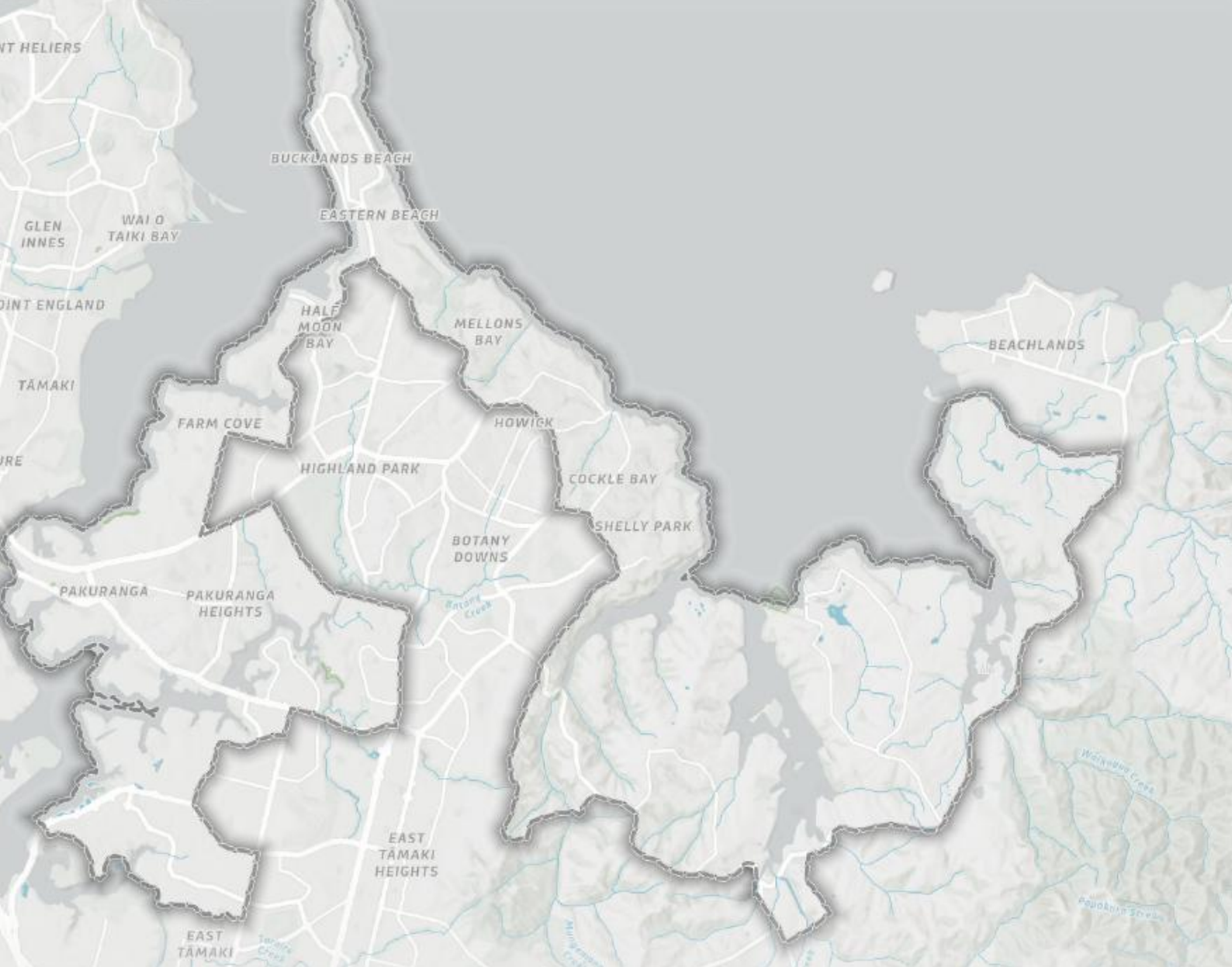




Ngā mahere whakaurutau mō te takutai

Shoreline Adaptation Plan

Highbrook to Whitford

Volume 3: Adaptation Strategies

August 2025, Version 1.0

2025



Shoreline Adaptation Plan

Highbrook to Whitford

Volume 3: Adaptation Strategies

All Auckland Council Shoreline Adaptation Plans are considered living documents, noting that the SAP team is committed to ensuring that the values, aspirations and outcomes sought by Ngā ngā iwi o Tāmaki Makaurau are represented in each plan and supported throughout implementation. The SAP team will continue to work with and support iwi to respond to the SAP programme and include linkages to this cultural narrative in further revisions of the SAP reports within the rohe of respective iwi authorities.

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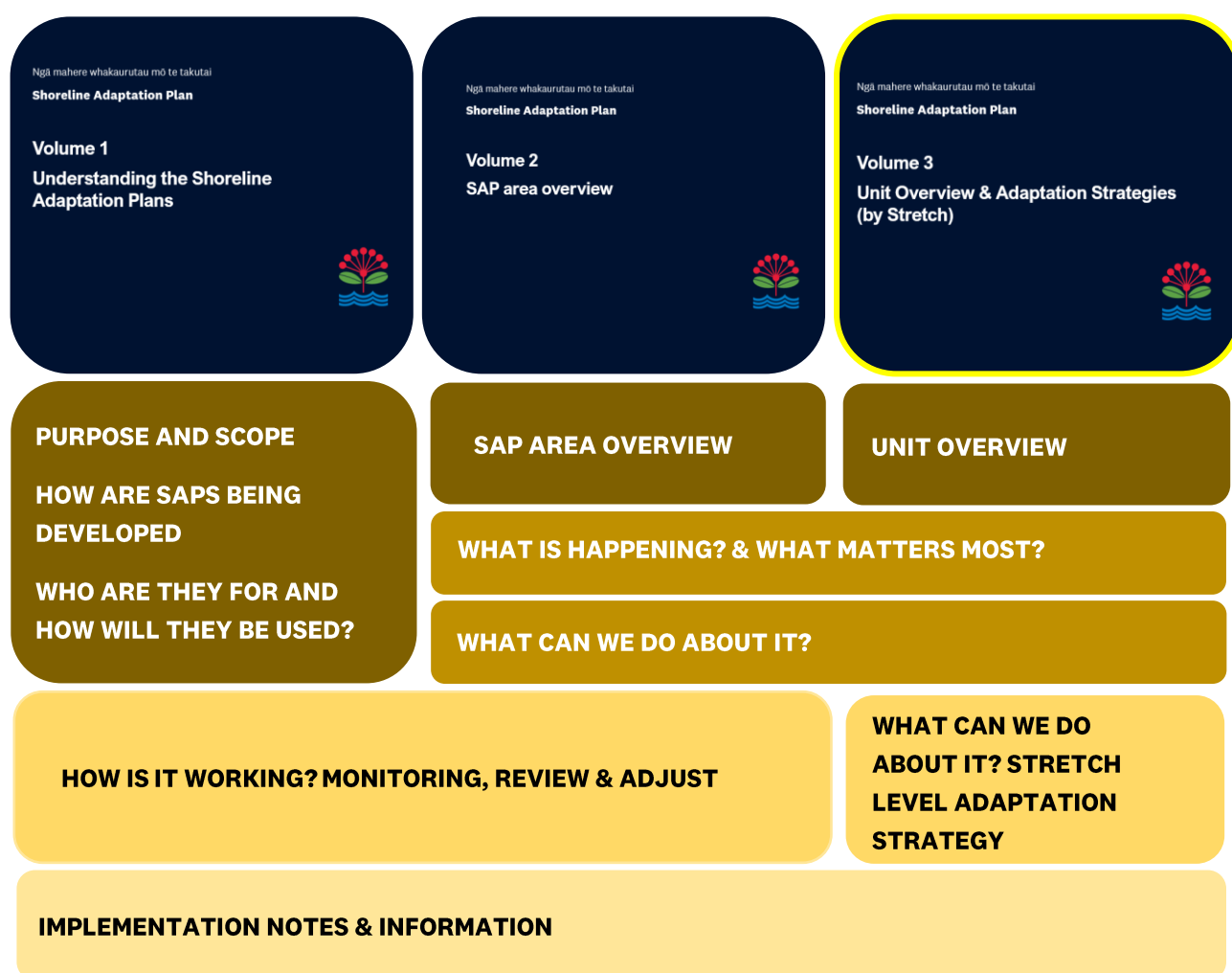
Front Cover

Shoreline Adaptations Plan area overview map for Highbrook to Whitford. Prepared for Auckland Council by Tonkin + Taylor 2025.

