Wesley Bay

Intertidal habitat for coastal and wader birds

BFA

Wairaki Stream Reserve is within the Tamaki Ecological District Forest Remnants BFA (biodiversity focus area).

Waikōwhai Park is valued for its size, centrality and natural character providing a tranquil place away from the city. There are various popular walking tracks though the native bush

Unit boundary

2.1 2.2 Stretch

Walking tracks

Informal recreation park

Auckland Council owned land

0 500m 1km

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

Unit 2: Waikōwhai

This unit is within the Puketapapa Local Board area covering approximately 3.9 km of coastline from Park Road in Pourewa / Kingswood Reserve at the end of Aldersgate Road extending westward to Gilletta Road and Wairaki Stream Reserve, Hillsborough Road and Halsey Drive along the northern boundary. It covers two coastal stretches. Auckland Council reserve land dominates the coastal edge, with several large parks and much of the coastal vegetation remaining within reserve land.

What is happening

The coastal landform along this unit is steep, with well-vegetated coastal cliffs (30-75 m high) formed in East Coast Bays Formation sediments with variable volcanic content, interspersed with a series of embayments between headlands. There are a few small lower-lying areas at the head of bays including Lynfield Cove; Wattle, Waikōwhai Faulkner and Wesley Bays. Cape Horn headland between Taunahi / Wattle Bay and Waikōwhai Bay is indicative of where the locally more resistant lithology exists. The cliffs are fronted by a narrow intertidal area that extends out to the main harbour channel (Wairopa Channel). The intertidal area is wider within bays, up to 200 m wide. In places, the wave-cut platform is exposed, otherwise the foreshore sediments are very fine.

The area's inner harbour is generally a low wave-energy shoreline with some protection and restricted fetch distances across to Puketutu Island and Mangere Bridge. However, this location is open to some of the longest fetch (~22 km) within the harbour from the south and southwest in prevailing wind conditions.

Noting the topography and exposure of this coastline, significant damage was experienced during the storm events of 2023, with over 30 slips on the Manukau coast. Significant damage to park infrastructure was experienced, with Waikōwhai Park re-opening on 31st August 2024.

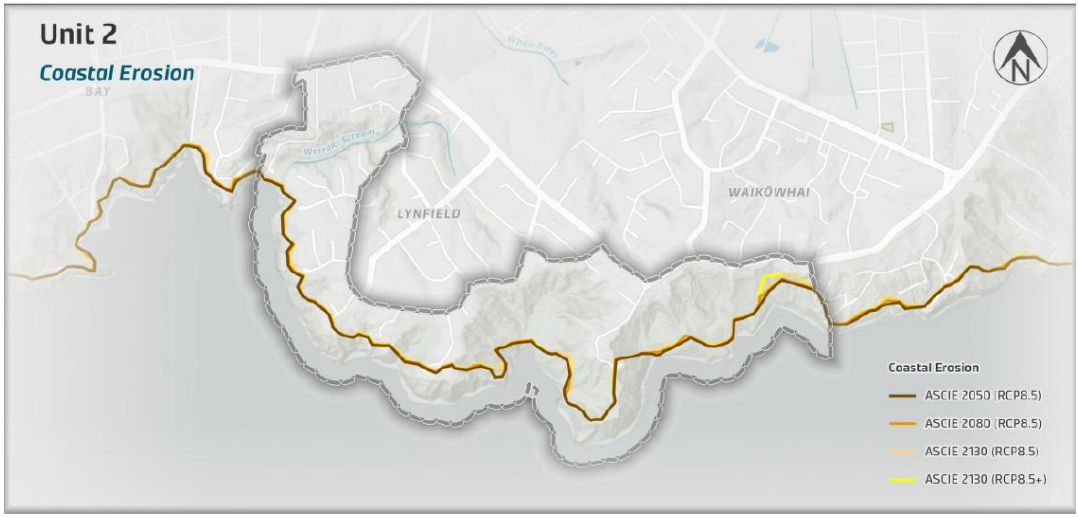
Landscape changes, sediment build up, land slips and infrastructure damage as a result of the 2023 extreme weather events and the need to ensure engagement captures private property owners impacted by/ vulnerable to coastal hazards was highlighted by the Puketāpapa, along with the need to reflect and address current and historic coastal hazard-related damages. Furthermore, the events of Cyclone Gabrielle have shown that areas within Unit 2 and the wider Manukau Harbour North coast are exposed to an unacceptably high landslide risk. Land instability/ landslide hazards are not directly considered within the scope of the SAPs – for further information on hazards considered with the SAPs, refer to *Volume 1: Understanding the Shoreline Adaptation Plans*. Further work is underway to understand the risk to life from large-scale instability in these areas and further support for these affected communities through Auckland Council's established Storm Recovery Office[1].

Coastal erosion and instability

The regional ASCIE distances for this unit range from –20 m to –70 m of susceptible land over the 100-year, high change scenario. The widest ASCIE distances are observed along the more exposed

[1] OurAuckland (2025). "Enhancing our understanding of landslides in Tāmaki Makaurau". Enhancing our understanding of landslides in Tāmaki Makaurau - OurAuckland

southwest-facing cliffed shoreline between Lynfield Cove and Cape Horn. The width of the ASCIE distances from the coastline varies through Taunahi / Wattle Bay Reserve, as they do round Cape Horn and along Waikōwhai Park and Captains Bush, notably reducing at the head of bays where recreational amenities have been developed on lower elevated parts of reserves. The coastal instability and erosion risk along this unit is primarily to Auckland Council parks and reserve land.



The coastline is predominantly unprotected with limited coastal protection structures being:

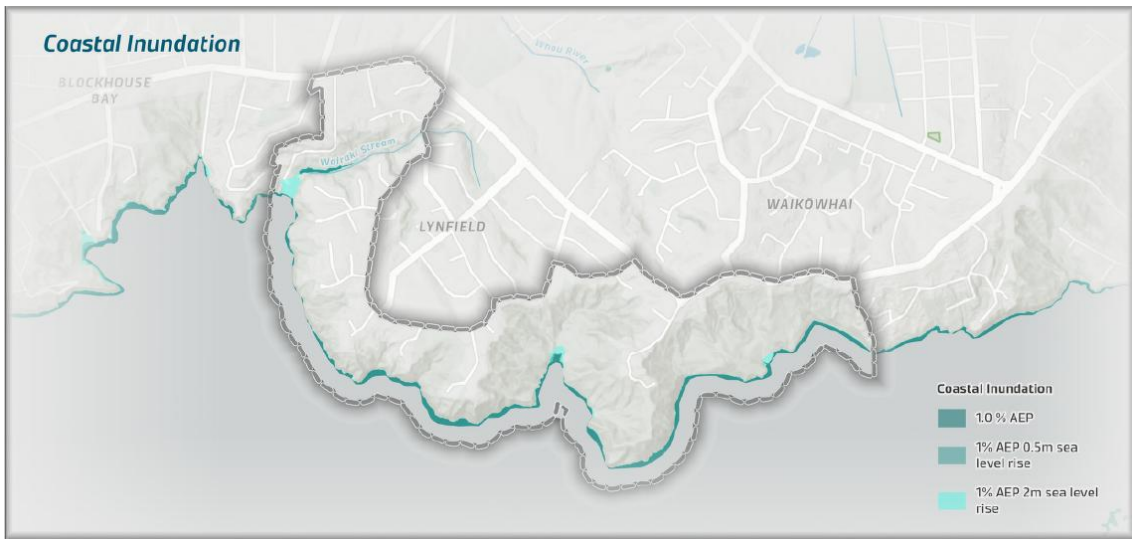
- Masonry seawall at Faulkner Bay, Waikōwhai Park
- Wairaki Stream Reserve seawall.

View over Lynfield Cove Beach from the Lynfield Cove Path (Auckland Council).

Coastal inundation

Due to the steep topography, coastal inundation will be naturally limited along most of the shoreline. Some areas of low-lying reserve, such as at Taunahi / Wattle Bay are temporarily exposed in the present day for a 1% AEP event. In the low climate change scenario, the entire grass reserve area at Taunahi / Wattle Bay is projected to be at risk to inundation, with increasing extent over the medium to long-term impacting walking tracks. In moderate to high change scenario, the carpark area in Waikōwhai Park adjacent to Faulkner Bay is at risk to coastal inundation with sea-level rise. The edge of Wairaki Stream Reserve is projected to be inundated in the moderate change, with inundation

exacerbated in the high change scenario by increased sea-level rise to impact the entire reserve and park amenities.



Flooding

Floodplain extents within this unit are limited to where streams outfall at the coast. It is noted that landward of Hillsborough Road (beyond extent of the SAP) there are some significant areas susceptible to flood hazards.

The lower Wattle Bay Stream and an area at the head of Taunahi / Wattle Bay, and Wairaki ki tai/ Wairaki Stream Reserve are within the 1% AEP flood plain, and numerous overland flow paths drain to the harbour.

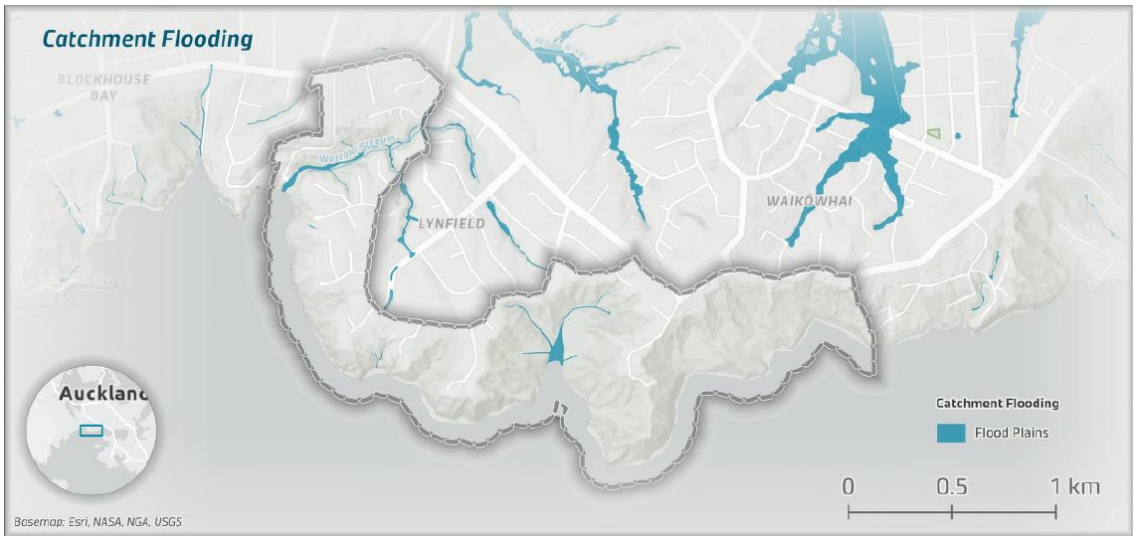


Figure 4: Coastal hazardscape for the Waikōwhai Unit reflecting coastal erosion susceptibility for 2050, 2080 and 2130 considering RCP4.5 and RCP8.5 emission scenarios, coastal inundation for 1% AEP storm surge for present day and with 0.5 m, 1 m and 2 m sea-level rise and the identification of flood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

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 (95.6 ha) Buildings, wharves (3 No.)			Park amenity structures, carparks, accessways, buildings (0.8 ha)			AT roads (9.7 km) Bridges (0 m^2)			Water pipes (47.5 km)		
Short	Medium	Long	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Coastal erosion susceptibility											
Moderate	High	High	High	High	High	Low	Low	Moderate	Moderate	Moderate	Moderate
Coastal inundation											
Low	Low	Moderate	Moderate	Moderate	Moderate	None	None	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 over changing climate scenarios.

- Captains Bush
- Lynfield Cove Reserve
- Pae – Mohani / Manukau Domain
- Waikōwhai Park (carpark, boat ramp and coastal steps)
- Wairaki ki tai/ Wairaki Stream Reserve
- Taunahi / Wattle Bay
- Pourewa ki uta / Wesley Bay Reserve

- Two historic landfills in Waikōwhai Park.

- Watercare has a few wastewater pump stations close to the coast and there are stormwater pipes, predominantly in the Waikōwhai and Wairaki ki tai / Wairaki Stream Reserves.

- Slips in other coastal parks, Pourewa / Captains Bush, Taunahi / Wattle Bay and Pae – Mohani / Manukau Domain, have also significantly impacted the track network with some tracks requiring medium to complex works.

- Waikōwhai Park boat ramp.

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.

- 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.

- This unit contains part of the Waikōwhai Walkway, valued for the connecting track network through the native bush along and to the coast. Good views are provided across the harbour from a number of locations.
- Waikōwhai Park is valued for its size, centrality and natural character, providing a tranquil place away from the city. The closure of this park over an extended period of time (now re-opened) has frustrated members of the community and concern was expressed at the works' progress.

- Most of the coastal edge is identified as terrestrial and marine SEAs in the Auckland Unitary Plan. The vegetated coastline is a mixture of coastal forest types including broadleaved indigenous forest, pōhutukawa treeland/flaxland/rockland, and kānuka scrub/forest.
- The marine SEA (SEA-M1-1912) is an important ecological corridor of coastal forest remnants, through to firm reefs below the cliff that grades into muddy intertidal flats near the channel edge where coastal and wader birds are feeding. There are three bird hotspots around Cape Horn, between Waikōwhai Bay and Taunahi / Wattle Bay Reserves.
- Wairaki Stream Reserve is within the Tāmaki Ecological District Forest Remnants BFA (biodiversity focus area).

Who have we heard from?

Feedback was received via Social Pinpoint, 'AK Have Your Say' survey, community submissions, in-person public engagement events and online information sessions (webinar). The event local to this area was the Wesley Market in Mt Roskill, neighbouring events took place at the Titirangi Beach Hall and the Ecomatters Environmental trust in New Lynn, New Lynn War Memorial Library, Titirangi War Memorial Hall and Green Bay Community House. Outside of the engagement platforms community feedback was also received through direct communication, in Unit 2 an organisation submission was received from Transpower.

What is happening?

There were many concerns raised by the community regarding the damage sustained to coastal tracks, boat ramps and the forest because of landslides and flood events. The key areas of concern were Waikōwhai, Lynfield Cove and Pae – Mohani / Manukau Domain.

- There were major concerns raised regarding the landslides and flooding at Waikōwhai which caused coastal facilities and walkways to become damaged or inaccessible until repairs could be undertaken. Furthermore, feedback highlighted concern over future slips around Waikōwhai, exposing the landfill that underlies it (fear that the whole park is in danger of collapse in a similar fashion to the Onepoto / Grannys Bay slip).
- The community expressed that the coastal walk at Lynfield Cove is not the same as paths which were affected by the 2023 storm events.
- Pae – Mohani / Manukau Domain track that provides access to the coast was damaged in the storm events.

What matters most? Community values and uses

This unit was generally valued for its natural and tranquil feel, despite being in close proximity to the city. The key uses of this unit were primarily outdoor recreational activities.

- Waikōwhai Park was valued as a tranquil area away from the city with nice views. The natural environment was noted to have beautiful natural bush, native birds and sea life. The park caters for various activities including swimming, walking, running, dog walking and exercise, playground, picnicking and outdoor enjoyment.
- Pae – Mohani / Manukau Domain was noted to have the best local views of Manukau Heads while the Pae – Mohani / Manukau Domain / Lynfield Cove coast is afflicted with Pacific oysters.
- The bays in Lynfield are appreciated for walking, views and picnic spots.
- Taunahi / Wattle Bay has a great beach and native bush. The community value the coastal walkways, which are lightly trafficked and good for watching birds and enjoying the scenery.

What can we do about it? Community feedback and aspirations

For the Waikōwhai Unit, the majority of respondents supported the short-term strategies, with more uncertainty in the long and medium term, owing to:

- The community highlighted the need for additional access paths within Pae – Mohani / Manukau Domain, particularly to improve walkability across the grassy areas during winter. Currently, the lack of formal pathways makes it difficult to traverse the park when the ground is wet or muddy, limiting accessibility for pedestrians, families, and those with mobility challenges.
- Commentary that flood damage in this unit is extensive, and many of the Bays remaining closed even two years later from the 2023 weather events – there was strong advocacy to repair/ maintain coastal assets and facilities and accessways to and along the coast.
- Ongoing engagement and collaboration with local communities and residents alike in the implementation of coastal adaptation strategies, noting the community's experience with the 2023 weather events.
- Community feedback highlighted a concern for the ecological damage/ degradation within the Waikōwhai Unit, with commentary that populations of banded kōkopu and inanga that once inhabited the streams within this area are effectively wiped out due to Council works that involved filling these waterways with rock. Additionally, feedback highlighted that the shag nesting colony has declined dramatically and is now estimated to be only a tenth of its former size. There is strong advocacy to support pest control efforts by local residents and volunteers and focus on remediation efforts in alignment/ collaboration with community groups.
- Commentary from Transpower: Within Unit 2, existing National Grid assets include the 220kV Henderson – Otahuhu line on towers, noting that these assets for the most part are set back from the coastal edge. Whilst outside of scope for the SAP Programme (third party infrastructure), ongoing consideration and identification of Transpower assets and management intentions are advocated for.

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

Stretch 2.1: Wesley Bay

This stretch commences at Pourewa / Kingswood Reserve (at the end of Aldersgate Road) and includes Wesley Bay culminating at the western boundary of Waikōwhai Park, near Cape Horn Road. It includes Pourewa / Kingswood Reserve, Waikōwhai Park (internal park road, foreshore and upper level carpark, seawall with integrated ramp and stairs, park amenities and path network), Waikōwhai historic closed landfills, wastewater pumpstation and stormwater outfalls.