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, public-land boundaries, and infrastructure considerations.
SAP unit	The SAP area is divided into smaller SAP units to enable a more detailed and comparative view of how risk is attributed across the subject area.
Sea-level rise	The increase in the level of the ocean, caused by the melting of glaciers and ice sheets and thermal expansion of water as it warms.
Significant Ecological Area	- Significant Ecological Areas (SEAs) have been identified by the Auckland Unitary Plan (AUP: OP) for terrestrial areas, and parts of the coastal marine area. Marine Significant Ecological Area (SEA-M): - Identified areas of important indigenous vegetation or habitats of indigenous fauna located in the coastal marine area, and are afforded protection under the AUP:OP. Terrestrial Significant Ecological Area (SEA-T): - Identified areas of important indigenous vegetation or habitats of indigenous fauna located on land or in freshwater environments and are afforded protection from the adverse effects of subdivision, use and development.
Site and place of significance to Mana Whenua	Sites and Places of Significance to Mana Whenua applies to sites and places in the Tāmaki Makaurau/ Auckland region that are protected for their significance to mana whenua. It acknowledges that sites and places have tangible and intangible cultural values in association with historic events, occupation, and cultural activities.
Statutory Acknowledgement Areas (SAA)	A statutory acknowledgement is an acknowledgement by the Crown that recognises the mana of a tangata whenua group in relation to specified areas - particularly the cultural, spiritual, historical, and traditional associations with an area.
Social Infrastructure	Facilities and assets that support social activities, interactions, and wellbeing within a community.

Shoreline Adaptation Plan Areas

Tāmaki Makaurau, Auckland, is a coastal city, bounded to the east and west by the South Pacific Ocean and the Tasman Sea. The region has around 3,200 km of dynamic coastline and encompasses three major harbours: the Kaipara, Manukau and Waitemata. Due to its location, much of the city's urban development and supporting infrastructure is concentrated in coastal areas and exposed to coastal processes such as erosion and inundation. These natural processes are considered hazards when they impact on things or locations of value. Climate change related to greenhouse gas emissions is contributing to rising sea levels, which have a range of impacts including increasing the frequency and magnitude of coastal hazard events. Auckland Council began developing a series of Shoreline Adaptation Plans (SAPs) in 2021. These area-based plans form the first step for the SAP programme in achieving a resilient future for Auckland's coasts. A more detailed discussion on the Shoreline Adaptation Plan 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:

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

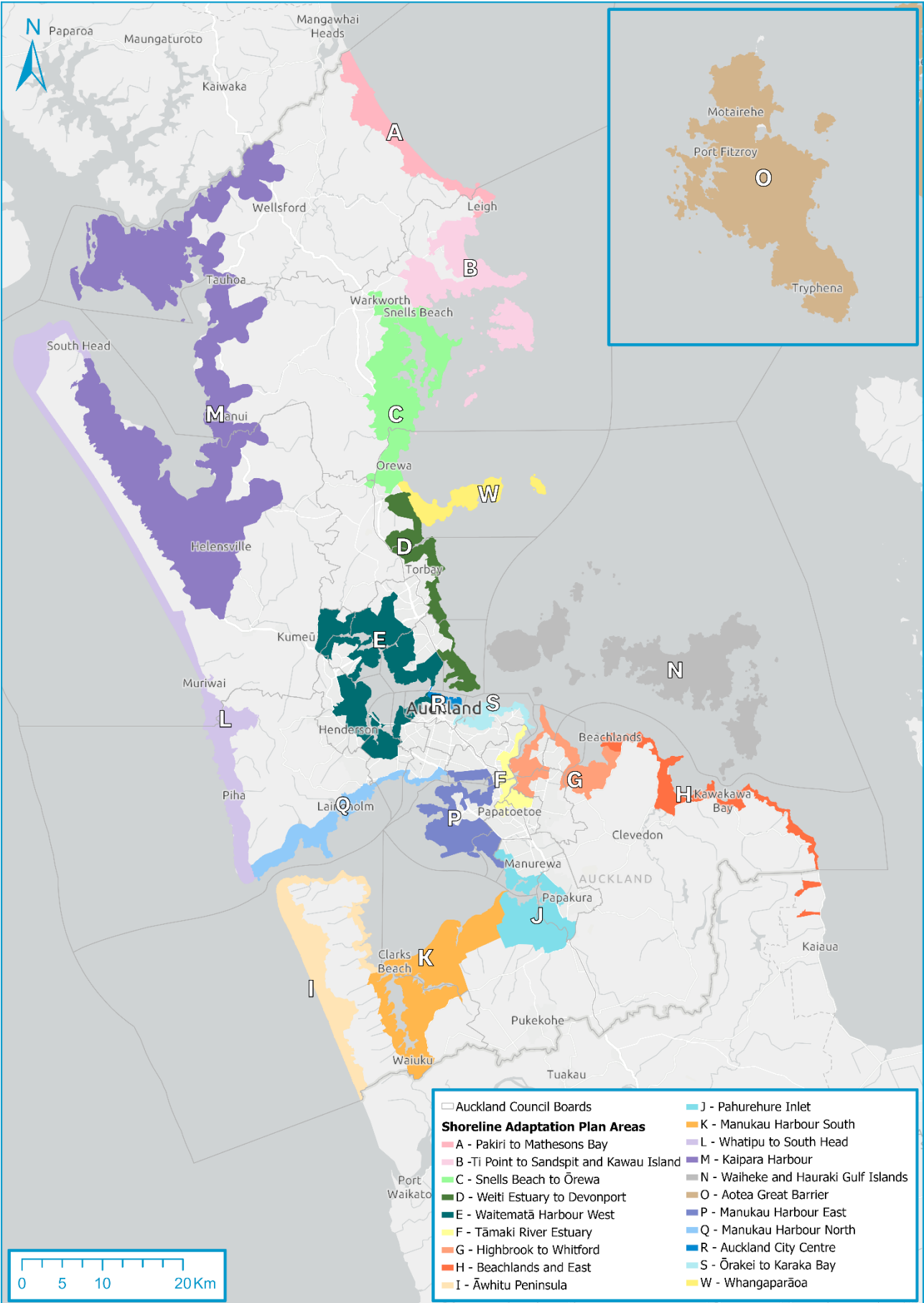
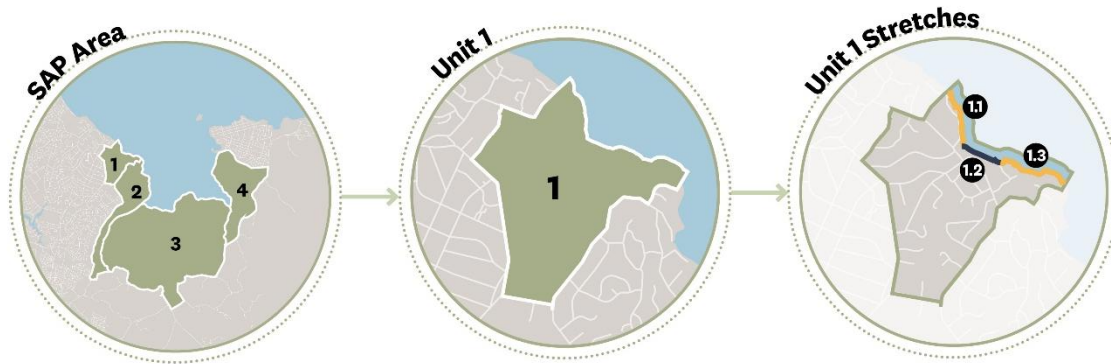


Figure 1-1: Regional Overview of Shoreline Adaptation Plans

SAP areas, units & stretches

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



Climate change scenarios (timeframes for change)

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

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

Highbrook to Whitford



Pakuranga Creek Path



Pakuranga Creek Path runs alongside Pakuranga Creek, surrounded by native bush and highly valued by locals for its natural landscape



Highly valued bird roosts along the coastal margin, community advocacy for supporting natural coastal margins/landscapes



Highbrook Pathway



Highbrook Water Sports Centre



Highbrook Park

Stonedon Drive Esplanade Reserve



Highly valued coastal connections and cycleways along this section of the coast (i.e. Highbrook Path, Highbrook South Path, Pakuranga Creek Path, Ti Rakau Loop)



Burswood Esplanade Reserve

Transpower Assets traverse this coastal unit



Pakuranga Creek Pathway



Pakuranga Golf Club



Golflands Loop Pathway



Ngāti Ōtara Park

Highbrook South Pathway



The wider landscape within this coastal unit is of high cultural significance to local iwi, with aspirations to support the natural environment



Highbrook Park



Unit boundary

Stretch

Walking tracks

Informal recreation park

0 500m 1km

Unit 1: Highbrook

Unit 1 commences adjacent to Highbrook Drive and Highbrook Park. It then extends northeast along the Tāmaki River Inlet, culminating near Cascades Road, adjacent to Pakuranga Country Club Golf Course. This unit also includes part of the northern shoreline of Ōtara Creek that is within the Howick Local Board area. The unit encompasses mostly industrial land use in East Tāmaki.

What is happening?

The upper Tāmaki River is a sheltered low wave energy environment. The width of the river narrows through this section and the main channel flows closer to the eastern bank (Waiouru Point) with intertidal flats fronting the low cliffed coastal edge. The Pakuranga Creek shoreline is highly indented and typical of sheltered estuarine environments, with shallow inlets typical of depositional zones in upper reaches of tidal inlets infilled with fine muddy sediment and dense mangroves.

Coastal erosion and instability

The inner Tāmaki Estuary has low, ongoing risk to coastal erosion primarily driven by weathering of the coastal edge by repetitive wetting and drying with tidal cycles. In this unit, the section most exposed low wave energy and tidal currents is on the Waiouru Point shoreline located on the outer bend of the main river channel.

The Highbrook shoreline is in a relatively natural state with few coastal management structures located along this section of coast. There is some isolated coastal armouring on the Pakuranga Creek shoreline, associated with historical landings, e.g. Cryers Wharf in Stonedon Drive Reserve. There is some mudcrete armouring around the Highbrook Water Sports Centre (ramp and pontoons) at Lady Fisher Place. Hard structures such as formalised accessways around Waiouru Peninsula and Highbrook Park are generally set back adequately from the coastal edge.

Coastal inundation

The steep, low cliff shoreline in this unit is at low risk to coastal inundation, with the impact predicted to be largely limited to the lower vegetated slope. Most of the extensive walkway network along the southern shoreline of Pakuranga Creek is adequately elevated above the predicted extent in the high change scenario along all but a short length through Frank Nobilo Esplanade Reserve. Wastewater pumping stations located in proximity to the coast are elevated above the extent of the predicted inundation flooding over all change scenarios.

Flooding

Inland tributaries of Ōtara Creek are prone to catchment flooding. Through the Community Flood Resilience initiative of Making Space for Water, Healthy Waters has funded pilot projects with local environmental and community organisations across Tāmaki Makaurau in response to the needs of the community and waterways impacted by the 2023 storm events. The Ōtara Waterways and Lake Trust are working alongside Auckland Council's Healthy Waters Team on practical flood resilience projects across Ōtara and Papatoetoe. There has been extensive native restoration planting in the area immediately surrounding Ōtara Creek and clearance of culverts.

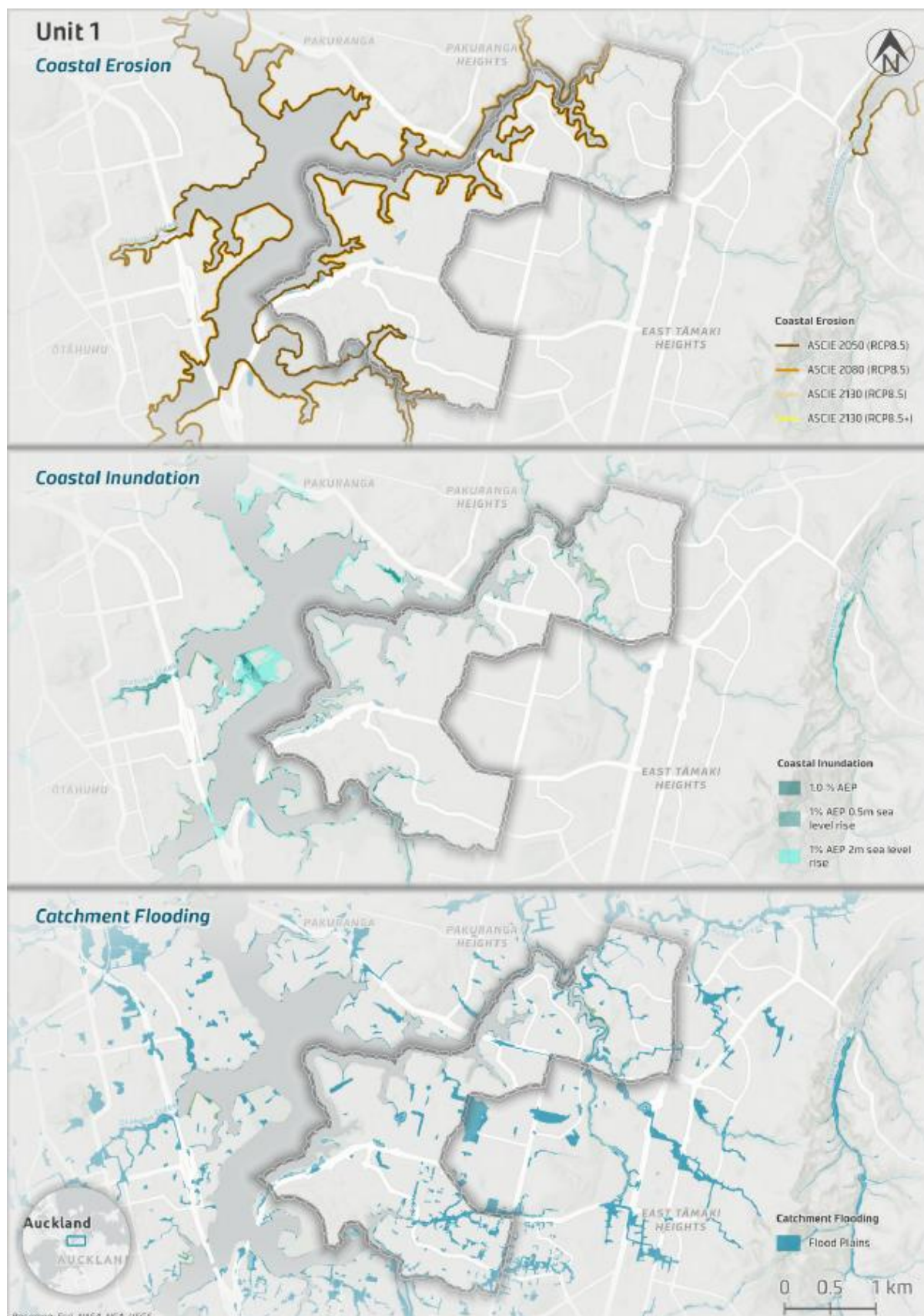


Figure 1-1: Coastal hazardscape for the Highbrook Unit reflecting coastal erosion susceptibility for 2050, 2080 and 2130 considering RCP4.5 and RCP8.5 emission scenarios, coastal inundation for 1%AEP storm surge for present day and with 0.5 m, 1 m and 2 m sea-level rise and the identification of flood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



Risk assessment

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

The table below summarises the risk levels for Auckland Council asset types in the short, medium, and long-term using the low, moderate and high climate scenarios

Council-owned land			Council community facilities			Transport infrastructure			Water infrastructure		
Park and reserve land (68.4 ha)			Park amenity structures, car parks, accessways, buildings (0.8 ha) Buildings, wharves (6 No.)			AT roads (41.8 km) Bridges (1,398.3 m ²)			Water pipes (209.7 km)		
Short	Medium	Long	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Coastal erosion and instability susceptibility											
High	High	High	Moderate	Moderate	Moderate	High	High	Very High	Moderate	Moderate	High
Coastal inundation											
Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Very High	Very High	Very High	Low	Low	Low
Key											
Very Low			Low			Moderate			High		
									Very High		

What matters most



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



- Highbrook Park, Burswood Esplanade Reserve; Burswood Park, Corta Bella Place Reserve; Frank Nobilo (Pebble Beach Place Reserve), Pakuranga Country Club Esplanade, Stonedon Drive Esplanade Reserve, Trugood Esplanade Reserve.



- Playground (Frank Nobilo Reserve).



- Wastewater:** There are 5 wastewater pumping stations in this unit (Highbrook Park, Burswood Drive, Cryers Road, PS 57 Botany, Stonedon Drive).



- Key pathway connections:** Walking tracks: Highbrook Path, Golflands Loop Path, Pakuranga Creek Path.
- Key regional roading:** Highbrook Drive.



- Harbour access:** Boat ramp and pontoons (Highbrook Watersports Park).

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



- Specific cultural values and outcomes for this unit will be developed through ongoing involvement with local iwi identified in Volume 2. Guiding objectives and outcomes which have informed the development of adaptation strategies have been identified in Volume 2.



- Highbrook Water Sports Centre, community ground lease, tenant-owned and maintained boat ramp and pontoon; future club rooms.
- Historical wharf (Stonedon Drive Esplanade Reserve), Guy's Wharf and Quarry (Category B), and McCallum's Wharf and Quarry (Category B).