Scenarios for change		
Low	**Moderate**	**High**
Protect 	**Protect** 	**Adaptation Priority** 
Explanation		
Protect under the low and moderate climate scenarios in relation to Waikōwhai Park. The park includes significant community recreational amenities and facilities, including a boat ramp and parking on the coast. It includes two historic landfills which have been subject to significant remediation (and are managed through Auckland Council's Closed Landfill Asset Management Plan). The park was closed following the 2023 weather events to undertake stability and remediation works (now re-open). **Adaptation priority** is required in the high change scenario in response to increasing risks from inundation hazards and the potential need to relocate some parks services and amenities (e.g. parking and picnic facilities) within the park extent.		
Implementation Notes		
• **Maintain** to enable safe walking connections to and along the coast including the wider network of coastal esplanade reserve. No new coastal defences are anticipated. • **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.		

Stretch 2.2: Taunahi | Wattle Bay to Wairaki

This stretch commences at the western boundary of Waikōwhai Park and culminates at Wairaki ki tai / Wairaki Stream Reserve on Gilletta Road. It encompasses many Auckland Council-owned reserves and wastewater pump stations. Multiple areas were affected by slips from the 2023 storm events.

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

Explanation

Maintain under all climate change scenarios to maintain access to the coast, including paths and boardwalks. This strategy also provides for the localised landward relocation and upgraded design of assets and facilities to manage increasing risk from inundation.

Maintain provides for the maintenance and renewal of existing erosion management structures, including the Wairaki Reserve seawall, noting that this structure functions as a coastal erosion mitigation device and will not prevent inundation under the moderate and high scenarios.

Implementation Notes

- **Ecology:** Advocacy for ecological enhancement opportunities including saltmarsh and seagrass restoration in locations where these habitats already exist. Taunahi/ Wattle Bay to Wairaki ki tai/ Wairaki Stream Reserve is identified in the supporting ecology report (Tonkin & Taylor, 2023) as having potential for wetland restoration in response to sea-level rise by allowing natural saline vegetation to colonise and migrate landwards. There is an opportunity to provide for bird roosting options around Cape Horn. Advocacy for ongoing ecological enhancement supports local community groups, such as Friends of Wairaki Stream Group, who have already undertaken extensive planting efforts along this coastline. Ongoing efforts should be made to work in partnership with such groups where possible.
- **Cultural:** This stretch is identified as having cultural value including being an important mahinga kai (food gathering) site that provided freshwater taonga species (whitebait), including kōkopu, kōaro and īnanga. Tuna (eel) species, including ōrea (longfin) and papakura (shortfin) were also abundant in its waters. Further engagement with local iwi will be required.
- **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.

Unit 3
Manukau North

N

The walking network in this unit is highly valued by the community. Coastal connections are key for this area, new future walkway in development: Te Whau Walkway

Te Whau Pā (Te Whau Point) is regarded as a site of high archaeological importance and cultural significance to local iwi (including Te Kawerau ā Maki)

Gittos Domain is the largest reserve in the unit and provides an extensive track network.

'Te Ara o Tiriwa' – The Pathway of Tiriwa walkway: A coastal walk in Blockhouse Bay which starts at Gill Cresent.

Community engagement events took place at the Green Bay Community House.

x 2

Portage Rd

Taylor Rd

Blockhouse Bay

Craigavon Park

Kinross St

Armagh Rd

Blockhouse Bay Road

Connaught St

Godley Rd

Cliff View Dr

Gittos Domain

Te Whau Pā

Blockhouse Bay

Tauihu/ Green Bay Beach

Āmio/Blockhouse Bay Beach Reserve

Karaka Park

Volunteer conservation groups are highly active in this area

Historic portage connections between the Manukau and Waitemata Harbours – highly culturally significant

Āmio/Blockhouse Bay Beach Reserve is highly valued by the community for its activities and uses such as swimming, picnicking, playground, boat launching, bird watching and scenery. There are various park assets including the masonry seawall and notably there has been sand replenishment.

Transpower's critical infrastructure lines run though this coastal margin

Unit boundary

3.1 3.2 Stretch

Walking tracks

Informal recreation park

Auckland Council owned land

0 500m 1km

NOTE: Maps may be updated to improve wayfinding and accessibility

Unit 3: Blockhouse Bay/Green Bay

This unit covers approximately 4.9 km of coastline in the area from Gilletta Road westward to Karaka Park where this aligns with Conlon Drive/Totara Crescent on the western boundary of the Pinesong Retirement Village. Donovan and Kinross Streets, and Godfrey and Avonleigh Roads run along the northern boundary. The unit covers four stretches and is within the Whau Local Board area.

The unit is dominated by the residential areas of Blockhouse Bay and Green Bay. Most of the shoreline is backed by Auckland Council reserves and DOC Green Bay marginal strip. Within this area there is a network of walking trails along the vegetated cliffs between Blockhouse Bay and Green Bay, and limited access points down to the foreshore.

What is happening? Coastal context and hazardscape

This unit takes in the western side of Lynfield Cove, Blockhouse Bay and Green Bay. The landform along the coastline is steep cliff/hillslopes around 30 m high formed in East Coast Bays Formation sediments of alternating sandstone and mudstone with variable volcanic content, and covered in vegetation with some exceptions, e.g. exposed cliff faces, partially covered by overhanging tree canopy. There are some lower-lying areas adjacent to Tauihu / Green Bay Beach and Blockhouse Bay.

At Blockhouse Bay, there is a 90 m long beach between two rocky headlands that extend 50-60 m from the embayed shoreline, with a larger headland along the western entrance of the bay approximately 250 m from the beach. The beach has been renourished and is fronted by a wide shallow intertidal area. The backshore is armoured with a curved seawall constructed in 1932.

This is a low wave-energy harbour shoreline, open to some of the longest fetch (~22 km) within the harbour. The intertidal area that extends out to the Wairopa Channel is narrow, except within Blockhouse Bay where it is up to 300 m wide.

The cliffed coastline is dominated by coastal broadleaved indigenous forest with much of the coastline recognised as terrestrial SEA. There is a planted exotic forest at Craigavon Park, and kānuka scrub/forest, and fire-induced gumland heath wetland at Gittos Domain. The cliffs are fronted by intertidal mudflats, sandy beaches, and sandstone reefs with the area around the Green Bay coastline, Te Whau Point to Manukau Margin Reserve, identified as an important ecological corridor from the Waitākere Ranges.

Coastal erosion and instability

The reserve land extending along the cliffed shoreline in this unit is within the short to long term ASCIE lines. Within this area, there is a network of walking trails along the vegetated cliffs between Blockhouse Bay and Green Bay, and limited access points down to the foreshore. The ASCIE distances are generally narrower (25 – 60 m) within Blockhouse Bay in the lee of Te Whau Point.

The medium term ASCIE lines (2050 & 2080) indicate that the coastal margin of Āmio / Blockhouse Bay Reserve including the accessway to the Blockhouse Bay Boat Club building, to be susceptible to coastal instability and erosion hazards. The southern and western shoreline is currently armoured with an engineered rock revetment. In the longer term, a wider extent of coastal reserve would be impacted in the absence of coastal armouring. At Green Bay Reserve, community facilities (park

amenities and toilet block) and underground services (stormwater and wastewater) are within the short to medium ASCIE.

Coastal inundation

Due to the steep topography, coastal inundation will largely be confined to low-lying areas along the periphery of this shoreline at Tauihu / Green Bay Beach and Blockhouse Bay. In the short-term, coastal inundation with a 0.5 m sea-level rise will impact much of the grass reserve to the north of the existing playground at Blockhouse Bay and will extend along the accessway towards Blockhouse Bay Boat Club building.

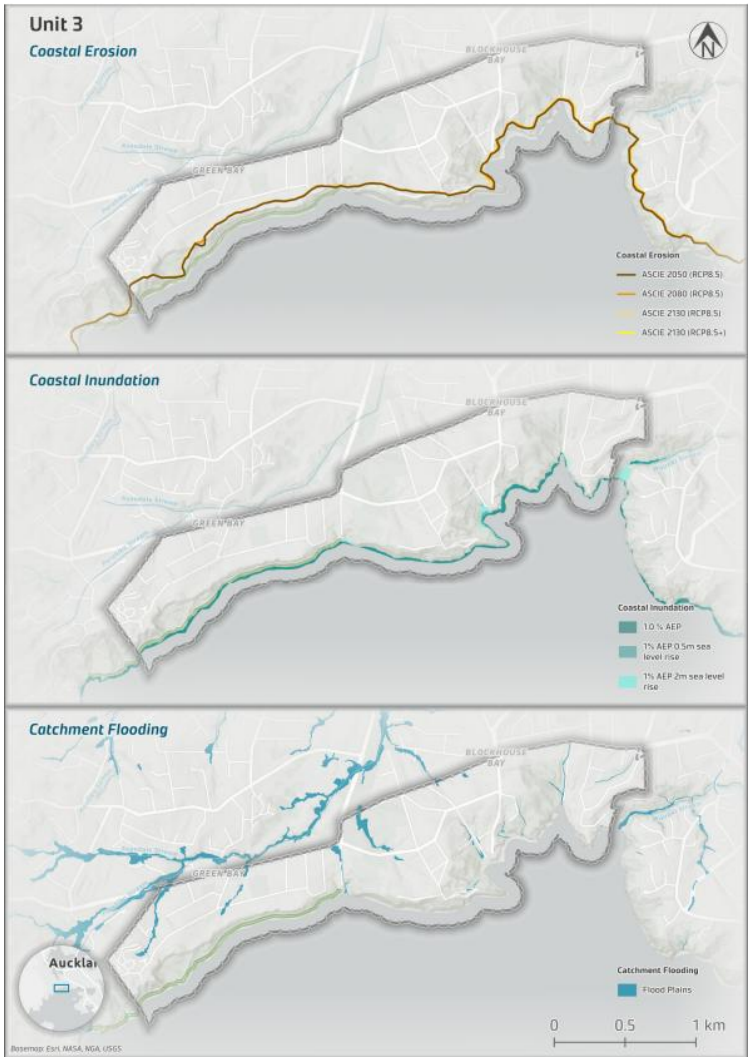


Figure 5: Coastal hazardscape for the Blockhouse Bay / Green Bay Unit reflecting coastal erosion susceptibility for 2050, 2080 and 2130 considering RCP4.5 and RCP8.5 emission scenarios, coastal inundation for 1%AEP storm surge for present day and with 0.5 m, 1 m and 2 m sea-level rise and the identification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

There are existing coastal protection structures along this section of coastline. Some of the key features are as follows:

- Blockhouse Bay's southern and western shoreline is armoured with an engineered rock revetment
- Blockhouse Bay backshore is armoured with a curved seawall constructed in 1932

- Beach renourishment at Blockhouse Bay was undertaken in 2008 with 900 m^3 imported sediment placed on the beach to create a berm width of 10 m.

Āmio / Blockhouse Bay Beach Reserve with the various parks assets in view including the masonry seawall.

Āmio / Blockhouse Bay Beach Reserve – View from Endeavour Street looking into the park (Source: Auckland Council)

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[2, 3]. 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.

Council-owned land			**Council Community facilities**			**Transport infrastructure**			**Water infrastructure**		
Park and reserve land (49.4 ha) Buildings, wharves (16 No.)			Park amenity structures, carparks, accessways, buildings (0.5 ha)			AT roads (15.5 km) Bridges (0 m^2)			Water pipes (82.4 km)		
Short	Medium	Long	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Coastal erosion susceptibility											
Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	High	High	High	Moderate	Moderate	High
Coastal inundation											
Low	Low	Low	Moderate	Moderate	Moderate	Low	Low	Low	Low	Moderate	Moderate
None			**Low**			**Moderate**			**High**		**Very High**

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

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

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.

- Āmio / Blockhouse Bay Beach Reserve (playground, walking path and boat ramp are near the shoreline)
- Gittos Domain
- Graigavon Park
- Tauihu / Green Bay Beach
- Karaka Park

- Blockhouse Bay boating club building is used as a community venue (Community lease of Auckland Council land).

- Blockhouse Bay Road and Gill Crescent stormwater outlets.

- Gittos Domain is the largest reserve in the unit and provides an extensive track network.
- 'Te Ara o Tiriwa' – The Pathway of Tiriwa walkway: A coastal walk in Blockhouse Bay which starts at Gill Cresent.
- Other coastal access points are from the bottom of Lewis Street and in Tauihu / Green Bay Beach.

- Āmio / Blockhouse Bay Beach Reserve boat ramp.

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 Whau Pā (Te Whau Point) is situated within this unit, noting that several middens and terraces are visible now, but with erosion over time all other signs of occupation have been destroyed. Te Whau Point is still regarded as a site of high archaeological importance and cultural significance to local iwi (including Te Kawerau ā Maki), with this fortified Pā once protecting the Whau canoe portage to the Waitematā Harbour, and the canoe building area of Te Kōtuitanga.
- 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 natural environment provided by the coastal reserves is enjoyed as places to recreate, exercise and interact with the coast, with the Blockhouse Bay Seaside Walk of value to local communities.
- The boat ramp and boating club are valued by local communities.
- Sand replenishment was noted including that it provided a good swimming beach, was safe for children and generally good water quality.

- Volunteer conservation groups (including but not limited to the Te Whau Pathway Environment Trust (formally Whau Coastal Walkway Environmental Trust) are highly active in this unit, undertaking a variety of conservation activities in coastal areas.

- The cliffed coastline is dominated by coastal broadleaved indigenous forest with much of the coastline recognised as terrestrial SEA. There is a planted exotic forest at Craigavon Park, and Kānuka scrub/forest, and fire-induced gumland heath wetland at Gittos Domain. The cliffs are fronted by intertidal mudflats, sandy beaches, and sandstone reefs with the area around the Green Bay coastline, Te Whau Point to Manukau Margin Reserve, identified as an important ecological corridor from the Waitākere Ranges.
- SEA-M2-173 – Green Bay Coastline, Te Whau Point to Manukau Margin Reserve is an important ecological corridor from the Waitākere Ranges. It includes steep sandstone cliffs, with mature coastal broadleaved forest. Pied and little shags roost in pōhutukawa trees along the coastline. Additionally, Green Bay Kiokio is found within this unit, recognised as being regionally rare.
- Consideration of actions to restore and enhance the coastline via coastal weed management and nature-based solutions (i.e. wetland/ salt marsh restoration to protect low-lying assets, enhancement of natural seagrass beds).

Who have we heard from?

Feedback was received via Social Pinpoint, 'AK Have Your Say' survey, community submissions, in-person public engagement events and online information sessions (webinar). The events local to this area were the Green Bay Community House, Ecomatters Environmental Trust in New Lynn, New Lynn War Memorial Library, while neighbouring events took place at Titirangi Beach Hall, Titirangi War Memorial Hall and Wesley Market in Mt Roskill. Further community input was received through direct communication. In Unit 3, an organisational submission was also received from Transpower.

Community Meeting: Green Bay Community House

Key themes discussed at this event included but were not limited to vulnerability of road networks (Takahe Road, Cliff View Drive), responsibility for road reserves; hazard impacts on these areas and adjacent private land needing to be proactively addressed. Additionally, resolving issues identified in the 2023 process, and to communicate these improvements effectively to community residents was highlighted, noting that this event was attended by representatives from the Stickered Titirangi Area Residents (STAR).

What is happening?

The community expressed concerns about damage to coastal tracks, facilities and beaches caused by the 2023 storm events. The main areas of concern were Blockhouse Bay, Green Bay and Gittos Domain.

- The January 2023 floods resulting in the loss of sand from the Blockhouse Bay Beach.
- In the same area there have been slips from the cyclone that have created damage and, at the time of seeking feedback, had not been cleared.
- Damage to tracks around Sandy Bay was noted in feedback (Jan 2023 storm events).
- The community noted that the Blockhouse Bay Boat Club, an important community facility, is vulnerable to inundation, flooding and coastal erosion and instability.

What matters most? Community uses and values

- The community values the beautiful natural environment of this area, noting the sea is relatively clear; and the presence of native birdlife. The regenerative bush at Gittos Domain was noted as having birds and insects including glow worms at the creeks.
- At Blockhouse Bay the intimacy of the bay and accessibility is valued. The main activities and uses are swimming, picnicking, playground, bird watching and scenery. The boat ramp is seen as an important community facility.
- At Green Bay and Craigavon Park, the uses were very similar to those at Blockhouse Bay, noting the community highlighted the importance of green spaces.
- Gittos Domain was recognised as an excellent place for bush walking.

What can we do about it? Community feedback and aspirations

- Advocacy for weed control around cliffs and coastal edges, along with native planting (e.g. deeply rooted species such as kanuka).
- Advocacy for the installation of additional protective barriers upstream at Āmio / Blockhouse Bay Beach Reserve, recognizing the beach as an important and valued part of the coastline.
- Ongoing engagement and collaboration with local communities and residents alike in the implementation of coastal adaptation strategies.
- Commentary from Transpower: Within Unit 3, existing national grid assets include the 220kV Henderson – Otahuhu line of towers. Whilst outside of scope for the SAP Programme (3rd party infrastructure), ongoing consideration and identification of Transpower assets and management intentions are advocated for, noting the proximity of some of these assets to the coastline/ water.

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

Stretch 3.1: Gittos Domain

This stretch contains the area from Wairaki ki tai/ Wairaki Stream Reserve (next to Gilletta Road) at the eastern end of Unit 2, through to the edge of Āmio / Blockhouse Bay Beach Reserve. This stretch was impacted by the 2023 slips which caused track closures and impacted connectivity to and along the coast.