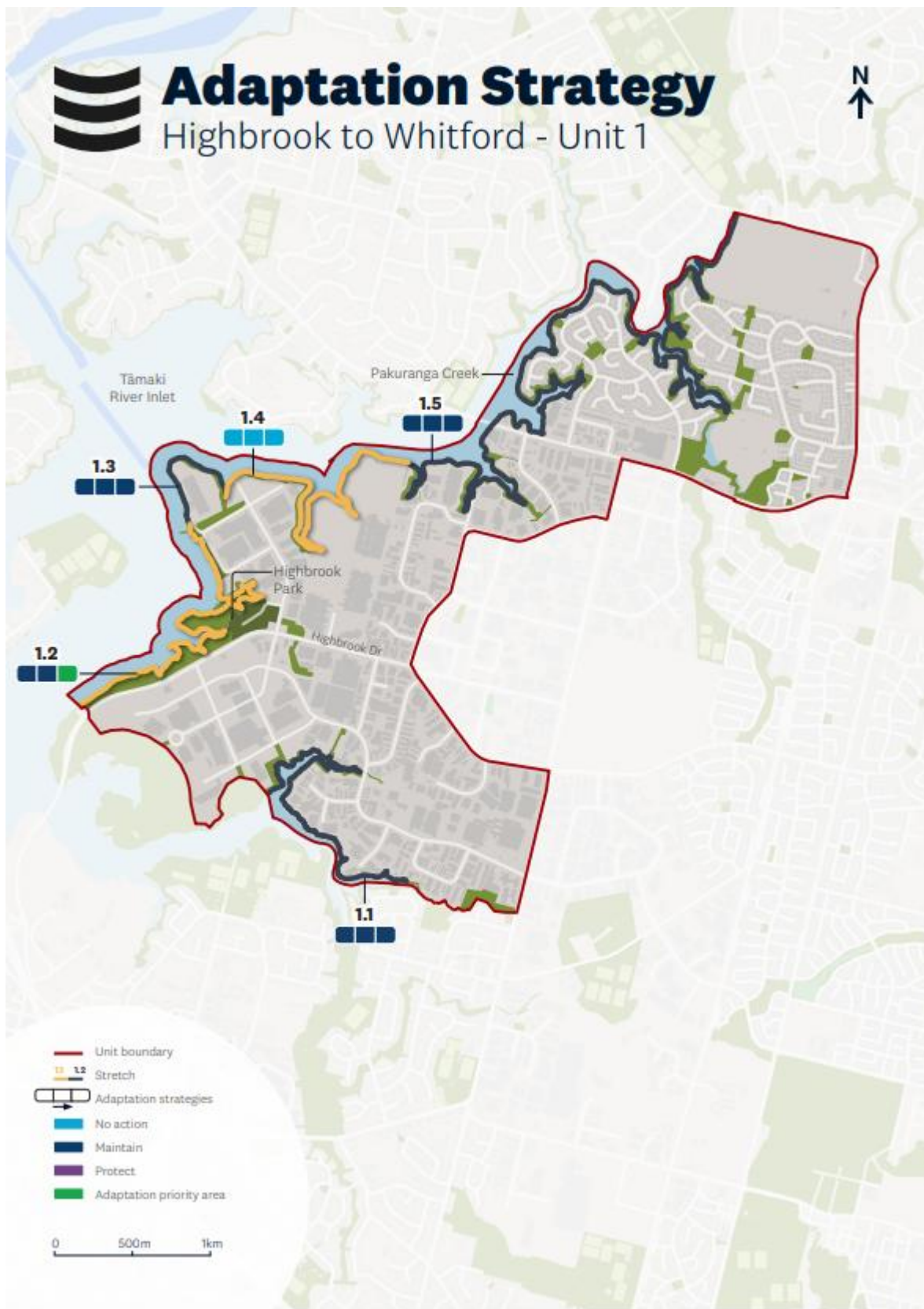
- This unit is characterised by areas of mangrove forest and scrub and saltmarsh – sea rush oioi along Ōtara Creek. There is also a small area of regenerating broadleaved scrub located in the upper reaches of Ōtara Creek.
- This unit includes the southern section of Pakuranga Creek which is lined by mangrove forest and scrub. Pakuranga Creek is a Significant Ecological Area regarded as the best example of mangrove habitat in the Tāmaki Estuary.
- The area is also recognised as because of the extensive areas of feeding habitat for wading birds.



Who we heard from?

Feedback was received via digital platforms, Social Pinpoint and 'AK Have Your Say', as well as submissions from community groups (i.e. the Tāmaki Estuary Environmental Forum). Key themes in community submissions included but were not limited to:

- The Tāmaki Estuary Environmental Forum and Howick Local Board raised concerns about erosion and sediment runoff leading to a decline in water clarity and biodiversity for this unit. Advocating for improved stormwater infrastructure and catchment management to reduce pollutants entering the estuary.
- The protection and enhancement of the natural environment was a key theme, with support for minimal intervention approaches focused on ecological remediation and resilience. There was a strong advocacy from respondents for planting buffer areas on sections of the coast susceptible to erosion.
- Requests to maintain and expand ecosystems along Pakuranga Stream. Establish a quiet refuge area for birds, offering safe habitat away from high-use zones and encouraging biodiversity conservation.
- The existing cycleway from Ti Rakau Bridge to Highbrook is well used and appreciated, but safety concerns have been raised. An aspiration for connecting the two coastal cycleways directly would significantly improve safety and user experience.
- Pakuranga Creek is recognised as a great spot for kayaking, offering calm waters and scenic views. Walkways along the creek are highly valued. Maintenance of walkways was noted, with benefits of improving usability and enhancing the natural character of the space.
- There was concern about the impact of the development of coastal structures (the sandstone wall at Highbrook was identified as an example), and the potential for conflict with environmental outcomes.

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

1.1: Ōtara Creek to Highbrook Drive Bridge

This stretch includes the northern shoreline of Ōtara Creek within the Howick Local Board area. The shoreline adjacent to Highbrook Park is also within the Howick Local Board area. Highbrook Path is located within this stretch and is an important connecting path along much of this area of coastline, popular with walkers and cyclists.

Scenarios for change		
Low	Moderate	High
Maintain 	Maintain 	Maintain 
Explanation Maintain supports the continued management of risk to the highly valued Highbrook Path. Areas of the reserve and path are exposed to coastal erosion under all climate change scenarios. Currently there are no existing coastal protection structures.		
Implementation Notes Consideration of the design and location of the path and undertaking proactive realignment of the path should be considered to manage risk.		

1.2: Highbrook Drive to Lady Fisher Place

This stretch includes the shoreline adjacent to Highbrook Drive and Highbrook Park extending east to Lady Fisher Place, including the Watersports Centre facilities and Highbrook Path. Highbrook Drive is a main road in this stretch which runs between the industrial area and the edge of the estuary. Currently there are no existing coastal protection structures located within this stretch.

Scenarios for change		
Low	Moderate	High
Maintain 	Maintain 	Adaptation Priority 
Explanation Highbrook Path is an important connecting path along much of this area of coastline, popular with walkers and cyclists. The path is exposed to coastal erosion under all climate change scenarios. Maintain provides for the continued management of risk to this path network. The Highbrook Water Sports Centre, a tenant-owned facility, is an important regional sporting facility for the local and wider community. This is exposed to coastal hazard risks under all climate change scenarios and has a functional need to be located in proximity to the coast. Maintain reflects the ongoing need to maintain safe access to this facility and for more proactive management of supporting assets including landward infrastructure and its potential realignment further inland. Adaptation priority in the high change scenario signals a greater extent of coastal inundation flooding with increasing sea-level rise will likely impact useability and access to existing facilities in their current location, including supporting landward infrastructure.		

Scenarios for change		
Low	Moderate	High
Implementation Notes - Consideration of the design and location of the Highbrook Path and the undertaking of proactive realignment of the path should be considered to manage risk. Management: Transpower assets are located within this stretch and further engagement with assets owners/managers through implementation is identified.		

1.3: Lady Fisher Place to Waionuru Road (east)

This stretch includes the shoreline around the commercial / industrial zone at Waionuru Point, to the north of Waionuru Road. There are limited assets within this industrial stretch which backs on to the community of East Tāmaki. Highbrook Path is located on a thin strip of reserve along the coastline between Lady Fisher Place and Waionuru Road, with views across the estuary. The path is popular with walkers and cyclists.

Scenarios for change		
Low	Moderate	High
Maintain 	Maintain 	Maintain 
Explanation Maintain over all change scenarios reflects that sections of the path will be exposed to erosion over time and provides for the continued management of path connections.		
Implementation Notes Maintain reflects the management of risk through targeted intervention to maintain safe public access where realignment options are restricted due to the narrow reserve. Engineered coastal armouring is not envisaged along this stretch.		

1.4: Waionuru Road to Stonedon Drive Esplanade Reserve

This stretch encompasses a relatively short section of the Pakuranga Creek coastline, beginning adjacent to Waionuru Road cul-de-sac and extending to the western border of Stonedon Drive Esplanade Reserve. This stretch is privately-owned commercial/industrial land.

Scenarios for change		
Low	Moderate	High
No action 	No action 	No action 
Explanation No action over all scenarios reflects the lack of Auckland Council-owned land, infrastructure or assets in this stretch.		

Scenarios for change		
Low	Moderate	High
Implementation Notes		
No action does not preclude the management of roading connections as required. Ecology: Pakuranga Creek is a SEA with existing vegetation providing a nature-based buffer to the reserve. No action does not preclude actions to support ecological outcomes.		

1.5: Stonedon Drive Esplanade Reserve to Pakuranga Country Club Golf Course

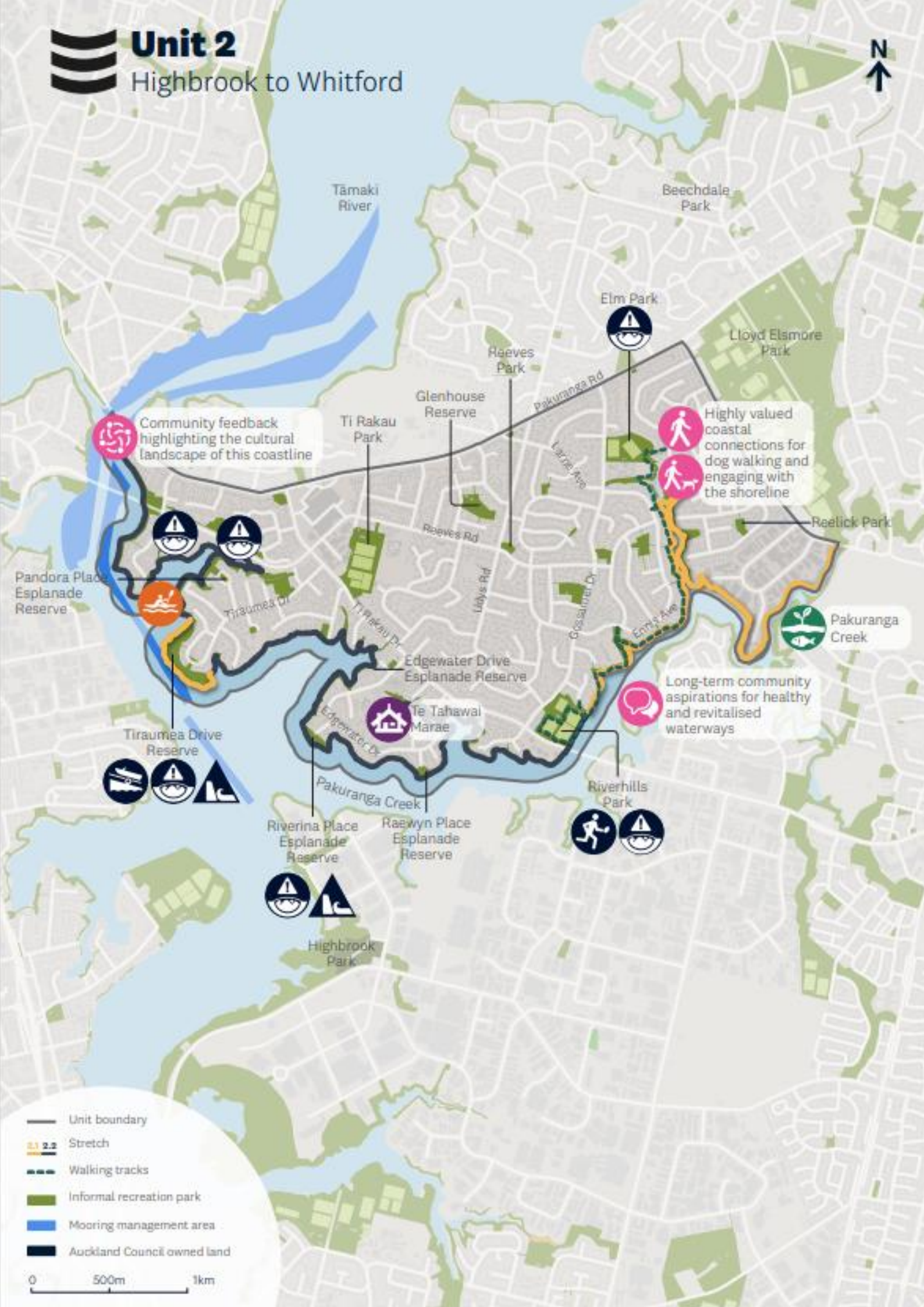
This stretch commences at the western border of Stonedon Drive Esplanade Reserve and encompasses the southern shoreline of Pakuranga Creek culminating near Cascades Road, adjacent to Pakuranga Country Club Golf Course.

Scenarios for change		
Low	Moderate	High
Maintain 	Maintain 	Maintain 
Explanation		
An extensive coastal walkway is routed along the southern shoreline of Pakuranga Creek from Stonedon Drive to Cascades Road, with short boardwalk sections bridging gully depressions and small side arms of the branching inlet. The walkways provide an important function for the local community and are largely adequately elevated above the predicted extent of coastal flooding inundation in the high change scenario along all but a short length through Frank Nobilo Esplanade Reserve. Maintain strategy recognizes the value of the community assets and aspirations to retain walkway connections.		
Implementation Notes		
Ecology: Consideration of planted buffers to stabilise banks, may have co-benefits in this stretch contributing to ecological outcomes. Cultural: This stretch contains cultural sites of significance likely exposed to coastal hazards in all scenarios. Ongoing engagement with local iwi will be required to ensure the implementation of adaptation strategies reflects cultural values and local landscapes.		



Unit 2

Highbrook to Whitford



Unit 2: Pakuranga

Unit 2 begins near the northern border of Pakuranga Country Club Golf Course and extends along the shoreline of the predominantly residential Pakuranga Heights area, culminating at the southern end of Lagoon Drive bridge, this unit is located within the Howick Local Board area.

What is happening?

This is a sheltered low-energy coastal environment. Tāmaki River’s main channel narrows through the middle reaches between Pakuranga and Panmure, before widening out to a sheltered tidal basin from which Pakuranga Creek branches to the east. The narrow channel and surrounding landform limit fetch, and the wide shallow intertidal area limits depth for locally generated wind waves. Pakuranga Creek shoreline is highly indented and the sheltered shallow inlets in the upper reaches are typical of estuarine depositional zones infilled with fine muddy sediment and dense mangrove habitat.

Coastal erosion and instability

In the sheltered estuarine environment through the middle reaches of Tāmaki River, the low cliff headland areas (Tiraumea Park and Riverina Place Esplanade) are most at risk to erosion and instability within this unit due to the relative exposure.

The coastal margin of the headland reserve at Tiraumea Drive is exposed to coastal erosion hazard risks, with the boat ramp accessway within the low climate change ASCIE. Other developments on the reserve including the carparking area are set landward of the predicted erosion extent in the high change scenario.

The headland reserves at Tiraumea Reserve and Riverina Reserve are armoured with aged coastal protection structures including grouted rock seawalls, tiered gabion basket seawalls, and tipped rock. The remaining shoreline within this unit is unarmoured and fringed with mangroves and saltmarsh vegetation.

Riverina Place reserve has a stacked gabion seawall along the exposed eastern shoreline of the headland.



Riverina Reserve armoured with stacked gabion basket seawalls (Source: Auckland Council)

Tiraumea Reserve has grouted stone seawall armouring along toe of the vegetated bank around the headland, and localised stacked rock armouring either side of the ramp to protect the ramp accessway.



Stacked rock armouring Tiraumea ramp access. Source: Auckland Council

Coastal inundation

Coastal inundation is predicted to impact the fringe of esplanade reserves along the Pakuranga shoreline. The area at greatest risk to coastal inundation flooding in this unit is the low-lying land around Millen Avenue Esplanade Reserve in a moderate change scenario and extending inland adjacent to parts of Pakuranga Highway.

Headland reserves (Tiraumea Park, Riverina Place Reserve, Raewyn Place Reserve) are largely elevated and only the vegetated fringes will be impacted. Within Pakuranga Creek, the side inlets will be increasingly exposed with future sea-level rise, however impacts are limited because there are few Council assets present.