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

Explanation

Maintain under the low climate change scenario is identified to support ongoing safe public access to the coast and to manage risk from coastal hazards. The sheltered beach cove has high value for community access to the coast, with coastal walking tracks to the foreshore complementing its use. **Adaptation priority area** under the moderate and high climate change scenarios responds to coastal instability and erosion susceptibility and the need to realign coastal access (including road end access, walking tracks and steps) within the park areas.

Implementation Notes

- **Wastewater infrastructure:** Increasing inundation risk to wastewater pump stations located within this area of the coast may require localised measures to protect the functionality of some of these assets under the high climate change scenario.

Stretch 3.2: Āmio / Blockhouse Bay Beach reserve

This stretch includes Āmio / Blockhouse Bay Beach Reserve culminating to the west of Blockhouse Bay Boat Club /Te Whau point. The Blockhouse Bay Boat Club building is a non-Auckland Council asset within this stretch that is used as a community asset.

Scenarios for change		
Low	**Moderate**	**High**
Protect 	**Maintain** 	**Adaptation Priority** 

Explanation

The park facilities and boat launching access have been identified as significant community assets with the boat launching ramp providing recreational boat access to Manukau Harbour.

Protect in the low climate change scenario supports the maintenance of protection structures and highly valued community areas. **Maintain** in the moderate change scenario reflects the retention and localised landward realignment of services (as required) to respond to increasing inundation risk.

Adaptation priority in the high change scenario recognises the need to relocate assets to manage future coastal inundation risk at appropriate trigger levels (to be determined). Further engagement with local iwi and local communities will be required to ensure that future planning for the management of assets and land at risk from coastal hazards responds to cultural values and social and community needs, including (and not limited to) maintaining boat launching access to the harbour.

Scenarios for change		
Low	**Moderate**	**High**
Implementation Notes		
• **Ecology:** Nature-based solution opportunities are identified including advocacy for planting to reduce scouring impacts of wave overtopping and consideration of natural seagrass beds at Blockhouse Bay to reduce impacts to the shoreline from coastal wave exposure. • **Cultural**: Te Kawerau ā Maki has identified aspirations around harbour access, mahinga kai, maintaining cultural landscapes, protection of wahi tapu; these values/ activities are sought through the tikanga of manaakitanga - ongoing engagement with Te Kawerau ā Maki is required. • **Note:** there is an important portage connection here.		

Stretch 3.3: Tauihu | Green Bay Beach (Portage)

This stretch commences at Te Whau Point and culminates to the west of Green Bay Beach Reserve at the end of Portage Road.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Adaptation Priority** 	**Adaptation Priority** 
Explanation		
Maintain under the low climate change scenario acknowledges the need to maintain safe coastal access within and along the esplanade reserve areas. Under the moderate to high climate change scenarios, **adaptation priority** signals that planning is required to respond to increasing hazard risk to park amenities that are predicted to be exposed to coastal inundation flooding with sea-level rise.		
Implementation Notes		
• **Cultural:** This stretch is of significant cultural value due to historic portage connections between the Manukau and Waitematā Harbours. Further engagement with local iwi identified in Volume 2 will be required through implementation.		

Stretch 3.4: Karaka Park

This stretch includes Karaka Park (from Portage Road) to where this stretch aligns with Conlon Drive/Totara Crescent on the western boundary of the Pinesong Metlifecare retirement village.

A narrow esplanade reserve that is largely inaccessible due to dense vegetation and steep terrain extends the length of the stretch and includes the Manukau marginal strip. There are several reserves providing a range of community-based facilities set back from the coast outside the ASCIE and elevated above predicted coastal inundation flooding extent.

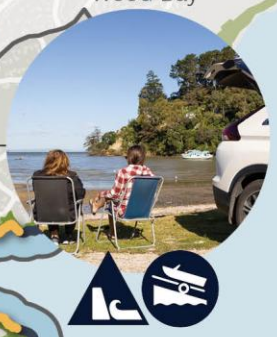
Scenarios for change		
Low	**Moderate**	**High**
No action 	**No action** 	**No action** 
Explanation		
No action is required as the coast is largely inaccessible, and no Council assets are exposed.		
Implementation Notes		
• This strategy does not preclude management of weeds management and restoration planting, in particular along exposed coastal margins to manage erosion risk by slowing overland flow and provide root reinforcement to exposed soils.		

Unit 4
Manukau North

N

The early 2023 weather events impacted Titirangi Bay communities.

Wood Bay



Tracks in Atkinson Reserve (Zigzag Track), Paturoa Esplanade, Opou Reserve, and the Bill Haresnape Walk are the lifeblood of the community for many locals who get around on foot

Cultural sites of importance to local iwi that make up the wider landscape of this unit include Te Kai ō Poutūkeka, Ōtītore, Ōkewa, Paturoa, and Taumatarearea (the headland overlooking the entrance to Waikūmete)

Atkinson Park

The backshore is armoured by a grouted rock seawall, and the Paturoa Stream channel that discharges at the centre of the beach is lined with retaining walls

Titirangi Beach Rd

Paturoa stream

Community lease of council land. Paturoa Hall also known as Titirangi Beach Hall

French Bay / Otitori Bay

French Bay Yacht Club - Community lease on council land

Titirangi Beach Reserve is a bird hotspot

French Bay and Titirangi Beach: valued for their beautiful natural environment within intimate bays for exercise, swimming and water-based activities

Titirangi Beach Reserve

Little Muddy Creek is an intertidal area with a variety of habitats, from mudflats to rocky reefs, and boasts an uninterrupted sequence from algal beds and mangroves to coastal forest

Laingholm Dr

Owen's Green

The early 2023 weather events impacted Laingholm communities

Little Muddy Creek

Community facility and heritage site - Maurice Shadbolt House and studio

Titirangi South Road boat ramp, also referred to as the Jenkins Bay boat ramp and Titirangi Beach boat ramp, is highly valued by local communities and provides access to the harbour for a range of water-based activities

Laingholm Scenic Reserve

Community lease of council land. Sandys Parade, Laingholm Fishing Club

Community feedback advocated for repairing and supporting walkways, investment in infrastructure and maintenance alongside enforcement of best-practice stormwater management and support for planting initiatives

Kauri Point Rd

Laingholm Beach

A grouted seawall extends along Laingholm Beach with a 5-15m wide sandy beach buffer in front of the northern section

Taumatarea Esplanade

Unit boundary

4.1 4.2 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*

Unit 4: Titirangi / Wood Bay

This unit, within the Waitākere Ranges Local Board area, extends approximately 15 km along the indented northern Manukau Harbour shoreline from Oatoru Bay (immediately east of Wood Bay) to Taumatarea Point (Laingholm). It includes the coastal areas of Wood Bay, French Bay, Titirangi Bay, Little Muddy Creek and Laingholm.

What is happening? Coastal context and hazardscape

The unit's shoreline is a low wave-energy harbour environment, subject to some of the longest fetch within the harbour.

Most of this unit's coastline is steep and well vegetated. However, there are some exposed cliff faces, particularly on steeper slopes. The coastline meanders in and out of the intertidal embayments which intersperse this coastline including Oatoru Bay, Wood Bay, French Bay, Pauroa Bay, Herrings Bay, Jenkins Bay, Wai-kumete/ Little Muddy Creek and Laingholm Bay. The embayments of Wood Bay, French Bay and Titirangi Beach are semi-enclosed bays between steeply sloping vegetated cliff headlands. Each bay is generally characterised by small, dry, high-tide beach areas in the upper inlet that grade to soft intertidal flats veneering rocky shore platforms exposed at the sides of the bays.

The indented coastline between Laingholm Point to Tokoroa Point, including Waiohua / Little Muddy Creek is sheltered, with a substantial intertidal area. The head of Little Muddy Creek embayment is currently filled by mangrove forest which provides a level of protection to this sheltered shoreline. The reserves along this part of the shoreline are connected by esplanade reserve along this eastward-facing coastline.

Coastal erosion and instability

Figure outlines the predicted coastal hazardscape for this unit under varying climate change scenarios.

The steep coastal cliffs are susceptible to coastal erosion and instability over all change scenarios, including esplanade reserve land fringing the coastal edge. Along with exposure to coastal processes and sea-level rise, the coastal susceptibility to instability is driven by cliff height and the ability to reach a stable slope angle.

As a harbour environment, much of the embayed and intertidal coastline is more sheltered and less susceptible to coastal erosion. At Wood Bay, French Bay, Titirangi Beach and Laingholm Beach, the areas of low grassed reserve and carparking areas are within the low change ASCIE, along with some park amenities. Noting some assets have a functional need to be located at the coastal edge (e.g. boat ramps).

There are multiple existing coastal protection structures along this section of coastline. Some of the key features are as follows:

- Wood Bay Reserve has a natural scarped grass bank along the central beach and is partially armoured with rock seawalls at each end of the bay.

- Extensive reclamation has been undertaken along the toe of the cliff along the southern side of French Bay embayment in 3 stages (1940, 1963 and 1973) to form a recreational reserve and boat launching ramps (with associated parking) and the French Bay Boating Club. The backshore of the beach is partially armoured by a grouted rock seawall, with mature pōhutukawa along the shoreline.
- At Titirangi Beach, the backshore is armoured by a grouted rock seawall, and the Paturoa Stream channel that discharges at the centre of the beach is lined with retaining walls.
- A grouted rock seawall extends along Laingholm Beach, with a 5-15 m wide sandy beach buffer in front of the northern section. Tipped rock groyne structures have been constructed alongside the ramp adjacent to Laingholm Fishing Club.

Key coastal protection structures in this unit are depicted below:

French Bay – low grouted seawall armouring Otitori Bay Road.

Coastal inundation

Noting the steep topography of much of this unit, the risk from coastal inundation and sea-level rise is focussed on the low-lying embayments and creeks which interrupt this coastline. The risk to Auckland Council community facilities and transport infrastructure is very high in the high change scenario (over 1 m of sea-level rise) at these locations.

Community facilities predicted to be exposed to coastal inundation include park amenities at Wood Bay, French Bay, Titirangi Beach, Laingholm Reserve, along with numerous other coastal accessways and smaller reserves that provide public access to the coast within this unit. Several low-lying roads, such as Landing Road, Laingholm Drive and Western Road are also exposed to coastal inundation which will increase in frequency and magnitude with ongoing sea-level rise. Road assets along the upper arms of Waihoua Creek and Little Muddy Creek, adjacent to Warner Park, in front of Sandys Parade, are similariy vulnerable to coastal inundation, noting the vulnerability of road networks was highlighted in community feedback.

Flooding

Catchments and flood plains within this unit typically align with the low-lying coastal inundation areas indicated above. Areas at Wood Bay Reserve, Miha Road Reserve, French Bay, Davies Bay Reserve, Alex Jenkins Memorial Reserve, South Titirangi Road from Arama Reserve, Landing Road

Reserve (Waituna and Alice Streams) are within the 1% AEP floodplain, with part of Landing Road predicted to be flooded in a 1% AEP event.

There are flood-prone areas at French Bay, Davies Bay and along South Titirangi Road, and numerous overland flow paths along this shoreline draining to the harbour.

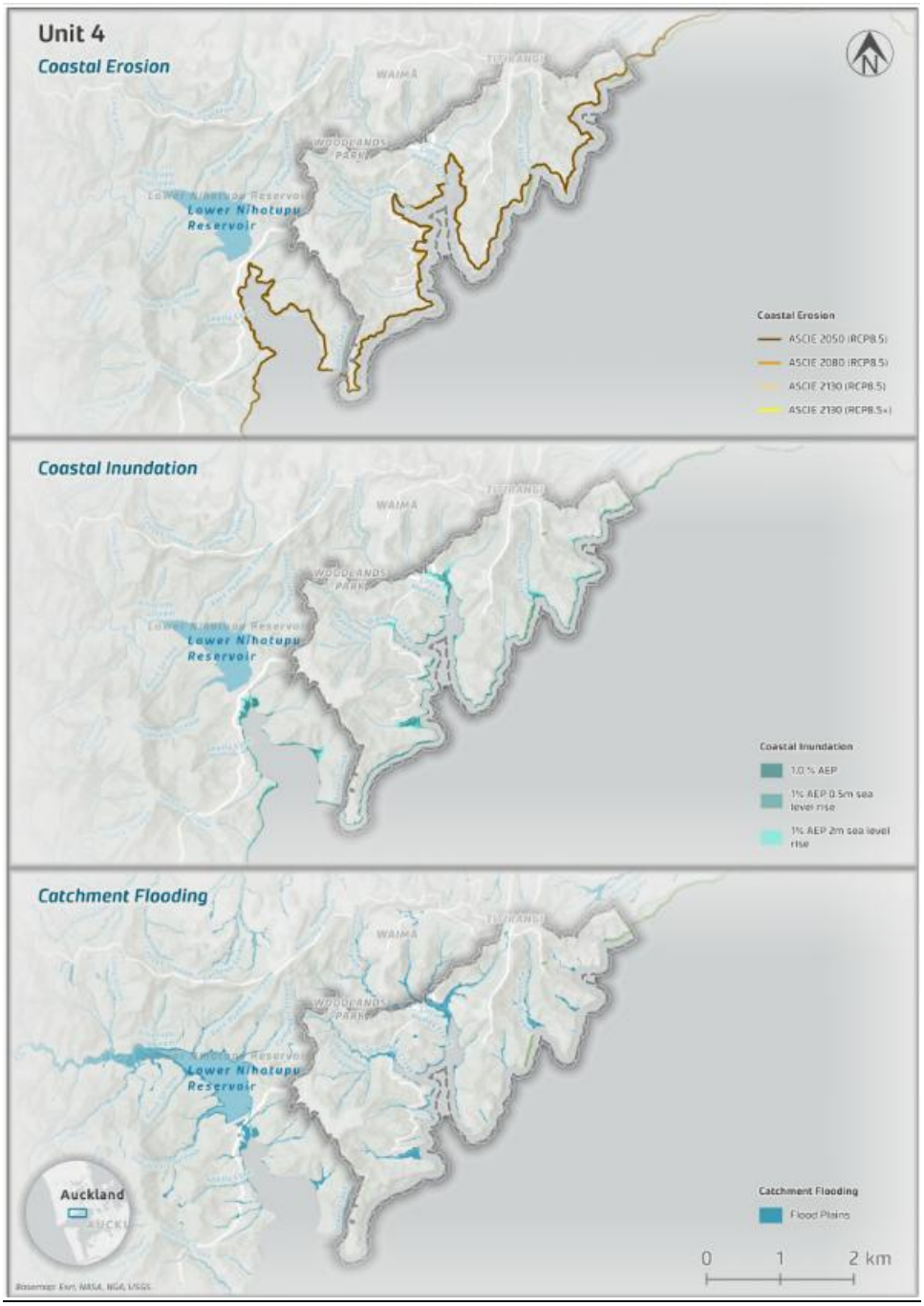


Figure 6: Coastal hazardscape for the Titirangi/Wood Bay Unit reflecting coastal erosion susceptibility for 2050, 2080 and 2130 considering RCP4.5 and RCP8.5 emission scenarios, coastal inundation for 1%AEP storm surge for present day and with 0.5 m, 1 m and 2 m sea-level rise and the identification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

Risk assessment

The risk table 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.

Council-owned land			**Council Community facilities**			**Transport infrastructure**			**Water infrastructure**		
Park and reserve land (104.1 ha) Buildings, wharves (40 No.)			Park amenity structures, carparks, accessways, buildings (1.1 ha)			AT roads (135.7km) Bridges (397.9 m^2)			Water pipes (209.0 km)		
Short	Medium	Long	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Coastal erosion susceptibility											
Moderate	Moderate	Moderate	High	High	High	High	High	High	Very high	Very high	Very high
Coastal inundation											
Moderate	Moderate	Moderate	High	High	Very high	Moderate	High	Very high	Moderate	Moderate	High
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 over changing climate scenarios.

- Over 40 reserves including the substantial overarching area of Waitākere Ranges Regional Park.
- Key coastal reserves include (but are not limited to) Wood Bay Reserve, French Bay Esplanade, Titirangi Beach Reserve and Laingholm Reserves.
- Most of the coast has esplanade reserve extending around its periphery.

- There are areas of historic closed landfills around the coastal edge of Little Muddy Creek and further north at Tangiwai Reserve in the upper reaches of the inlet.

- French Bay Yacht Club (community lease of Auckland Council land).
- Sandys Parade Laingholm Fishing Club (community lease of Auckland Council land).
- Paturoa Hall aka Titirangi Beach Hall (community lease of Auckland Council land).

- Boat ramps are located at Wood Bay, French Bay, Alex Jenkins Memorial Reserve and Laingholm Beach.

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.

- Along these shores are places of historical importance to local iwi including Te Kai ō Poutūkeka, Ōtītore, Ōkewa, Paturoa, and Taumatarearea, (the headland overlooking the entrance of Waikūmete).
- 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 local iwi (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.

- There are several popular beaches and local parks located within this unit that are highly popular for recreational activities, including provision of water access for boating which is supported by several boat ramps in the area.
- The early 2023 weather events have impacted some of these valued community assets, particularly at French Bay, Titirangi Bay and Laingholm Beach. This included destruction of the Coastguard Services building in French Bay. A new location for this service is being sought with a temporary base in Onehunga.
- Recovery efforts following severe weather events have led to a focus on climate adaptation, particularly through community-led initiatives and infrastructure improvements, with a focus on catchment management, flood and landslide resilience. The Stickered Titirangi Areas Residents, the Laingholm and District Community Emergency Response Group are two key groups operating in this space.
- Volunteer conservation groups (including but not limited to the South Titirangi Neighbourhood Network, 20 Acre Wood (Titirangi) and Waima to Laingholm Pest Free) are highly active, undertaking a variety of conservation activities in coastal areas.