Flooding

Flooding in this unit is predominantly isolated to overland paths traversing the coastal margin, noting the catchment flooding is predominantly further inland along tributaries that drain to Pakuranga Creek.

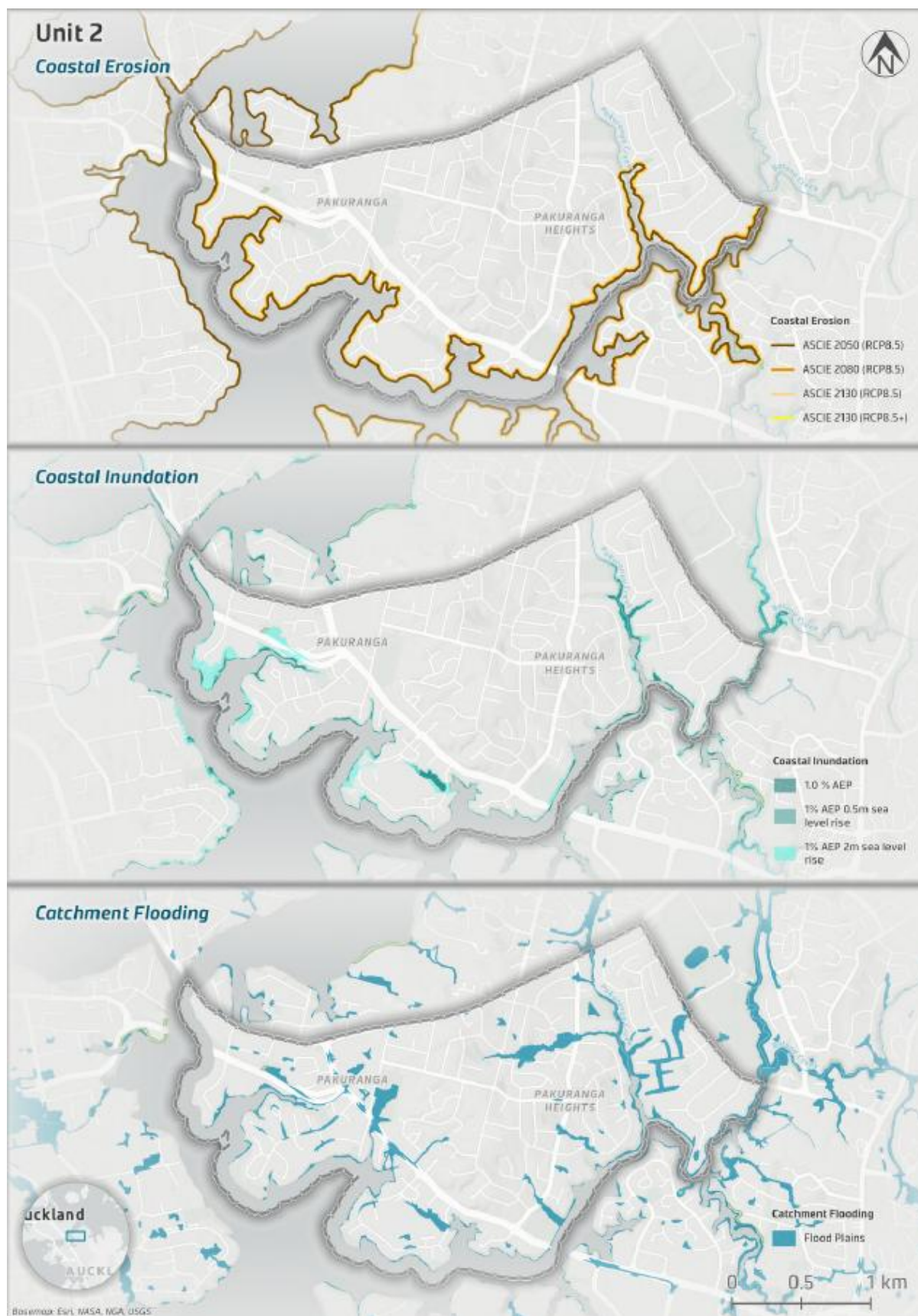


Figure 2-1: Coastal hazardscape for the Pakuranga Unit reflecting coastal erosion susceptibility for 2050, 2080 and 2130 considering RCP4.5 and RCP8.5 emission scenarios, coastal inundation for 1%AEP storm surge for present day and with 0.5 m, 1 m and 2 m sea-level rise and the identification of flood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

Risk assessment



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

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

Council-owned land			Council community facilities			Transport infrastructure			Water infrastructure		
Park and reserve land (64.8 ha)			Park amenity structures, carpark, accessways, buildings (3.1 ha) Buildings, wharves (38 No.)			AT roads (53.6 km) Bridges (4,612.5 m ²)			Water pipes (280.9 km)		
Short	Medium	Long	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Coastal erosion and instability susceptibility											
Low	Moderate	Moderate	Low	Moderate	Moderate	Very High	Very High	Very High	Moderate	Moderate	High
Coastal inundation											
Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Very High	Very High	Very High	Low	Low	Moderate
Key											
Very Low			Low			Moderate			High		
									Very High		

What matters most



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



- **Open space reserves and coastal parks:** Riverhills Park, Raewyn Place Esplanade Reserve, Riverina Place Esplanade Reserve, Tiraumea Park, Millen Avenue Esplanade Reserve.
- **Narrow esplanade reserves** along sections of this unit with limited accessibility and connectivity (Hope Farm Avenue Esplanade Reserve, Ennis Avenue Reserve, Riverhills Park, Fremantle Place Esplanade Reserve, Edgewater Drive Esplanade Reserve, Mattson Road Esplanade Reserve, Millen Avenue Reserve).



- **Park amenities:** Riverhills Park sports fields and local paths, toilets and storage shed (Tiraumea Park), playground (Raewyn Place Esplanade Reserve).



- **Wastewater:** There several pipe bridge crossings and multiple pump stations located in proximity to the coastal edge (Edgewater Drive, Fremantle Place, Gossamer Drive, Mangos Place, Pakuranga South, Millen Avenue, Pakuranga, Pelorus Place, Undine Street).



- **Closed landfills:** Hope Farm Esplanade, Ennis Ave Reserve, Riverhills Park, Riverina Place Esplanade, Tiraumea Reserve, Millen Avenue Esplanade.



- **Key roading:** Ti Rakau Drive.
- **Key walking tracks:** There are no contiguous coastal walkway connections through this unit, with local paths limited to local park areas.



- **Harbour access:** Small vessel launching facilities at Tiraumea Reserve and kayak landing at Millen Avenue Esplanade Reserve.

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



- Specific cultural values and outcomes for this unit will be developed through ongoing involvement with local iwi identified in Volume 2. Guiding objectives and outcomes which have informed the development of adaptation strategies have been identified in Volume 2.



- Community leases including (but not limited to) Tiraumea Reserve, Fencible United Football Club (Riverhills Park).
- Commercial boat builders (Stretch 2.4)



- This unit includes the southern section of Pakuranga Creek which is lined by mangrove forest and scrub.
- Pakuranga Creek is a Significant Ecological Area because it is regarded as the best example of mangrove habitat in the Tāmaki Estuary.
- The area is also recognised as SEA because of the extensive areas of feeding habitat for wading birds along this coastline.



Who did we hear from?

Feedback was received via digital platforms, Social Pinpoint and 'AK Have Your Say'. Key themes in community submissions included but were not limited to:

- Strong community aspirations for the future restoration and enhancement of local waterways, with a vision of healthy, flourishing ecosystems. Support for preserving and expanding vegetation along Pakuranga Stream and in Burswood to strengthen ecosystems and reduce soil erosion.
- Concerns about the performance of stormwater and wastewater infrastructure on the coastal environment, including erosion, habitat degradation, and water contamination. Concern about the impact on local wildlife and their habitats, noting that pollution from nearby industrial activities was also highlighted in community feedback as a significant environmental threat.
- Support for ecological restoration, including removal of wilding pines and replacement with native species, to improve ecological health and visual and help buffer the coastline in response to coastal hazard risk.
- High value of area for wildlife, particular seabirds, and the contribution to the area's vibrant natural character.
- Local walkways (within reserves) and reserve areas are highly valued, with important features noted including unobstructed views of the estuary.
- High value recreational open space in this unit includes River Hills football fields, and other grassy edges along the coast that provide opportunity for users to walk, sit, and enjoy the natural surroundings.

What can we do about it? Adaptation strategies for Unit 2.

2.1: Pakuranga Country Club Golf Course to north of Riverhills Park

This stretch begins near the northern border of Pakuranga Country Club Golf Course and extends along the northern shoreline of Pakuranga Creek to the northern boundary of Riverhills Park.

Scenarios for change		
Low	Moderate	High
No action 	No action 	No action 
Explanation The esplanade reserve along the northern shoreline of Pakuranga Creek between the Golf Course and Riverhills Park is largely vegetated and inaccessible, with limited Auckland Council assets located within identified coastal hazard areas. No action is identified due to most of the esplanade reserve being undeveloped, with limited Council assets exposed to coastal hazards in this stretch.		
Implementation Notes No action does not preclude the management of risk to transport and water infrastructure as required, including in relation to flood hazards. No action in relation to coastal modification aligns with the with the existing ecological values and the role of vegetation providing a nature-based buffer to the coastal edge.		

2.2: Riverhills Park to Tiraumea Reserve south

This stretch extends along the northern shoreline of Pakuranga Creek from Riverhills Park (inclusive) to Tiraumea Reserve. There are several coastal parks along this shoreline. The esplanade reserve along this stretch is not contiguous and as a result, continuous public connection along the coast is not provided for this stretch.

Scenarios for change		
Low	Moderate	High
No action 	Maintain 	Maintain 
Explanation No action is reflective of the limited Council land and assets exposed to coastal hazards under the low change scenario. Maintain in the moderate and high change scenario reflects that the Riverhills Park sports fields will be increasingly exposed to coastal inundation flooding and ongoing maintenance will be required to preserve existing uses within these park areas. Maintain also recognises the increasing exposure of Riverina Reserve, and other areas of the coast, and the future need to manage risk to engineered and reclaimed areas (historic closed landfill) of this shoreline.		
Implementation Notes Closed landfills: There are four closed landfills in this stretch (Riverhills Park, Ennis Avenue Reserve, Hope Farm Esplanade Reserve, and Riverina Place Esplanade Reserve) which are managed through the Closed Landfill Asset Management Plan. Management: Transpower assets traverse this unit. Engagement with major infrastructure providers (Transpower assets) will be required when considering adaptation responses.		

2.3: Tiraumea Reserve

This stretch encompasses Tiraumea Reserve which is an open space reserve at the headland. The open space reserve has several important community assets including a boat launching ramp, toilet block and storage shed utilised by waka ama groups. The facility provides an important function to people accessing the coast in this area. Some sections of shoreline are armoured with grouted stone seawalls along the toe of the vegetated bank around the headland, with localised stacked rock armouring either side of the ramp to protect the ramp accessway.

Scenarios for change		
Low	Moderate	High
Maintain 	Maintain 	Maintain 
Explanation Maintain over all climate scenarios relates to the continued maintenance of risk to the access to the coast (boat ramp and associated accessway); management of the impact of coastal erosion may be required to support safe access. Maintain for wider areas of the reserve refers to the management of risk through design and location of assets, noting that management may also be required in relation to historic land uses.		
Implementation Notes • Closed landfill: There are areas of historic closed landfill at Tiraumea Reserve that will be managed through the Closed Landfill Asset Management Plan.		

2.4: Tiraumea Reserve to Lagoon Drive

Stretch 2.4 commences at the northern border of Tiraumea Reserve / beginning of Pandora Place Esplanade Reserve, continues along Tāmaki Estuary eastern shoreline before culminating at the southern end of Lagoon Drive bridge. The esplanade reserve along this stretch is largely inaccessible and structures are primarily privately-owned boat launching facilities. There are relatively few Council-owned assets, a small kayak jetty is at Millen Avenue Esplanade.

Scenarios for change		
Low	Moderate	High
No action 	No action 	No action 
Explanation No action reflects the limited Auckland Council-owned land and assets within this stretch. Reserve / park land in this stretch can be managed through no action (retaining a dynamic coastline) supporting a vegetated shoreline and natural coastal edge.		
Implementation Notes • No action does not preclude the management of risk to transport and water infrastructure as required, including in relation to flood hazards. Management of risk through the consideration of design and location, of assets may also be appropriate for asset renewal of water access structures. • No action does not preclude future development of access/walking connections along this coastline to enhance connectivity; risk should be proactively managed through the alignment and design of future coastal walkways. • Closed landfill: There are areas of historic closed landfill at Millen Avenue Reserve that will be managed through the Closed Landfill Asset Management Plan.		



Unit 3

Highbrook to Whitford



Unit 3: Farmcove (Panmure Bridge to Half Moon Bay)

Unit 3, located within the Howick Local Boad area, begins northeast of Lagoon Drive bridge at the start of Pakuranga Rotary Path and southwest of Dayspring Way Esplanade Reserve. It then extends north along Tāmaki River Inlet until the boundary of the North Pier within Half Moon Bay Marina. Residential areas of Pakuranga, Sunnyside, Farm Cove and Half Moon Bay are within this unit.

What is happening?

The middle reaches of the Tāmaki River shoreline are generally sheltered with wave energy entering the estuary reduced by the sheltering effects of Musick Point and Browns Island and the shallow water depths over Tahuna Torea. There is long fetch of 12 km to the northeast, and higher waves can impact the shoreline during extreme storm events that coincide with high tide.

The main Tāmaki River channel is aligned close to the cliffs flanking the embayment at Half Moon Bay that then flows in a large sweeping meander towards the Point England shoreline in the west. The width of intertidal flats increases in relation to the channel alignment, from 300 m fronting the vegetated sea cliffs south of Half Moon Bay to over 1 km wide at Wakaaranga Creek mouth.

Wakaaranga Creek is a sheltered, low-energy estuarine environment, with muddy intertidal flats incised with drainage channels and established mangrove and saltmarsh vegetation in the upper reaches. There is a sandy, north-facing beach area with a low-lying backshore reserve area developed on the former lagoon area at the southern side of Wakaaranga Creek mouth, with a sand/shell spit oriented towards the northeast. Fine sands and muddy estuarine sediment veneer the shore platform with some exposed fossilised tree trunks. Intertidal sediments become muddier south of Farm Cove and there is a significant increase in mangrove growth in sheltered areas. There is also generally an increase in adjacent land levels, with steeper banks along the coastal edge.

The eastern shoreline Tāmaki River between Wakaaranga Creek and Pakuranga is a wide embayment fronted by 50-300 m wide intertidal flats backed by a low cliff that is largely armoured. There is a narrow pocket beach to the south of Pakuranga Sailing Club that is the only section of unarmoured coast along the 2 km stretch. There are several smaller indentations along this shoreline where drainage channels from the catchment enter Tāmaki River, with isolated established mangroves. There are two small side inlets at Pakuranga that are infilled with mangroves and saltmarsh.

The Half Moon Bay shoreline has been significantly modified by reclamation for the development of marina facilities that has infilled the small embayment at the north of this unit.

Coastal erosion and instability

At a unit level, risk from coastal erosion susceptibility to Council community facilities is high. The full 2.2 km length of the Rotary Walkway from Panmure Bridge to the upper part of Wakaaranga Creek is at susceptible to coastal erosion and instability. In the absence of any armouring, the walkway and majority of reserve would be exposed in the low change scenario. While this length of shoreline is currently protected by gabion basket seawalls, rock revetments and a length of mudcrete armouring that has fixed the coastal edge, the reserve is still exposed to scour from wave overtopping during extreme storm conditions. The tree-lined esplanade reserve and cliff-top walkway along most exposed sections of shoreline in the northern part of this unit around Compass Point are exposed in a low change scenario.

The sand/shell spit at the entrance to Wakaaranga Creek is a dynamic feature with the beach area and adjacent reserve subject to erosion in the low change scenario. The reserve has been developed with a sealed carpark area and community lease building (Pakuranga Sailing Club) that are exposed across all timeframes.

Most of the shoreline in this unit is armoured. There is a concentration of community facilities developed along the coastal edge and in proximity to the coastal margin. Examples of some of the protection structures located along the coastal margin are as follows:

Tāmaki Bay Drive Reserve
(adjacent Riverlea Avenue)
gabion baskets armoured
coastal walkway.



Rotary walkway along Tāmaki Bay Drive Reserve armoured with stacked gabion basket seawall with rock capping (Source: Auckland Council)

A 500 m length of the Rotary
walkway adjacent to St
Kentigern College is
armoured with mudcrete.



Mudcrete armoured of Rotary walkway section near St Kentigern College with boardwalk section bridging ignimbrite exposure (Source: Auckland Council)

Stacked gabion basket seawall armouring Rotary walkway along Fisher Parade Esplanade Reserve.



Rotary walkway along Fisher Parade Esplanade Reserve, armoured with stacked gabion basket seawalls (Source: Auckland Council)

Bramley Drive revetment armours the shoreline in front of the Pakuranga Sailing Club building, however the low-sealed carpark is only buffered by a narrow grass reserve and small high-tide beach.