- The whole coastline is recognised as a terrestrial SEA. There is a large mangrove forest and scrub area at Laingholm, which backs onto an area of regenerating Kānuka scrub/forest. The rest of the coastline is lined with coastal broadleaved forest, with one small pocket of exotic forest at Laingholm.
- Little Muddy Creek is an intertidal area with a variety of habitats from mudflats to rocky reefs and boasts an uninterrupted sequence from algal beds, mangroves, to coastal forest.
- Titirangi Beach Reserve is a bird hotspot.
- Consideration of actions to restore and enhance the coastline via mangrove restoration and enhancement at Little Muddy Creek/ Waiohua Creek, weed management around coastal cliff areas prone to slips like Paturoa Bay, dune planting and enhancement at Titirangi Beach Reserve and coastal planting to protect coastal assets and ecosystems.

Who have we heard from?

Feedback was received via Social Pinpoint, 'AK Have Your Say' survey, community submissions, in-person public engagement events and online information sessions (including a coastal hazards webinar).

The events local to this area were held at Titirangi Beach Hall and Titirangi War Memorial Hall. Neighbouring events are reflected in Volume 2. Outside of the engagement platforms, community feedback was also received through direct communication. In Unit 4, organisation submissions were received from Titirangi Residents and Ratepayers' Association and the Disabled Persons' Assembly.

Community Meeting: Titirangi Beach Hall (25th July 2023) and Titirangi War Memorial Hall (18th July 2024) was supported by the Waitākere Ranges Local Board. Key feedback is summarised below, noting that the Stickered Titirangi Areas Residents' Association attended the Titirangi War Memorial Hall event.

What is happening?

- The community experienced severe disruption and damage during the 2023 Auckland Anniversary flooding and Cyclone Gabrielle. The main impacts noted in responses included:
    - At Titirangi Bay, landslides made the beach inaccessible. There was debris on the beach, carparking areas and accessways.
    - At French Bay, there was significant damage to the amenities block, boats, road access and the coastline. A major landslip destroyed the coastguard building and threatened the French Bay Yacht Club and made the beach inaccessible.
    - Laingholm Beach (Sandy's Parade) banks to the left of the beach collapsed.
    - Feedback that Western Road has frequently been flooded, both by tidal surges across Sandys Parade and by stormwater runoff from the valley. Commentary noted that restoring the small wetland area at the corner of Western Road has helped improve the situation, however the entire beachfront area at Laingholm Beach remains low-lying, with concerns regarding sea-level rise and the likelihood of more frequent flooding.
    - Commentary that flooding from heavy rainfall leads to sewage overflows in Laingholm Valley, with pollution flowing into the marine environment.
    - Commentary that the January 2023 storms have caused or worsened slips along the Wood Bay coast, many of which have resulted in the loss of native bush, including a large pōhutukawa tree.
- Overall, the community was concerned about the ongoing vulnerability of Council assets in the reserves and roading infrastructure (such as Otitori Bay Road, Landing Road, Sandys Parade and Western Road), which connect the community.

What matters most? Community values and uses

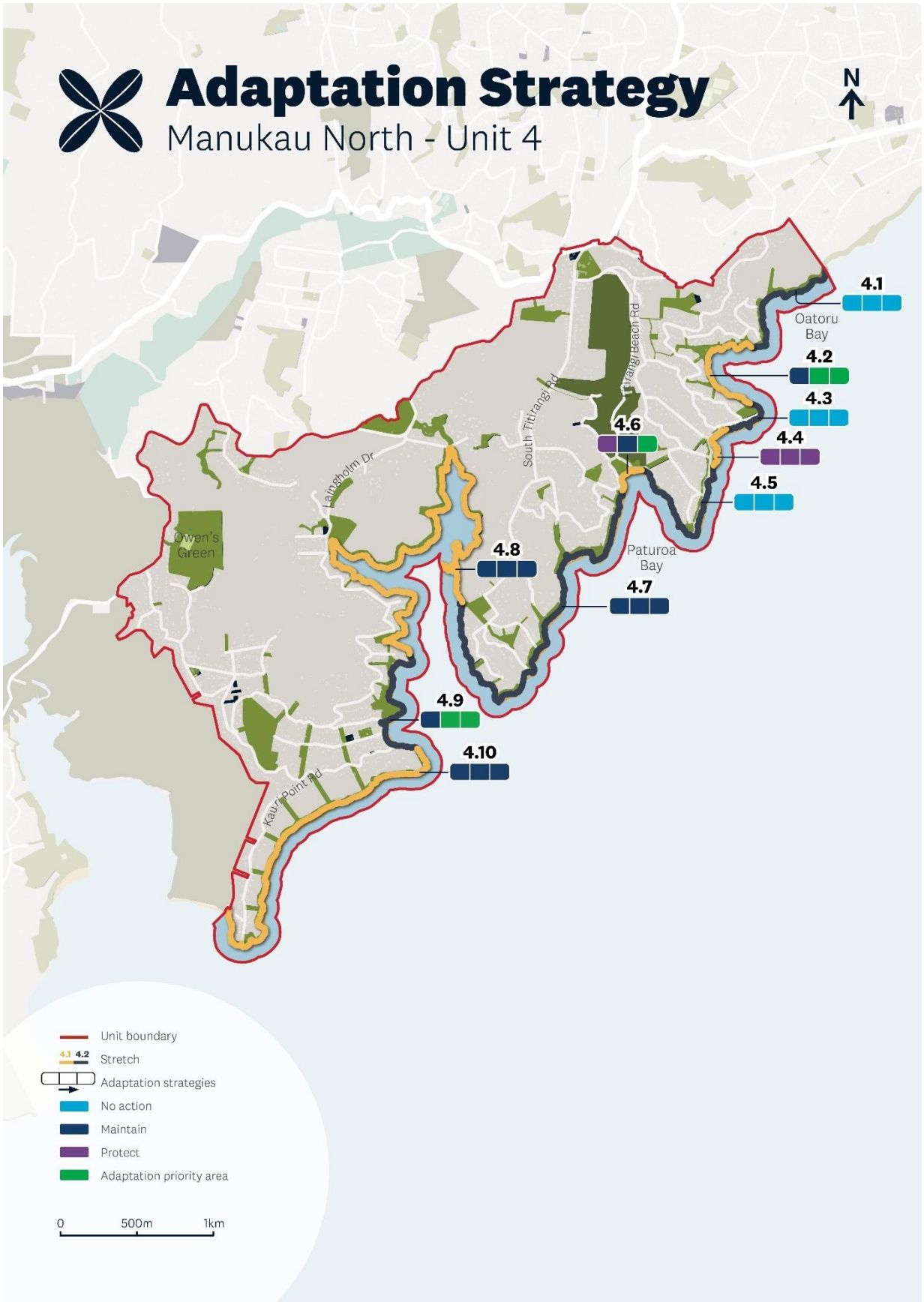
- Recreation activities are the dominant uses of this unit with the most common including walking and dog exercise, sailing, rock jumping, fishing, bird watching, swimming, picnicking and enjoying the scenery.
- Overall, the community valued this area for its beautiful natural environment, coastal connections and water access. The top values expressed by the community are as follows:
    - The Titirangi South boat ramp (Jenkins Bay boat ramp), French Bay boat club facilities and boat ramp, and Laingholm Reserve playground were valued community assets, noting feedback highlighted water-based activities (e.g. sailing) as popular activities in this unit.

  - French Bay and Titirangi Beach were valued for their scenery along with opportunities for exercise, swimming and water-based activities.
  - Laingholm Beach and Titirangi Beach Reserve are home to many shorebirds. The community actively volunteers to protect the native flora and fauna, with volunteers also helping to monitor the health of the water around Laingholm Beach.
  - Commentary that Laingholm Beach is a fantastic spot for community gatherings.

What can we do about it? Community feedback and aspirations

- The importance of coastal connections was noted. The tracks in Atkinson Reserve (Zigzag Track), Paturoa Esplanade, Opou Reserve, and Bill Haresnape Walk were seen as vital routes for many locals who rely on walking to get around the coast, emphasising the need to maintain and repair existing connections.
- Ongoing engagement and collaboration with local communities and residents alike in the implementation of coastal adaptation strategies. The Stickered Titirangi Areas Residents noted the impact of the 2023 storm events and the need to collaboratively, proactively manage coastal assets and infrastructure, with a focus on road reserves and the impact of hazards on these areas and adjacent private land.
- A need for proactive wellbeing support to be planned and implemented to assist with future events, as well as ongoing discussions about natural hazards, risks, and adaptation (highlighted by the Stickered Titirangi Areas Residents' Association).
- The Stickered Titirangi Areas Residents' Association expressed frustration that road reserves are not clearly recognised as Council-owned land which can cause confusion with respect to operational maintenance.
- Residents and community groups (the Titirangi Residents and Ratepayers' Association) strongly advocated for the consideration of the Waitākere Ranges Heritage Area Act (2008) and its purpose and objectives. Acknowledging this feedback, the Waitākere Ranges Heritage Area Act is discussed further in Volume 2.
- The French Bay Boat Club facilities and boat ramp are highly valued, with feedback highlighting the boat ramp as one of the few ramps on the northern side of the harbour. Additionally, enforcement to prevent people from blocking the ramp and ensuring that parking is fully available for boat owners was highlighted.
- The Laingholm and District Community Emergency Response Group highlighted the vulnerability of key access roads around the coast (Huia Road, Sandys Parade, Warner Park Ave and Woodlands Park Road), noting that many of these roads function as lifeline services (Sandys Parade – important for emergency vehicles in upper Laingholm's fire brigade headquarters, sole vehicle access to Western Road).
- Feedback highlighted the need to consider stormwater management in coastal management and recognise wildfire risk as a potential hazard.
- Investment in infrastructure and maintenance, stricter enforcement of best practices for stormwater management, and ongoing support for planting initiatives, with a focus on long-term sustainability.

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



4.1: Oatoru Bay to Wood Bay

This coastal stretch covers the area from Totara Crescent on the western boundary of the Pinesong retirement village through to Wood Bay. The stretch is predominantly unmaintained coastal esplanade reserve with no Auckland Council assets in close proximity to the coast.

Scenarios for change		
Low	**Moderate**	**High**
No action 	**No action** 	**No action** 
Explanation		
No action recognises that this stretch is largely in a natural state with no Council-owned assets near the coastline.		
Implementation Notes		
Ecology: Works to support the retention of ecological corridors across unmaintained reserve planting around coastal tracks is still accommodated with a no action strategy.		

4.2: Wood Bay

This coastal stretch covers the area from the end of Inaka Esplanade Reserve on the eastern edge through to Opou Reserve, covering the entirety of Wood Bay embayment. It includes many Council-owned assets including Wood Bay Reserve and park amenities (playground, toilets, path, park furniture and beach access ramps) and the wastewater pump station. Through community engagement, the park facilities, carpark and beach access at Wood Bay have been identified as significant community assets. The boat ramp provides recreational boat access to Manukau Harbour.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Adaptation Priority** 	**Adaptation Priority** 
Explanation		
Maintain under the low climate change scenario supports the maintenance of the coastal edge via existing coastal protection structures which support critical infrastructure (wastewater pump station and surrounding pipe network) and its functionality. **Adaptation priority** under the moderate and high climate change scenarios recognises the need to realign and relocate assets to manage risk. Further engagement with local iwi and local communities will be required to ensure that future planning for the management of assets and land at risk from coastal hazards responds to cultural values and social and community needs, including (and not limited to) maintaining access to the harbour.		
Implementation Notes		
• **Cultural:** This stretch is of identified cultural value acting as a link to local iwi Tanui ancestors and historically functioning as an important mahinga kai (food gathering) site, upholding tikanga within the wider catchment. Further engagement with local iwi will be required. • Watercare, the wastewater infrastructure asset owner, will monitor how coastal hazards may impact on operation of these assets and future implementation options.		

4.3: Opou Point

This coastal stretch covers the area from Opou Reserve through to French Bay Esplanade, encasing the entirety of Opou Point and Opou Reserve. Much of this stretch is densely vegetated with limited Council-owned assets in proximity to the coast.

Scenarios for change		
Low	**Moderate**	**High**
No action 	**No action** 	**No action** 
Explanation		
No action recognises that this stretch is largely in a natural state with limited Council-owned assets near the coastline.		
Implementation Notes		
• **No action** in relation to coastal defences, allowing for preservation of a natural coastal edge. • **No action** does not preclude ongoing maintenance of the existing coastal accessways connection to French Bay.		

4.4: French Bay | Otitori Bay

This coastal stretch covers the entirety of French Bay Esplanade, at the northern end of the sandy beach through to and including reclamation at the southern end of French Bay. Extensive reclamation has been undertaken along the toe of the cliff along the southern side of French Bay embayment in 3 stages (1940, 1963 and 1973) to form a recreational reserve and boat launching ramps (with associated parking) and the French Bay Boating Club. The reclaimed areas are exposed to coastal erosion and coastal inundation.

Scenarios for change		
Low	**Moderate**	**High**
Protect 	**Protect** 	**Protect** 
Explanation		
Protect across all climate change scenarios is required to provide ongoing maintenance and protection of the coastal edge via coastal protection structures in a fixed location. This will provide ongoing support to critical infrastructure and community assets of high amenity value (i.e. boat ramps and yacht club).		
Implementation Notes		
• **Ecology:** Options for incorporation of nature-based solutions in future management strategies to be considered.		

4.5: Shag Point Headland

This coastal stretch covers the area south of French Bay | Otitori Bay to Titirangi Beach Reserve, including accessways along Miha Road Reserve and Okewa Reserve. An undeveloped esplanade reserve, with steep cliffs is inaccessible to the public.

Scenarios for change		
Low	**Moderate**	**High**
No action 	**No action** 	**No action** 
Explanation		
A general approach of **no action** for coastal management will be applied.		
Implementation Notes		
• **Maintain** will be applied to provide for ongoing maintenance of safe public coastal accessways along the coast, noting community feedback highlighted the need to maintain coastal connections to and along the coast.		

4.6: Titirangi Beach Reserve

This coastal stretch covers the entirety of Titirangi Beach Reserve, starting from Aydon Road at its eastern boundary through to the western boundary of Titirangi Beach. Nearly the entire Titirangi Beach Reserve is within the 1% AEP floodplain. The lower area would be temporarily inundated in a 1% AEP storm event, and this inundation in the high change scenario with over 1 m of sea-level rise will impact wider areas of the reserve including playground, toilets and hall.

Scenarios for change		
Low	**Moderate**	**High**
Protect 	**Maintain** 	**Adaptation Priority** 
Explanation		
Titirangi Beach and the beach reserve have been identified as having significant community value due to the beautiful natural environment and opportunities for water-based activities including swimming. **Protect** under the low climate change scenario is required to support the provision and/ or maintenance of protection structures to protect highly valued community areas from increasing coastal hazard risk. **Maintain** in the moderate change scenario allows for ongoing maintenance of community spaces and coastal protection structures, whilst enabling an opportunity to transition to **adaptation planning** under a high climate change scenario. This signals the need to review services that can be sustained within the existing reserve area and the potential need to relocate assets to manage risks in the future with ongoing sea-level rise. Further engagement with local iwi and local communities will be required to ensure that future planning responds to cultural values and social and community needs.		
Implementation Notes		
• **Coastal access:** The strategies recommended support for ongoing maintenance of access to and along the coast via walking connections and road networks.		

4.7: Paturoa Bay to Laingholm Point

This coastal stretch contains the area from the western side of Titirangi Beach around Laingholm Point to Tamariki Reserve, encasing several esplanade reserves and isolated coastal access points (including Paturoa Esplanade, Davies Bay Reserve, Alex Jenkins Memorial Reserve and Arapito Foreshore Reserve).

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Maintain** 	**Maintain** 
Explanation		
Maintain has been applied to this stretch under all climate change scenarios to provide for the ongoing maintenance of safe, public coastal access points along the coast. Potential localised realignment of some areas of the pathway may be required in the moderate to high change scenario to avoid or respond to coastal instability.		
Implementation Notes		
• **Maintain** in relation to coastal accessways. A general approach of **no action** is anticipated in relation to coastal defences, allowing for a focus on preserving a natural coastal edge and acknowledging the limitations of hard coast protection structures along this coastline. • **Advocacy:** Ongoing weed management and restoration planting along exposed coastal margins to support erosion risk management by reducing the impact of weathering and providing root reinforcement to exposed soils.		

4.8: Wai-kumete | Little Muddy Creek

This coastal stretch covers the inner Wai-kumete | Little Muddy Creek coastline from the northern edge of Tamariki Reserve to Dorothy Road (Laingholm Drive Esplanade).

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Maintain** 	**Maintain** 
Explanation		
Assets are generally setback from the coast at this location. **Maintain** over all change scenarios allows for the retention and ongoing maintenance of community connections, including ongoing maintenance of roading infrastructure (e.g. Landing Road).		
Implementation Notes		
• **Closed landfill:** Management of the historic closed landfill area around Little Muddy Creek reserve (and Tangiwai Reserve further landward) will be managed under the Closed Landfill Asset Management Plan. The Closed Landfill Team will advise on any specific considerations that may impact the implementation of adaptation strategies. • **Road infrastructure:** Auckland Transport, the asset manager, will monitor how coastal hazards may impact on operation of these assets and future implementation options. • **Ecology:** Opportunities for mangrove restoration and saltmarsh enhancement at Wai-kumete	Little Muddy Creek / Waiohua Creek can be supported under this strategy.	

4.9: Laingholm Beach

This stretch contains the area from Dorothy Road through to the southern end of Sandys Parade, encasing the entirety of Warner Park, Sandys Parade Road and Laingholm Beach. Within this stretch, many Auckland Council-owned assets, land and infrastructure are susceptible to coastal hazards over changing climate scenarios.

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

Explanation

Maintain under the low climate change scenario provides for the maintenance and renewal of existing, consented coast protection structures and park assets particularly within Sandys Parade, noting that minor landward realignment may be required as structures are renewed.

Adaptation priority under moderate and high climate change scenarios, assuming continued sea-level rise, is signalled to respond to increasing hazard risks to roading, parks and wastewater assets. Further engagement with local iwi and local communities will be required to ensure that future planning for the management of assets and land at risk from coastal hazards responds to cultural values and social and community needs.

Implementation Notes

- **Road infrastructure:** Community feedback highlighted the vulnerability of roading networks within this stretch, noting the frequent flooding of Western Road (both by coastal inundation across Sandys Parade and by catchment flooding). Proactive consideration of roading networks and ongoing engagement with residents within this stretch (i.e. along Western Road) to manage coastal hazard risk is strongly encouraged. Feedback also emphasised the importance of maintaining and ensuring future provision of critical access routes for emergency services.
- **Nature-based solutions:** Future opportunities for nature-based solutions to assist in wave attenuation, along with revegetation of low-lying grasses to promote stabilisation are supported through this strategy.

4.10: Taumatarea Esplanade

This coastal stretch covers approximately 2.4 km of coastline between Tokoroa Point at the southern end of Laingholm Bay and Taumatarea Point. It includes a series of discrete coastal accessways along Taumatarea Esplanade that connect to the landward Kauri Point Road.

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

Explanation

Acknowledging the natural topography of this stretch**, maintain** across all three climate change scenarios accommodates ongoing maintenance of accessways to the coast.

Implementation Notes

- **Coastal access:** This strategy supports the ongoing maintenance of access routes and walking tracks in a way that supports the natural coastal edge (i.e. more coastal planting, weed management) and provides for management of stormwater systems, as advocated for by community feedback.

Unit 5
Manukau North

N

Lower Nihotupu Dam

The lower Nihotupu Dam is a significant water asset supplying around 5% of Auckland's water

Waitakere Ranges Regional Park

Laingholm Dr

Lower Nihotupu Reservoir

Huia Road is exposed to catchment flooding as it lies below the Lower Nihotupu Dam. The community has expressed the need to protect this critical roading connection, which provides access to Huia and Whatipū

Huia Rd

Waitakere Ranges Regional Park

Victory Rd

Laingholm Beach

Intact sequences of seagrass, mangroves, and saltmarsh transitioning to shelly beaches in Big Muddy Creek provide important habitat for bird species that feed, nest, and roost under the continuous cover

Symonds Bay

Big Muddy Creek

Huia Rd

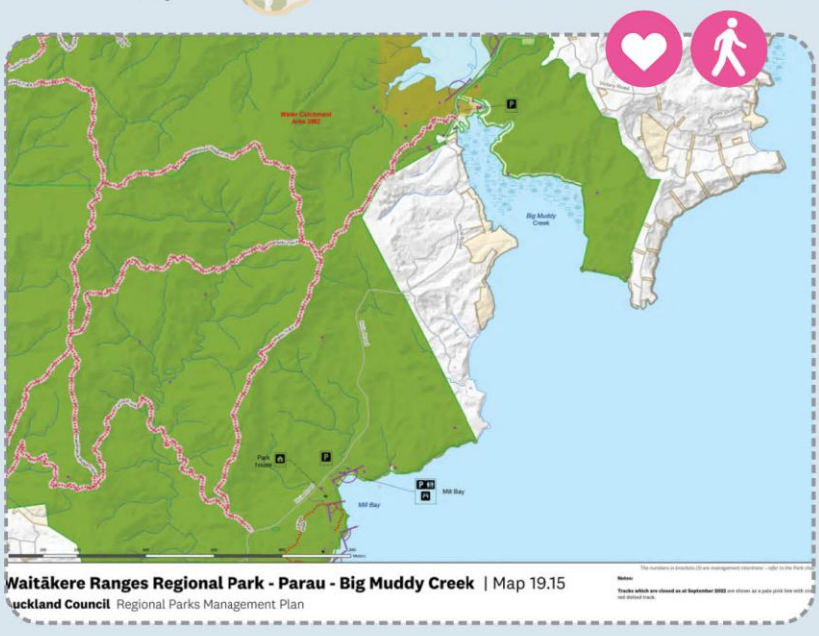
Big Muddy Creek

Kauri Point Rd

Bokel Bay

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

Big Muddy Creek highlighting coastal ecosystem and low lying nature of road network



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

0 500m 1km

Unit 5: Big Muddy Creek

This unit is located within the Waitākere Ranges Local Board area and has a comparatively smaller area to the other units in this SAP, covering about 3.5 km of the coast. It extends from the section of Waitākere South Regional Park on the eastern side of Big Muddy Creek up to Huia Road on the northern boundary. The unit includes only one coastal stretch.

What is happening? Coastal context and hazardscape

This unit takes in the eastern coastline of Big Muddy Creek/Paruroa from Bokel Bay and Symonds Bay north to Huia Road. Most of coastline is steep and well vegetated, with coastal cliffs and slopes ranging from 10 to 75 m high. There are no settlements within the area.

This shoreline is a low wave-energy harbour environment. Bokel Bay, located in the outer inlet to the west of Taumatatea Point, is more exposed and is fronted by sandy intertidal flats. Symonds Bay on the eastern shoreline consists of a wide shallow intertidal area infilled with mangroves backed by coastal forest.

Figure 7: Big Muddy Creek looking landward from Takaranga Reserve, showing a gradient of mangrove to native bush. Source; Cat Davis.

Coastal erosion, instability and inundation

This unit is predominantly sheltered in nature. As a result, there is limited exposure and susceptibility to coastal hazards at this location as indicated in Figure 8. Noting the predominantly steep terrain, susceptibility to coastal erosion and instability is higher.

However, there are very limited Council assets exposed within the densely vegetated areas of Waitākere Regional Park. Exposure to coastal inundation is limited to the sparse, low-lying sections of coast within this unit.

Flooding

Flooding within the 1% AEP floodplain is predicted to occur on localised sections of Huia Road below the Lower Nihotupu Reservoir.

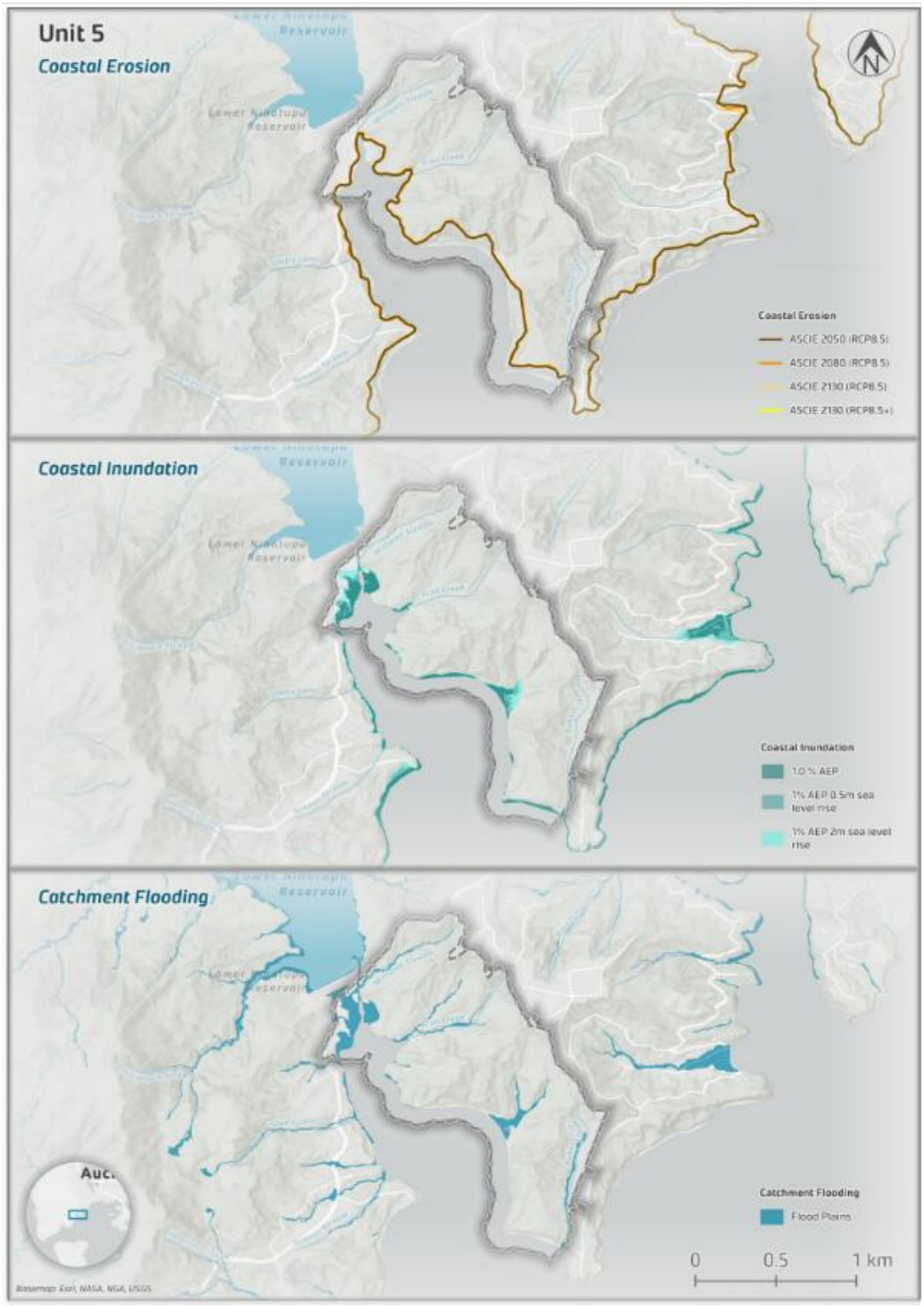


Figure 8: Coastal hazardscape for the Big Muddy Creek Unit reflecting coastal erosion susceptibility for 2050, 2080 and 2130 considering RCP4.5 and RCP8.5 emission scenarios, coastal inundation for 1%AEP storm surge for present day and with 0.5 m, 1 m and 2 m sea-level rise and the identification of 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). 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.

At a unit level, both coastal erosion and coastal inundation risk ratings are between none to medium, reflective of the absence of Council-owned assets in this unit area. Coastal erosion susceptibility tends to be a higher risk to Council-owned land, reflecting the lack of assets and limited low-lying coastal land (for coastal flooding).

Risk from coastal erosion susceptibility and coastal inundation to identified piped water infrastructure is low in the short term and does not change. However, as only linear water pipes and assets were included in the risk assessment, this risk rating does not reflect Watercare assets such as the Lower Nihotupu Dam and surrounding infrastructure.

Council-owned land			**Council Community facilities**			**Transport infrastructure**			**Water infrastructure**		
Park and reserve land (145.3 ha) Buildings, wharves (0 No.)			Park amenity structures, carparks, accessways, buildings (0 ha)			AT roads (1.1) Bridges (4.7 m^2)			Water pipes (2.1 km)		
Short	Medium	Long	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Coastal erosion susceptibility											
Medium	Medium	Medium	None	None	None	None	None	None	Low	Low	Low
Coastal inundation											
Low	Low	Medium	None	None	None	None	None	None	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 over changing climate scenarios.

- Waitākere South Regional Park.
- Big Muddy Creek Landing.

- There is no Auckland Council-maintained park infrastructure within this unit.
- Watercare managed carpark.

- The Lower Nihotupu Dam and reservoir run-off channel flows through this unit into Big Muddy Creek.

- Huia Road provides a vital connection to the rest of the SAP area, being the only road access to Huia and Whatipu.

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.

- 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.

- Apart from the Watercare-managed carparks off Huia Road, there are no publicly used assets. in this unit.

  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.

- The majority of this unit is covered by kauri, podocarp and broadleaved forest, with mangroves and saltmarsh habitat in the upper reaches providing important marine and terrestrial linkages.
- There is an intact sequence of seagrass, mangrove to coastal forest, along rocky shelves and shelly beaches in Big Muddy Creek (SEA), providing for important marine and terrestrial linkages.
- The location is an important habitat for bird species which feed, nest and roost under continuous cover. This is one of only two examples in the ecological district of the intact sequence from mangrove forest, to coastal pōhutukawa forest to puriri forest to coastal kānuka forest on southern foothills.
- Due to the natural character of the unit and the minimal amount of assets that need coastal protection, Unit 5 could be left to naturally respond to coastal climate change pressures. Opportunities to restore and enhance the coastline could include mangrove and saltmarsh enhancement towards the upper reaches of Big Muddy Creek. These actions may help protect Huia Road, as the main access road to the Manukau North coast.

Who have we heard from?

Feedback was received via Social Pinpoint, 'AK Have Your Say' and community submissions (from the Waitākere Ranges Heritage Protection Society and Friends of Regional Parks). Aside from this, feedback was limited, reflecting the natural coastline and limited presence of Council-owned land and assets. In-person events are reflected in Volume 2.

What is happening?

- Commentary on the impact of the Lower Nihotupu Dam outflow and the resulting flooding across Huia Road, impacting key roading connections.

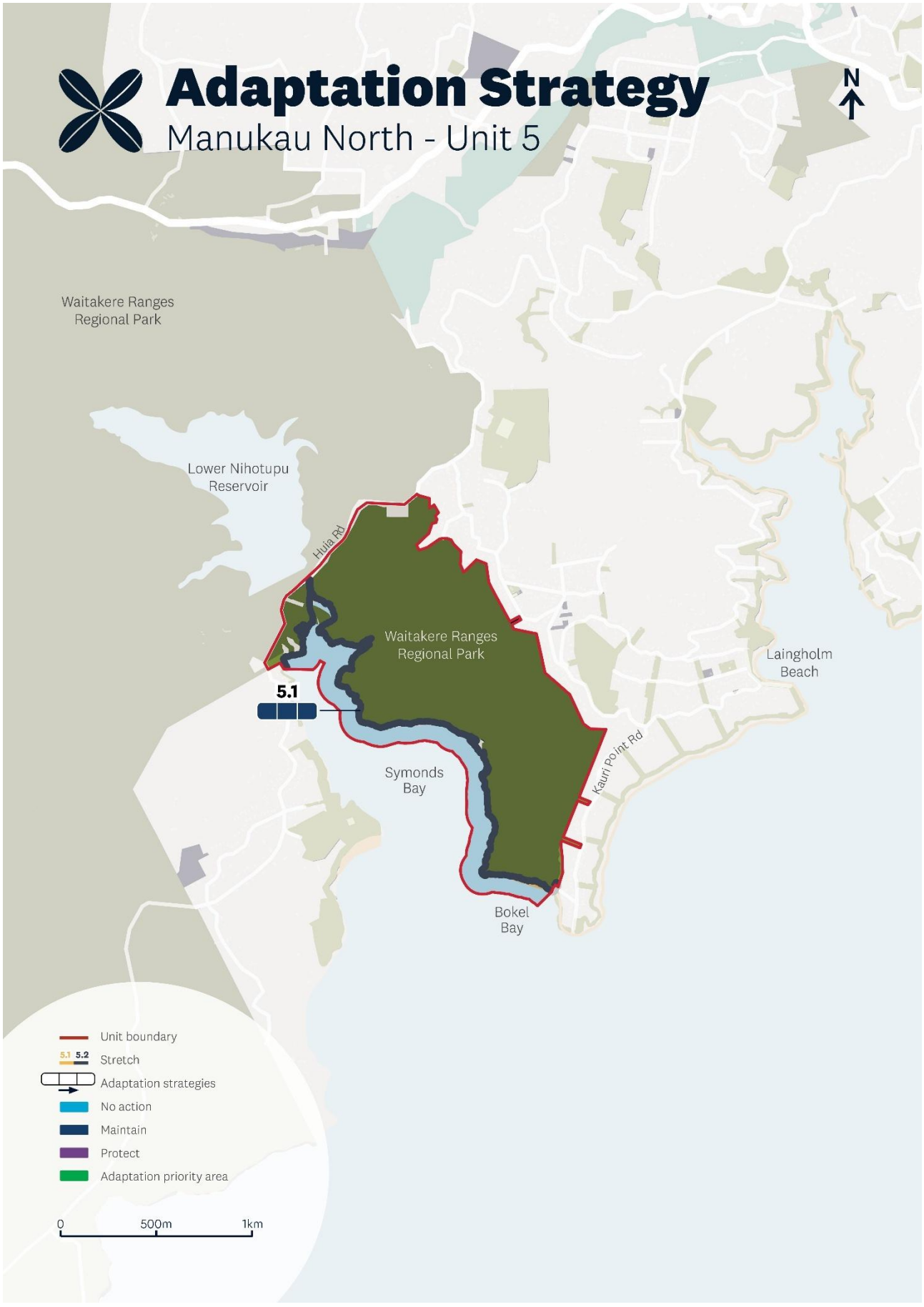
What matters most? Community uses and values

- There was limited public feedback on this unit, which was primarily seen as a place to stop and view the dam.
- Walking tracks within the Waitākere Ranges Regional Park were highly valued by both residents and visitors alike.

What can we do about it? Community feedback and aspirations

- Submissions (from the Waitākere Ranges Protection Society) highlighted that the Waitākere Ranges Heritage Area is of local, regional and national significance due to its unique heritage features, which include the prominent indigenous character of its terrestrial and aquatic ecosystems. The submission highlighted that the objectives of the Act need to be considered in coastal management planning.
- The impact of the Lower Nihotupu Dam outflow and the resulting flooding across Huia Road at this location needs to be actively managed.
- Ongoing maintenance of walking tracks within the Waitākere Ranges Regional Park.

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



Unit 6
Manukau North

Waitakere Regional Park

Waitākere Ranges Regional Park - Cornwallis | Map 19.16
Auckland Council Regional Parks Management Plan

N

Community feedback advocated for ensuring continued pedestrian access between Takaranga Reserve and Armour Bay

Armour Bay highly valued for easy boat launching and mix of spaces enabling various activities such as walking, swimming and tennis facilities

Takaranga Reserve

Huia Rd

Armour Bay

Shirley Rd

Huia road provides critical connections to and along the coast in this unit

Swanson Bay

Fletcher Bay

Waitakere Ranges Regional Park

Huia Rd

There are a number of significant cultural sites within the Cornwallis area, known to local iwi as Karangahape. These include the Karangahape pā and one of the largest known middens in the Waitākere Ranges

Mill Bay

Jubilee Walk

Pine Ave

Cornwallis Rd

Cornwallis Beach & Wharf

Cornwallis Beach

Community feedback highlighted that Kakamatua access to the beach via the track adjacent to stream, is vulnerable to inundation, flooding, landslips and erosion

Kakamatua Inlet

Cornwallis Rd

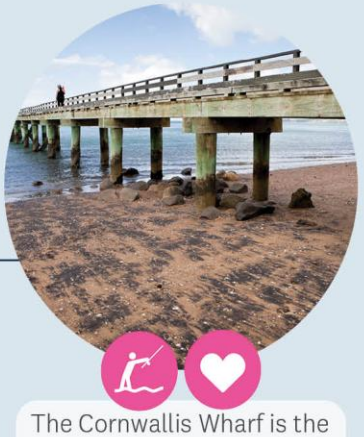
Kakamatua has saltmarshes and sand flats that provide important bird habitat

Daniel Bay

Herald Bay

Torea Bay

Puponga Point



The Cornwallis Wharf is the only wharf on the North Manukau coast, it is highly valued by the community

- Unit boundary
- 6.1 6.2 Stretch
- Informal recreation park
- Regional park
- Auckland Council owned land

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

Unit 6: Karangahape | Cornwallis

The unit sits within the Waitākere Ranges Local Board area and includes the residential settlements of Parau and Cornwallis. It extends approximately 11 km from Parau around the western shoreline of Big Muddy Creek/Paruroa along Cornwallis Beach to Kākāmatua Inlet on the western side of Cornwallis Peninsula. The northern boundary of the unit runs well beyond Huia Road into the Waitākere Ranges Regional Park. The unit covers five coastal stretches.

What is happening? Coastal context and hazardscape

The shoreline is largely coastal cliff and steep hillslopes (5-50 m high) formed in East Coast Bays sediments of alternating sandstone and mudstone with variable volcanic content. There are several small headland bay beaches along this shoreline, and mangrove forest inhabits the heads of Big Muddy Creek embayment.

Armour Bay is situated south of the small headland (Caven Point) on the western shoreline of Big Muddy Creek and is a southwest-facing sandy beach approximately 200 m long. The dry, high tide beach area is backed by a low scarped grass reserve and is fronted by wide intertidal sand flats with exposed rocky shore platform to the south.

Karangāhape | Cornwallis Peninsula provides shelter to inner harbour shorelines from high-energy swell waves driven into the harbour from the Tasman Sea during extreme storms. The east-facing shoreline is a low wave-energy harbour environment, despite being subject to some of the longest fetch within Manukau Harbour. Around Cornwallis wharf, the shoreline is punctuated with small pockets of beaches of sand and stable cobbles. Karangāhape Peninsula beyond Cornwallis Beach has steep coastal cliffs, dropping away to the deep channel that runs between the north and south coasts of the Manukau Harbour heads.

Coastal erosion and instability

The sheltered, inner harbour environments on the lee of Cornwallis Peninsula, including Big Muddy Creek have typically low susceptibility to coastal erosion and instability. Predicted susceptibility extent vary between beach and cliff erosion processes and the topography of the coast in the order of 30 to 50 m under the high climate change scenario.

The steeper terrain of Cornwallis Peninsula, particularly at the more exposed southern point and western face, have greater areas susceptible to coastal erosion and instability.

There are multiple existing coastal protection structures along this section of coastline. Some of the key features are as follows:

- The headland to the east of Armour Bay is armoured with grouted rock seawall[4] constructed around the base of the cliff in the 1970s.

[4] Consent 22709/23454

- There is short length of masonry seawall armouring the pedestrian bridge abutment in Mill Bay.
- At northern Cornwallis Beach, a timber training wall prevents the stream outlet eroding the northern bank and undermining established trees.
- Remediation work at Cornwallis Wharf was completed in 2021 comprising maintenance to repair decking, lower landings and steps and treatment/wrapping to preserve wharf piles. The original wharf was built in 1926 and has a strong history of community stewardship through the Save Cornwallis Old Wharf (SCOW) group which was formed in 1994.
- There is tipped rock armouring the carparking area adjacent to Cornwallis Wharf.

Key coastal structures in this unit are depicted below:

Footbridge and masonry abutments at Mill Bay. The abutments were renewed by Auckland Council in 2022.

Mill Bay Footbridge (Source: Auckland Council)

Rock armouring of carparking area at Cornwallis, with Cornwallis Wharf in the background.

Cornwallis Wharf Carpark (Source: Auckland Council)

Coastal inundation

Exposure to coastal inundation across this unit is confined to the limited areas of low-lying land at Big Muddy Creek, Hemsley Creek, Mill Bay and the Kakamatua Inlet. Council-owned assets exposed from the low change scenario include at Armour Bay (carpark, access road and relocatable parks infrastructure), Pine Avenue carpark and Cornwallis Wharf carpark.

Flooding

Flooding as a result of a 1% AEP rainfall event is also predicted to affect low-lying areas, with Auckland Council property and built assets at risk at Armour Bay Reserve, Cornwallis and Mill Bay. Swanson Bay and Fletchers Bay. All are within the 1% AEP floodplain, including flood-prone areas. Numerous overland flow paths drain to the harbour.

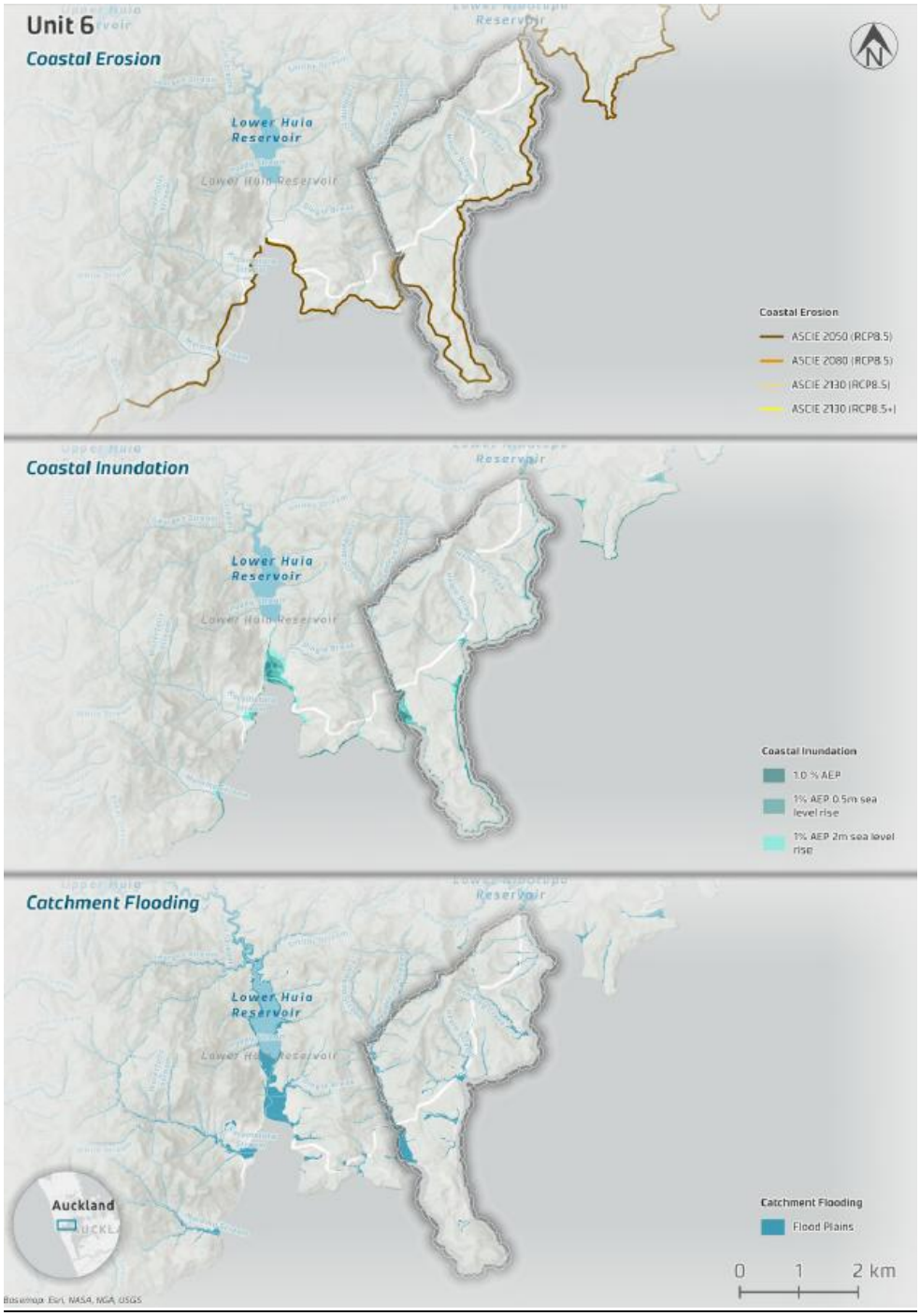


Figure 9: Coastal hazardscape for the Karangahape / Cornwallis Unit reflecting coastal erosion susceptibility for 2050, 2080 and 2130 considering RCP4.5 and RCP8.5 emission scenarios, coastal inundation for 1%AEP storm surge for present day and with 0.5 m, 1 m and 2 m sea-level rise and the identification 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).

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.

At a unit level, there is a high risk from coastal erosion susceptibility to Auckland Council-owned land, Auckland Council community facilities, environmental and culture and heritage from the short term. Impacted community facilities include recreational amenities such as car parking and picnic facilities.

The culture and heritage grouping is rated very high risk from coastal inundation in the medium to long term, the highest risk rating of all six groupings (predominantly archaeological sites and historic structures on the coastal edge). This area has very limited water infrastructure given the two small settlements, with roading mainly located back from coastal margins which accounts for the lower risk scoring for these groupings. The eastern side of the Kakamatua Inlet is an area of potential coastal inundation.

Council-owned land			**Council Community facilities**			**Transport infrastructure**			**Water infrastructure**		
Park and reserve land (628.9 ha) Buildings, wharves (29 No.)			Park amenity structures, carparks, accessways, buildings (2.4 ha)			AT roads (9.2) Bridges (198.6 m^2)			Water pipes (8.4 km)		
Short	Medium	Long	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Coastal erosion susceptibility											
High	High	High	High	High	High	Low	Low	Low	Low	Low	Low
Coastal inundation											
Moderate	Moderate	Moderate	High	High	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 over changing climate scenarios.

- Waitākere South Regional Park.
- Takaranga Reserve.
- Karangahape / Cornwallis and Kakamatua.
- Armour Bay Reserve.
- Mill Bay.

- Takaranga and Armour Bay Reserves include a range of amenities including playground, courts, toilets, parking areas.

- Takaranga, Armour Bay, Karangahape / Cornwallis have walking tracks.
- Kakamatua Beach walk.

- There is a 193 m long wharf at Cornwallis.
- Amour Bay boat ramp.
- Beach launching from Cornwallis.

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.

- 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.
- There are a number of significant cultural sites within the Cornwallis area, known to local iwi as Karangahape. These include the Karangahape Pā and one of the largest known middens in the Waitākere Ranges.
- A pou whenua on Cornwallis Beach acknowledges local iwi associations to the area.
- European heritage features are the Orpheus Graves Monument overlooking Kakamatua and the McLachlan Monument on Puponga Point.
- 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.

- Cornwallis Beach, Waitākere South Regional Park is one of Auckland's busiest regional parks. It is a major beach destination for swimming in calm waters with extensive picnicking areas and open spaces that are popular with families and large groups.
- Cornwallis wharf, the only wharf on the Manukau North Coast, is valued by the community and a popular fishing spot.
- Boat launching from the beach is also popular.
- 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.

- On the western side of Karangāhape | Cornwallis Peninsula is the Kakamatua Inlet (SEA), where the stream forms the boundary of this unit. Kakamatua has saltmarshes and sand flats that provide important bird habitat. The coastline has high intertidal biodiversity value and bird habitat, and the whole unit area is covered by the terrestrial significant ecological area.
- Lawry Point Coast (SEA) is a 2 km stretch of coastline which contains high intertidal biodiversity value. There are several specified species which are considered rare, including perhaps the richest sea squirt habitat on the north Manukau Harbour coast just north of Lawry Point.
- Opportunities to restore and enhance the coastal margin may include riparian planting along the river edge to stabilise the dune edge and to protect the coastal walkway at Kakamatua Inlet; coastal weed management and native planting to prevent erosion of the cliffs on the Karangāhape Peninsula; and monitoring and enhancing the intertidal seagrass beds along the coastline.

Who have we heard from?

Feedback was received via Social Pinpoint, 'AK Have Your Say' survey, community submissions, in-person public engagement events and online information sessions (webinar). The events local to this area included the Huia Community Hall, Titirangi Beach Hall and Titirangi War Memorial Hall, and Glen Eden Library drop-in session. Neighbouring events are reflected in Volume 2.

Outside of the engagement platforms, community feedback was also received through direct communication and submissions, noting community submissions were received from the 'Save Cornwallis Old Wharf Society', the Huia Cornwallis Community Group, 'Friends of Regional Parks' and individual submissions from residents (i.e. Huia and Cornwallis residents).

What is happening?

- The Anniversary Day floods caused slips at Cornwallis and there was debris on the beach/access/carpark. The community expressed concern that the park and associated amenities need to be protected from erosion.
- The access track to Kakamatua Beach, located alongside the stream, is susceptible to inundation and flooding.

What matters most? Key community uses and values

- Cornwallis has been described as 'popular, family friendly, accessible, scenic and historic'. Some of the key uses and values are below:
    - One of the most frequented beaches on North Manukau coast, known for its spaciousness and welcoming atmosphere.
    - Cornwallis Wharf is the only wharf on the North Manukau coast, highly valued by the community. The road network around Cornwallis was commented as being heavily trafficked.
    - The area is dog friendly.
    - Beautiful pōhutukawa, bush and birdlife.
    - The most common activities included swimming, walking, fishing, kayaking and picnicking.
- Armour Bay was mentioned for easy boat launching and people liked it for its mix of spaces suitable for various activities such as walking, swimming and tennis.
- Kakamatua is an extremely popular dog walking area, and it was suggested it was the most popular off-leash dog beach in Auckland. Concern was voiced about the track to the beach being vulnerable to flooding and inundation.

What can we do about it? Community feedback and aspirations

- Cornwallis is heavily used by the West Auckland communities; advocacy for Council to work with locals to develop and implement strategies that protect these beaches from erosion.
- Desire for the wharf and its access to be protected from erosion.
- Protecting/ maintaining vulnerable roading connections including Huia Road.
- Commentary that the toilet block and buried septic system at Armour Bay need to be relocated.
- Kakamatua – advocacy for additional parking to better accommodate access.
- Preserve pedestrian access connecting Takaranga Reserve and Armour Bay.

- ‘Friends of Regional Parks’ submission strongly advocated for ensuring/ retaining public access to the shoreline and protecting vital roads and power and telecommunications infrastructure.
- Emergency response: ‘Friends of Regional Parks’ highlighted that the proposed relocation of the Coast Guard Quick Response Unit to the Council depot at Pine Avenue requires continued quick access to the beach from the Pine Avenue car park for emergency responses (and access to the wharf to bring in boats and people during rescues and emergencies). Protecting the shoreline at Pine Avenue, including the vehicle bridge across the stream, is vital to continuing to provide access for emergency craft.
- Road networks: Feedback highlighted storm damage to road networks providing access to and along the coast and the need for ongoing maintenance of coastal connections.

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

6.1: Big Muddy Creek to Armour Bay

This coastal stretch covers the area from Big Muddy Creek Landing through to Takaranga Reserve just shy of Armour Bay, covering an edge of the Waitākere South Regional Park and Parau.

Scenarios for change		
Low	**Moderate**	**High**
No action 	**No action** 	**No action** 
Explanation		
No action acknowledges the unmaintained natural coastline, with no Council-owned land or assets present within this stretch. The strategy allows for the promotion of natural landscapes and cultural values.		
Implementation Notes		
• **Ecology:** This strategy does not preclude, where possible, monitoring and enhancing natural ecosystems along the coastline noting the expanses of mangrove forest and saltmarsh within this stretch. • **Heritage:** Sections of stretch are subject to the Waitākere Ranges Heritage Area Act (2008). • **Cultural:** Ongoing engagement with local iwi to understand aspirations and intentions.		

6.2: Armour Bay

This stretch covers the area from Takaranga Reserve through to the southern end of Armour Bay Reserve, encasing the entirety of Takaranga Reserve (playground and path) and Armour Bay (internal park roads, two carparks, network of paths, toilets, playing courts, boat ramp and retaining wall and park furniture).

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Maintain** 	**Maintain** 
Explanation		
Maintain over all climate change scenarios recognises the significance to the local community of both Armour Bay and Takaranga Reserve and aims to support maintenance of the existing coastal access structures, access to key community facilities and the coast. Localised landward reconfiguration of key services and assets (i.e. carpark at Armour Bay) within the wider reserve area to respond to increasing inundation risk may be required under the moderate and high climate change scenarios.		
Implementation Notes		
• **Coast protection:** The coastal edge to the west of Armour Bay is in a natural state with a flat area of grass reserve landward with a low scarp along the backshore of the beach. No further/ new coastal defence structures are anticipated within this stretch to preserve the natural character of the area and recognising the space available to reconfigure assets within the reserve (as required). • **Ecology:** Where possible, monitor and enhance natural ecosystems along the coastline.		

6.3: Armour Bay to Lawry Point

This stretch contains the area from Armour Bay Reserve through to Lawry Point, encasing Swanson Bay and Fletcher Bay. There are no Council reserve or assets present in this stretch in proximity to the coast.

Scenarios for change		
Low	**Moderate**	**High**
No action 	**No action** 	**No action** 
Explanation		
No action acknowledges the unmaintained natural coastline with no Council-owned land or assets present and allows for the promotion of natural landscapes and cultural values.		
Implementation Notes		
• **Ecology:** No action does not preclude actions to support ecological outcomes.		

6.4: Lawry Point to Cornwallis Wharf/Reserve

This coastal stretch covers approximately 3.8 km of coastline and contains the area from Lawry Point through to the end of Cornwallis Road in the Waitākere Ranges Regional Park. It includes Mill Bay, Cornwallis Beach, and the main area of Cornwallis within the regional park (including Cornwallis Wharf).

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Maintain** 	**Maintain** 
Explanation		
Maintain across all climate change scenarios recognises the significant recreational value of the Karangahape/ Cornwallis Reserve and wharf, a popular spot for fishing and boat launching, and the subsequent importance of roading and accessways to and along the coast. Maintain provides for the ongoing maintenance of accessways, amenities and existing coastal structures while preserving the natural character of this unique coastline.		
Implementation Notes		
• **Management of access points:** Retaining safe public access both to and along the coast in a sustainable manner to manage the impacts of coastal hazards is key for this stretch. • **Management of coastal protection structures:** The existing rock rip rap fronting the carpark at Cornwallis Wharf is regularly overtopped, resulting in scour of the coastal edge, and displacement of some rocks onto the adjacent beach. Investigation of more resilient management options at this location are required with reference to the Regional Parks Management Plan 2022. • **Community feedback:** 'Friends of Regional Parks' highlighted the importance of protecting key roading connections vulnerable to flooding and sea-level rise (i.e. Huia Road and Cornwallis Road), protecting key beaches like Cornwallis Beach and supporting assets (wharf). The strategy of maintain over all timeframes provides for this.		

6.5: Cornwallis Wharf/Reserve to Puponga Point/Kakamatua

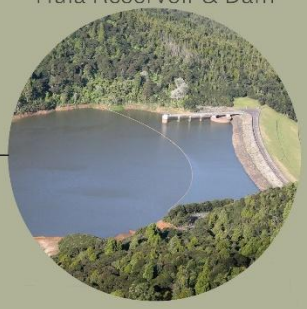
This coastal stretch covers approximately 5.6 km of coastline and contains the area south of the wharf through to the Kakamatua Inlet connecting into Huia Road. The Kakamatua Beach walk is located to the south of this stretch and is a popular walking destination.

Scenarios for change		
Low	**Moderate**	**High**
No action 	**No action** 	**No action** 
Explanation		
No action recognises the undeveloped, natural coastline within this stretch, making up part of the Waitākere Ranges Regional Park.		
Implementation Notes		
• **Access:** At Kakamatua Inlet, riparian planting along the river mouth to stabilise the bank which is being cut away. to protect the coastal walkway can be undertaken. • **Ecology:** Opportunities for weed management and revegetation planting to prevent erosion of the cliffs on the Karangāhape Peninsula and to enhance the vegetation already present are not precluded by this strategy.		

Unit 7
Manukau North

N

Huia Reservoir & Dam



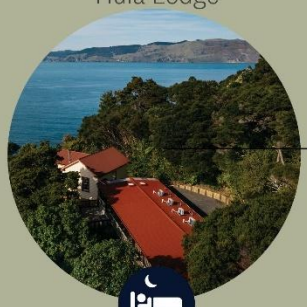
Waitakere Ranges Regional Park

The community expressed the importance of the Huia Road connection to maintain access to Little Huia and Whatipū and for maintaining lifeline services

Huia Domain

Community feedback strongly advocated for ongoing protection of the Huia road network, along with community facilities at Huia Domain (i.e. playground, and carpark)

Huia Lodge



The coastal landscape in this unit is of high cultural significance

Community feedback advocating for the ongoing maintenance of roading connections to Whatipū

Karamatura

Huia Bay

Huia Rd

Donald Mclean Lookout

Orpheus Bay

Kaitarakihi Beach

Little Huia

Huia Road provides critical connections to and along the coast in this unit. In places, the road is directly adjacent to the coastline at Huia and Little Huia, requiring ongoing management

Gibbsons Track

Whatipū Lodge

Whatipu Rd

Waterfall Bay

Boulder Bay

Whatipu Caves Track

Omanawanui Track

Manukau Heads

Whatipū

Paratutae Island

Community feedback for Little Huia expressed aspirations for a boat ramp and ongoing provision of water access

Waitakere Ranges Regional Park

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

Unit boundary

7.1 7.2 Stretch

Informal recreation park

Regional park

Auckland Council owned land

0 1km 2km

Unit 7: Huia

This unit is located within the Waitākere Ranges Local Board area, covering a large portion of the Waitākere Ranges Regional Park, from the west side of Kakamatua Bay to the western boundary of the SAP at Whatipu (including Paratūtae). The northern boundary of the unit runs well beyond Huia Road into the Regional Park. The unit covers six coastal stretches.

The extensive Waitākere Ranges Regional Park adjoins much of this unit and forms the highly naturalised coastline. The rugged terrain restricts access to and along this shoreline, though access to the harbour is provided at various locations, such as in/near the small coastal settlements Foster Bay, Huia Bay and Little Huia, and via reserves at Kaitarakihi, Karamatura/Hinge Bay and Whatipu.

Huia Road traverses along this unit, transitioning to Whatipu Road to the west at Little Huia. The roads are located mainly at a distance inland, however in places, the road is directly adjacent to the coastline at Huia and Little Huia.

What is happening? Coastal context and hazardscape

The stretch of coastline to the west of Cornwallis Peninsula to Whatipu Beach forms the northern headland of Manukau Harbour. The mouth of the harbour is approximately 2.5 km wide and is constricted by Awhitū Peninsula to the south and Whatipu to the north.

This coastline is rugged and indented, formed in volcanic and sedimentary rocks. Cliffs and hillslopes range from 100 – 300 m in height in places (such as between Huia and Whatipu). Coastal landform features include exposed steep rock cliff faces, small caves, slopes with undercut, and reasonably narrow wave-cut platforms which may have boulder and/or gravel beach deposits on them. There are small sandy/shelly beaches along the shoreline, including at Kaitarakihi, Fosters and Huia bays. Broad intertidal flats fill indented areas within Huia Bay and Kakamatua Inlet. There are small cobble beach areas on the western shoreline at Hinge Bay at the mouth of the Karamatura Stream.

The harbour entrance shoreline is largely protected by the Manukau bar system and Āwhitu Peninsula. However, part of this inner harbour shoreline is exposed to the largest fetches (18 – 22 km) across the harbour, experiencing some relatively high wave-energy during swell events.

Huia Bay is sheltered by its semi-enclosed nature and relatively short fetch of approximately 5 km to Awhitu Peninsula in the south. It is predominantly a low wave-energy environment. However, on occasion, high-energy open ocean swell waves during persistent south-westerly conditions can propagate through the harbour entrance and refract onto the shoreline, including into Huia Bay.

Tidal currents are strong through the narrow harbour entrance and deliver sediments to inner harbour shorelines, with decelerating currents within embayments and across the broad intertidal area creating a depositional environment. The Wairopa Channel (one of four main harbour channels) runs north from Puponga Point parallel to the Manukau North coastline.

Coastal erosion and instability

The steep topography of much of this unit results in much of the coastline being indicated as susceptible to coastal erosion and instability. However, there is relatively little development along the rocky harbour entrance shoreline, with large areas of undeveloped land (largely Waitākere Ranges Regional Park).

Susceptibility to coastal erosion is lower within the more sheltered Huia embayment including Foster Bay, Huia Bay and Hinge Bay. Erosion processes in this section of coast are controlled by coastal processes including wave energy, sediment availability and future rates of sea-level rise.

If unprotected, built assets exposed to coastal erosion and instability include sections of Huia Road and coastal assets located at Council reserves including Foster Bay Reserve, Huia Domain, Hinge Bay and Little Huia.

There are some existing coastal protection structures along this section of coastline. The key features are as follows:

- Foster Bay Reserve is armoured by a low seawall that retains reclamation, and extends along the full length of the beach, with multiple abutments and stormwater outfalls along the seawall.
- Huia Domain is protected by a combination of engineering approaches including masonry rock seawalls, rock revetment, detached rock groynes and beach renourishment with sand sourced from the intertidal area. Following damage to the original masonry seawall following a series of significant coastal storm events, the seaward coastal defences were constructed in 2017/2018.
- Where the road runs along the coast, tipped rock and grouted rock seawalls have been constructed to retain and support road fill and access to Little Huia and Whatipu.

Key coastal protection structures in this unit are depicted below:

Coastal defences at Foster Bay Reserve, including a number of abutments and stormwater outfalls encroach on the narrow beach at this location. The seawall is currently an active renewal project on Council's Regional Coastal Asset Renewals Programme scheduled for completion in 2026.

Seawall and associated coastal structures (abutments and stormwater outfalls) protecting the reclaimed edge of Foster Bay Reserve (Source: Auckland Council)

Following failure of the legacy masonry seawall fronting Huia Domain. A project was completed to construct two 45 m detached rock groynes and replenish the beach with imported and intertidal sand to protect the toe of the wall and create a more resilient coastal edge. The project was completed following extensive engagement with the local community and Waitākere Ranges Local Board on the preferred management option.

Recently completed detached rock groynes and sand replenishment at Huia Domain (Source: Auckland Council, 2018)

To the west of Huia Domain, a section of engineered rock revetment was constructed to protect coastal pōhutukawa trees, the western carpark and reserve land. The revetment stops short of Huia Road Bridge.

Rock revetment to the west of Huia Domain extending into Huia Stream (Source: Auckland Council)

Huia Road between Huia and Little Huia is armoured by sections of rock revetment and tipped rock, owned by Auckland Transport.

Rock revetment protection the edge of more exposed sections of Huia Road (Source: Auckland Council)

Coastal inundation

The low-lying embayments are exposed to increasing coastal inundation with ongoing sea-level rise. This is predominantly focussed to Foster Bay, Huia Bay, Hinge Bay and Little Huia, as well as sections of the road in close proximity to the coast.

Foster Bay Reserve is exposed to wave overtopping and scour in the present day which is being addressed through the active coastal renewal project. Under the moderate change scenario (1% AEP plus 0.5 to 1 m of sea-level rise), the extent of coastal flooding is predicted to impact the entire esplanade reserve and landward private properties. Huia Domain is also predicted to be impacted by present-day extreme coastal storm events and the extent exacerbated with sea-level rise over the moderate to high change scenario.

For a 1% AEP plus 0.5 m sea-level rise, a greater extent of reserve at Little Huia (and access to) will be exposed to coastal inundation including the road, carparking and regional park baches.

Flooding

Figure 10 shows the catchments and floodplains discharging to the coast from this unit. As low-lying areas, extents typically align with coastal inundation extents at the coast.

This unit includes properties impacted by the 2023 storm events. SAPs, as living documents, will be updated as decisions are made on the land.

The stormwater flooding hazards are managed via Auckland Council's (Healthy Waters Department) Making Space for Water programme - a programme of planned flood management works across the region.

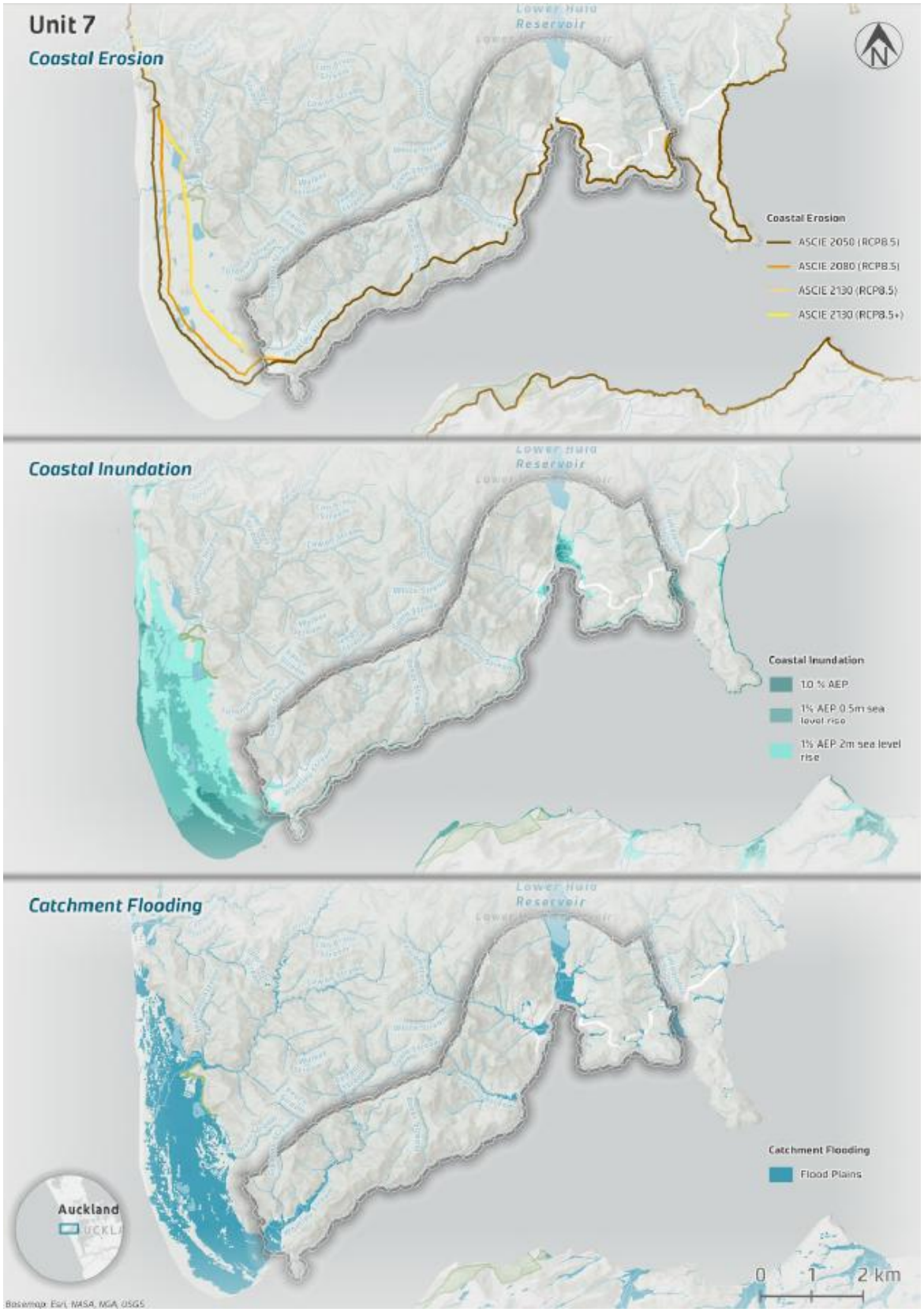


Figure 10: Coastal hazardscape for the Huia Unit reflecting coastal erosion susceptibility for 2050, 2080 and 2130 considering RCP4.5 and RCP8.5 emission scenarios, coastal inundation for 1%AEP storm surge for present day and with 0.5 m, 1 m and 2 m sea-level rise and the identification of flood plains.

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).

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 erosion susceptibility to Auckland Council community facilities is high in the short term. For transport infrastructure, this increases to very high risk in the medium to long term, reflective of the coastal roads including Huia and Whatipu Roads. For coastal inundation, there are increasing risks to transport infrastructure over time, reflective of the increasing exposure of the road network with ongoing sea-level rise.

Council-owned land			**Council Community facilities**			**Transport infrastructure**			**Water infrastructure**		
Park and reserve land (1776.1 ha) Buildings, wharves (67 No.)			Park amenity structures, carparks, accessways, buildings (2.6 ha)			AT roads (16.1) Bridges (254.3 m^2)			Water pipes (16.3 km)		
Short	Medium	Long	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Coastal erosion susceptibility											
Very high	Very high	Very high	High	High	High	High	Very high	Very high	Moderate	Moderate	Moderate
Coastal inundation											
Moderate	Moderate	Moderate	High	High	High	Moderate	High	Very high	Low	Moderate	Moderate
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 over changing climate scenarios.

- Waitākere South Regional Park (including Kaitarakihi Bay, Huia Point, Hinge Bay).
- Huia Domain (playground, toilets, carparks).
- Foster Bay Reserve.
- Little Huia (car parking).

- Auckland Council accommodation including Kiwanis Lodge, Barr Cottage.
- Barn Paddock and Karamatura Valley campground.
- Ranger House.
- Huia Lodge located within the Waitākere Ranges Regional Park
- Whatipu Lodge campground

- Watercare manages large areas of the Huia Dam Road parkland as it sits within its leased area including the Huia dam and reservoir.

- A wide variety of walking tracks form part of the Waitākere Ranges including Karamatura tracks, Omanawanui track, and tracks to lookouts at Mt Donald McLean and Huia Point.
- Huia Road.
- Whatipu Road.

- Foster Bay boat ramp.
- Huia boat ramp.
- Little Huia boat ramps.

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.

- 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.
- A Pou whenua located by the Karamatura car park recognises the connection of Te Kawerau ā Maki to the wider coastal landscape in this unit (identified in the Waitākere Ranges Regional Parks Management Plan[5]).
- Further association of the coastline to Te Kawerau ā Maki is set out in the Waitākere Ranges Heritage Area Local Parks Design Guidelines (2018[6]), noting 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.

- This unit is valued for a range of recreational activities including walking (including on the beach and with dogs), swimming, camping, and fishing.
- Boat launching from Little Huia and Huia is popular.
- Within the Ranges Regional Parkland Reserve is Huia Lodge, situated on a sloping site overlooking the sea.
- Whatipu Lodge is located on the far western edge of the coastal on a rugged site nested on the Manukau Heads.
- Huia Settlers Museum is a popular destination.
- Huia Hall (owned and managed by the Huia-Cornwallis Residents and Ratepayers' Association).
- Recovery efforts following severe weather events in areas such as Huia along the Manukau Harbour North coastline have led to a focus on climate adaptation, particularly through community-led initiatives and infrastructure improvements, with a focus on catchment management, flood and landslide resilience. Waitākere Ranges Local Board Emergency

5 https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/topic-based-plans-strategies/parks-sports-outdoor-plans/regional-parks-management-plans/Documents/regional-parks-management-plan-2022.pdf

6 https://www.aucklandcouncil.govt.nz/arts-culture-heritage/heritage-walks-places/docswaitakererangesheritagearea/waitakere-ranges-heritage-area-local-parks-design-guide.pdf

Readiness and Response Plan[7], [8] and the Waitākere Ranges Resilience Planning document are two key documents supporting this discussion.

- Watercare Services monitor water quality at four reservoirs: Upper Huia, Lower Huia, Upper Nihotupu and Lower Nihotupu. Based on this data, the water quality is high and nutrient levels are low which is reflective of the low level of development within the catchment.
- 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.

- The Whatipu to Cornwallis shoreline has both marine and terrestrial SEAs, with four BFAs (Biodiversity Focus Areas) present featuring large native trees with valuable habitat, including Huia embayment which is an important bird feeding area.
- The Huia and Kakamatua estuaries are relatively small compared to Big Muddy Creek. Along the edges of these estuarine areas, there are limited patches of salt marsh and salt meadow, featuring a mix of vegetation such as oioi, wiwi, and ribbonwood. In the lower intertidal zone, seagrass can be found in scattered patches, but this habitat is at risk due to the discharge of fine sediments from the surrounding catchment.
- Actions to restore and enhance the coastal margin may include restoration planting in areas subject to slips.
- Nature-based solutions may include riparian planting of the stream at Huia further up the catchment to mitigate future inundation.

Who have we heard from?

Feedback was received via Social Pinpoint, 'AK Have Your Say' survey, community submissions, in-person public engagement events and online information sessions (webinar). The events local to this area included Huia Community Hall, Titirangi Beach Hall and Titirangi War Memorial Hall and Glen Eden Library drop-in session. Neighbouring events are reflected in Volume 2.

Outside of the engagement platforms, community feedback was also received through direct communication and submissions, noting community submissions were received from the 'Save Cornwallis Old Wharf Society', the Huia Cornwallis Community Group, 'Friends of Regional Parks' and individual submissions from residents (i.e. Huia and Cornwallis residents).

Community Meeting: Huia Hall, Huia (09 March 2024 and 14th Aril 2024)

Two meetings took place at the Huia Community Hall, with events organised with the support of the Huia Cornwallis Community Group. Presentations were provided by Auckland Council staff followed by opportunities for questions and answers with those in attendance.

Key themes discussed at this event included but was not limited to:

- Vulnerability of road networks (Huia Road and Whatipu Road) which is key lifeline infrastructure.
- Desire to improve recreation and play spaces (i.e. in Huia Domain, Hinge Bay Reserve) and increased parking capacity around popular coastal spots (i.e. Little Huia, Karamatua).

[7] https://www.aucklandemergencymanagement.govt.nz/

[8] https://www.knowledgeauckland.org.nz/media/vpjj1sta/waitakere-ranges-resilience-planning-community-think-waitakere-ranges-local-board-report-2023.pdf

- Desire to maintain / improve recreational boat launching facilities (upgrade boat ramp at Little Huia).
- Supporting community resilience and recovery capability via ongoing engagement with key community groups and residents. There was also a desire to establish a community hall (at Cornwallis) as an emergency response hub, noting the remote nature of the west coast and the importance of empowering community-lead recovery efforts.
- Aspirations to repurpose the current Project K building into a coastguard emergency response base with a rescue vessel of sorts was also raised in feedback.

What is happening?

- There were multiple comments about Huia Road and the need to protect this from erosion, where there have been regular landslides that block the road. This link was recognised as vital to maintain access to Little Huia and Whatipu.
- The Waitākere Ranges Local Board identified the importance and value of the Hilary trail which traverses areas within this unit and has been impacted by 2023 storm events.
- Whatipu Road has been severely impacted by landslides from Cyclone Gabrielle. The community expressed the importance of maintaining the road for access to Whatipu and Waitākere Ranges Regional Park.
- Concern was expressed about coastal areas being vulnerable to flooding, inundation and erosion, including Huia Domain, and Little Huia.
- Little Huia Causeway: Highlighted as susceptible to inundation, erosion and landslides.
- Flooding and damage from storm events: Commentary that heavy rain events have caused severe flooding due to runoff from surrounding hills. This has resulted in damage to driveways, culverts (managed by Council), and nearby public roads and footpaths. Regular maintenance of public drains is essential.
- Inadequate drainage infrastructure (Foster Avenue): The pipes beneath driveways on Foster Avenue were commented on as being undersized and unable to handle the volume of water from diverted streams, with a perception that this leads to frequent flooding, as gutters are easily blocked and overwhelmed.

What matters most? Community uses and values

This unit had a mix of community feedback with many noting the natural environment, beautiful scenery, and great views. Feedback highlighted that the community used the area for a range of activities, the main activities noted included:

- Water-based activities (fishing, swimming and kayaking), signalling the importance of boat launching facilities.
- Active recreation including walking, tramping and camping.
- The community expressed appreciation for the beautiful wild coastline and tranquillity including Whatipū, Huia Domain and Kaitarakihi.
- Karamatura was highlighted as an excellent spot for gentle tramping, offering many beautiful views.
- Little Huia was recognised for its unique heritage, scenic beauty and special character.
- The ecological richness of the area, including native bush and the presence of dotterels was highly valued.
- Commentary that the wider coastline within Unit 7 is widely used by visitors from across Auckland for recreation (including tramping, family gatherings and boating).

What can we do about it? Community feedback and aspirations

- **Resilience of roading networks**: Increased maintenance of Huia Road which serves as the only access route for the wider Huia and Cornwallis communities and is considered a critical lifeline route.
- **Stormwater management**: A desire for improved maintenance and regular clearing of storm drains and to ensure stormwater pipes are adequately sized to handle the volume of water during storm events as renewed and a desire for improved water quality with reference to Foster Bay.
- **Preservation of the Waitākere Ranges:** Due to its significance as a protected Heritage Area and as an outstanding natural landscape. Community groups (Friends of Regional Parks, the Waitākere Ranges Protection Society (WRPS)) advocate for maintaining the high levels of natural character and protecting the area from development.
- **Support for community-led adaptation actions and planning:** Commentary that there is a need to improve support for communities during natural disaster events. With strong community concern with any reference to managed retreat (wording identified in consultation documents and no longer included in this plan)
- **Hinges Bay:** Improve the surrounding area by clearing overgrown grass and establishing a wetland planting area to enhance the natural environment.
- **Continue to support the initiatives** of landowners, volunteers and community groups that enhance the ecology of the area through pest control, pest plant control, and coastal and riparian planting. Investigate erosion prevention and mitigation works, particularly at Paturoa Stream and Waituna Stream.
- **Little Huia:** Repair and upgrade the boat ramp to make it usable at all tides, reducing the need for boats to launch directly off the beach and improving swimming safety. More all-weather trailer parking is also needed in the adjacent paddock.
- **Whatipū:** Requires improved access and upgraded road infrastructure.

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

7.1: Kaitarakihi Beach East

This coastal stretch covers approximately 2.2 km of coastline and contains the area along the west side of the Kakamatua Inlet and around Kakamatua Point to the eastern end of Kaitarakihi Beach.

Scenarios for change		
Low	**Moderate**	**High**
No action 	**No action** 	**No action** 
Explanation		
No action recognises there are no Council assets exposed to coastal hazards and climate change. This strategy supports the values of the natural coastline within the Waitākere Ranges Regional Park.		
Implementation Notes		
• **Ecology:** This strategy does not preclude ongoing weed management and coastal revegetation planting, especially in areas subjected to slips.		

7.2: Kaitarakihi Point to southern end of Fosters Bay

This coastal stretch covers the area around Kaitarakihi Point, from Kaitarakihi Beach through to the southern end of Fosters Bay Reserve.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Maintain** 	**Maintain** 
Explanation		
Maintain under all climate change scenarios provides for the ongoing maintenance of the limited accessways and coastal access points in this stretch (Kaitarakihi and Huia Point lookout). Under a high climate scenario, there may be a need for localised realignment of carparking areas in response to this risk.		
Implementation Notes		
• **Ecology:** Ongoing opportunities for coastal restoration planting to maintain a natural coastal environment. • **Coastal structures:** No new coastal defences are anticipated within this stretch, preserving a natural coastal edge while maintaining safe access to the coast. • **Community feedback:** Kaitarakiri Beach was highlighted as a highly popular swimming spot by locals. The strategy provides for ongoing maintenance to support access to the coast in alignment with community values.		

7.3: Huia Bay

This coastal stretch covers the Huia embayment, from the southern end of Foster Bay Reserve through to the western side of Huia Domain at the stream. It includes the entirety of Fosters Bay and Huia Domain.

Scenarios for change		
Low	**Moderate**	**High**
Protect 	**Maintain** 	**Adaptation Priority** 

Explanation

Protect under the low climate change scenario reflects the need for continued maintenance of protection structures to protect highly valued community areas from increasing erosion risk. Protect under the low scenario also reflects existing works undertaken at Huia Domain and acknowledges the seawall coastal renewals works underway at Fosters Bay to enhance protection of the local reserve and to enhance access and amenity along the foreshore.

Maintain under the moderate climate change scenarios continues to recognise the importance of the Huia Bay stretch and existing amenities, thus allowing for the ongoing maintenance of coastal protection structures and amenities, while acknowledging the increasing risk from inundation and the challenges in engineering a response in a low-lying area.

Adaptation priority under the high climate scenario is selected to identify the need to relocate some land uses and assets to ensure risks and asset function can be maintained to acceptable levels of service. Where possible, this may not signal the relocation of uses but require re-design to 'accommodate' increasing inundation frequency and duration. Further engagement with local iwi and communities will be required to ensure that future planning for assets and land at risk from coastal hazards responds to cultural values and social and community needs.

Implementation Notes

- **Management:** This strategy does not preclude localised interventions as required for roading connections to ensure alignment with adjacent management strategies for Huia Road (Stretch 7.4). Auckland Transport, the asset manager, will monitor how coastal hazards may impact on operation of these assets and future implementation options.
- **Management:** Management of catchment flooding hazards will be provided for via Auckland Council's (Healthy Waters and Flood Resilience).
- **Nature-based solutions:** Future opportunities to restore low-lying parts of the regional park landward of Huia Road wetland or salt marsh to increase flood resilience. Riparian planting of the stream at Huia further up the catchment to reduce potential scour impact.
- **Archaeological:** Long-term restoration of indigenous biodiversity and protection of recorded archaeological sites in this stretch is a high priority for local iwi, with nature-based solutions advocated. Ongoing engagement with Te Kawerau ā Maki to understand aspirations and intentions is required.
- **Community feedback:** Huia Bay has been identified as having significant community value due to its beautiful natural environment and connection to the coast. Feedback during consultation noted the impact of the early 2023 weather events which highlighted the vulnerability of existing assets, in particular, roading connections.

7.4 Huia Road Connection

As indicated in the summary adaptation strategy map, this stretch focusses on key sections of Huia Road along this SAP area. Other key coastal areas are noted to intersperse the road (e.g. Hinge Bay and Little Huia) and are addressed as separate stretches.

This stretch commences at Huia bridge and continues west, culminating at Little Huia, with the primary purpose of addressing the management of Huia Road holistically in response to coastal hazard risks.

Scenarios for change		
Low	**Moderate**	**High**
Protect 	**Protect** 	**Protect** 
Explanation		
Protect over all change scenarios is recommended and is reflective of the need for continued investment in the maintenance of the highly valued roading connections (Huia Road and bridge), noting this provides the sole connection west to Little Huia and Whatipu.		
Implementation Notes		
• **Management:** Auckland Transport, the asset manager, will monitor how coastal hazards may impact on operation of these assets and future implementation options. • **Community feedback**: Residents highlighted that Huia Road serves as the sole access route for the wider community and lifeline service vehicles, with feedback highlighting that the stability and safety of this road rely not only on the tipped-rock revetment but also on the stability of the cliff above. A **protect** approach acknowledges this key roading connection.		

7.5: Hinge Bay

This coastal stretch contains the area from Karamatura Stream south to where Huia Road meets the coast, encasing the entirety of Hinge Bay and a coastal portion of the Waitākere Ranges Regional Park at Hinge Bay.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Maintain** 	**Adaptation Priority** 
Explanation		
Maintain under low and moderate climate change scenario allows for the remediation of the coast at this location with a preference for nature-based solutions to restore a resilient coastal edge. **Adaptation priority** under the high climate change scenario signals the need to consider the potential landward relocation of assets outside of the hazard zone in the long term.		

Scenarios for change		
Low	Moderate	High
Implementation Notes		

- **Nature-based solutions**: There are opportunities to reinstate the natural coastal edge at this location through removal of relic coastal structures and cobble beach replenishment (subject to resource consent) to create a more resilient coastline in response to future coastal hazards and climate change risks.
- **Heritage:** Identified historic heritage sites are located within this stretch including the Manukau Timber Company Mill and Huia Lodge.
- **Community feedback:** Karamatura/ Hinge Bay is highly valued for picnicking, bush walks, including trails that connect to coastal routes, camping, swimming, and activities such as pétanque. Community aspirations for maintaining the coastal reserve to support community values.
- **Engagement:** Ongoing engagement with Te Kawerau ā Maki and the local community will be required in the implementation of adaptation strategies.

7.6: Little Huia

This stretch covers the area south of Hinge Bay from where Huia Road follows the coastline through to Whatipu Road in the south, encasing the entirety of Little Huia.

Scenarios for change		
Low	Moderate	High
Protect 	**Maintain** 	**Adaptation Priority** 
Explanation		

Protect under the low climate change scenario recognises the importance of the wider Little Huia embayment and the criticality of the roading connections (Huia Road), to local communities. This stretch also includes key boat launching facilities recognised by both the local and wider community. These assets are exposed to coastal processes. Existing consents enable the ongoing maintenance of tipped rock revetments, vertical seawalls, and culverts (including Little Huia Ford) along this stretch of coast providing coastal protection through the mitigation of erosion risk to roading connections. The level of service of low-lying extents of the road will be impacted by extreme coastal storm events and ongoing sea-level rise. Management of the roading connection between Huia and Whatipu will require collaboration and wider community consultation and planning.

Protect does not preclude the proactive landward (localized) relocation of some assets at Little Huia (i.e. the toilet block) under low climate change scenarios to respond to inundation risk.

Maintain under the moderate climate change scenario allows for ongoing maintenance of roading connections, community spaces and coastal protection structures, whilst enabling an opportunity to consider adaptation planning under the high climate change scenario.

Implementation Notes
• **Further engagement** with Te Kawerau ā Maki and local communities will be required to ensure that future planning for the management of assets and land at risk from coastal hazards responds to cultural, ecological values and social and community needs. • **Community feedback**: Advocacy to protect/ maintain Little Huia, noting this part of the coast is highly valued for its boat launching assets, swimming spots and picnic facilities. Additionally, feedback noted the need to repair and upgrade the boat ramp to make it usable at all tides, reducing the need for boats to launch directly off the beach and improving swimming safety. • **Coastal structures**: The Little Huia boat ramp has recently (2025) been identified in the coastal renewals work programme. The adaptation strategy of protect is reflective of this project.

7.7: West of Little Huia

This coastal stretch covers approximately 7.4 km of coastline and contains the area from the south side of Whatipu Road around Kaiteke Point through to Paratūtae Island in the west.

Scenarios for change		
Low	**Moderate**	**High**
No action 	**No action** 	**No action** 
Explanation		
No action recognises that this stretch is largely in a natural state and is an area of Outstanding Natural Landscape and Outstanding Natural Character, with no community facilities assets in close proximity to the coast.		
Implementation Notes		
• **No action** does not preclude actions to support ecological outcomes along this stretch including long-term restoration of indigenous biodiversity and planting around coastal tracks. • **Cultural:** This stretch is identified as having high ecological values and significant cultural values to Te Kawerau ā Maki. No action does not preclude the management of historic heritage values identified in this stretch.		

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