Bramley Drive Reserve rock revetment armouring Rotary walkway and Pakuranga Sailing Club building with natural sandspit fronting the low reclaimed grass reserve at the entrance to Waka Aranga Creek (Source: Auckland Council)

Coastal inundation

Reflective of the low-lying nature of the coastal edge along this unit, the risk from coastal inundation is very high, even in the low climate change scenario. Inundation will specifically impact the Bramley Drive Reserve and the low-lying reserve area adjacent to Pakuranga Sailing Club, the Rotary walkway, and Half Moon Bay ferry terminal surrounds including carparking and road access. With ongoing sea-level rise, the frequency and exposure of these areas in the moderate to high change scenario will significantly increase.

The steep cliffs along the northern part of the unit, prior to the Half Moon Bay area, are elevated above coastal flooding inundation.

Flooding

Coastal inundation is generally limited to the lower-lying inlets where streams discharge to the coast. Flood plains and overland flow paths are mapped to these generally lower-lying areas.

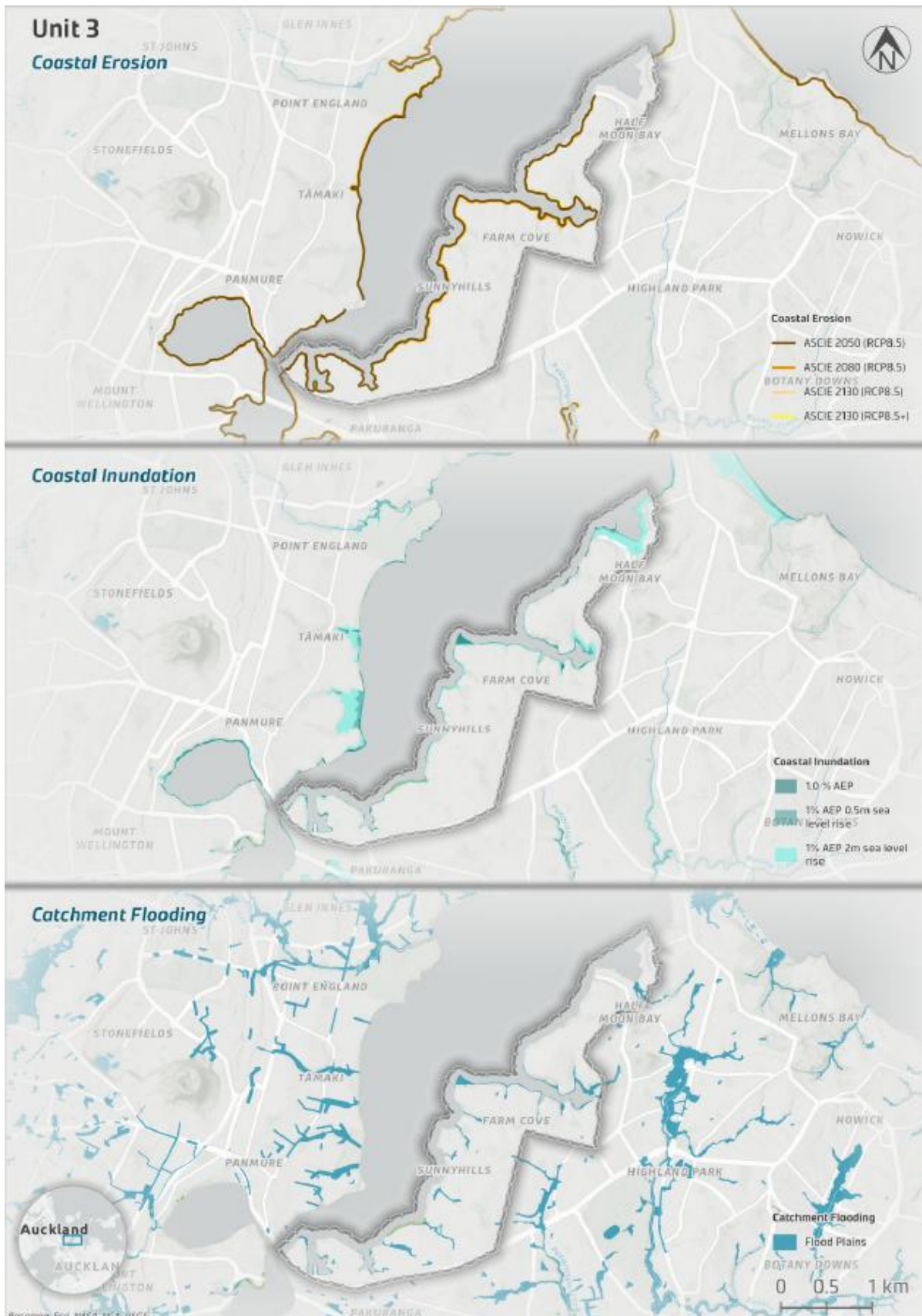


Figure 3-1: Coastal hazardscape for the Farmcove (Panmure Bridge to Half Moon Bay) Unit reflecting coastal erosion susceptibility for 2050, 2080 and 2130 considering RCP4.5 and RCP8.5 emission scenarios, coastal inundation for 1%AEP storm surge for present day and with 0.5 m, 1 m and 2 m sea-level rise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



Risk assessment

The risk table represents key groups of assets (e.g. 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 below summarises the risk levels for Auckland Council asset types in the short, medium, and long-term using the low, moderate and high climate scenarios.

Council-owned land			Council community facilities			Transport infrastructure			Water infrastructure		
Park and reserve land (38.6 ha)			Park amenity structures, carparks, accessways, buildings (1.9 ha) Buildings, wharves (22 No.)			AT roads (29.9 km) Bridges (1,472.5 m ²)			Water pipes (185.5 km)		
Short	Medium	Long	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Coastal erosion and instability susceptibility											
Moderate	Moderate	High	High	High	High	High	High	Very High	High	High	Very High
Coastal inundation											
Moderate	Moderate	Moderate	Very High	Very High	Very High	Very High	Very High	Very High	Moderate	Moderate	Moderate
Key											
Very Low		Low		Moderate		High		Very High			

What matters most



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



- **Parks and reserves:** Browns Park, Dayspring Way Esplanade Reserve, Kerswill Corner Reserve, Rotary Reserve (Bus Stop Reserve), Tāmaki Bay Drive Reserve, Williams Avenue Esplanade Reserve, Bramley Drive Reserve, Fisher Parade Esplanade Reserve, Curacao Place Esplanade Reserve, Waka Aranga Creek Reserve, Falstaff Place Reserve, Ara Tai Esplanade Reserve, Compass Point Reserve, Takutai Avenue Esplanade Reserve.



- **Key park facilities:** Public toilets (Pakuranga Sailing Club building), Snakes and Ladders Playground (Bramley Drive Reserve).



- **Wastewater:** There are 7 wastewater pumping stations in this unit (Manor Park, Pakuranga Road, Tāmaki Bay Drive, Bramley Drive, Belmere Rise, PS 39 Pakuranga North, Half Moon Bay Marina).



- **Closed Landfills:** Tāmaki Bay Drive Reserve.



- **Key pathway connections:** Rotary walkway extends 2.2 km from Pakuranga Bridge to Wakaaranga Creek (Farm Cove); Compass Point walkway.
- **Key transport network:** Half Moon Bay marina and ferry terminal, located at the northern end of the unit. The ferry terminal (operated by Auckland Transport) provides ferry services from Half Moon Bay to a range of destinations including the city centre and Hauraki Gulf Islands, including vehicle ferry services to island communities. This is a critical piece of the wider regional public transport network.



- **Key harbour access:** Half Moon Bay all-tide boat ramps; Bucklands Beach Yacht Club facilities provide access to adjacent boat moorings.

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



- Specific cultural values and outcomes for this unit will be developed through ongoing involvement with local iwi identified in Volume 2. Guiding objectives and outcomes which have informed the development of adaptation strategies have been identified in Volume 2.



- There are two heritage features listed in the Auckland Unitary Plan within the stretch; Panmure Swing Bridge, including abutments and swivel section (Category B) and Robert's Homestead (Category B).
- There are several exposures of the Farm Cove Ignimbrite in the southern part of this unit along the cliff sections adjacent to St Kentigerns College and Sanctuary Point. These are considered to be some of the best exposures of rhyolitic ignimbrite flow deposits in the Auckland region and are categorised as Outstanding Natural Features in the Auckland Unitary Plan.
- Parts of the southern shoreline include a section through fossil forest peat deposited during three climate cycles, ignimbrite with branch moulds, a small incised valley and further rhyolitic tephra. The deposits here are 3 m thick and bury charred vegetation.

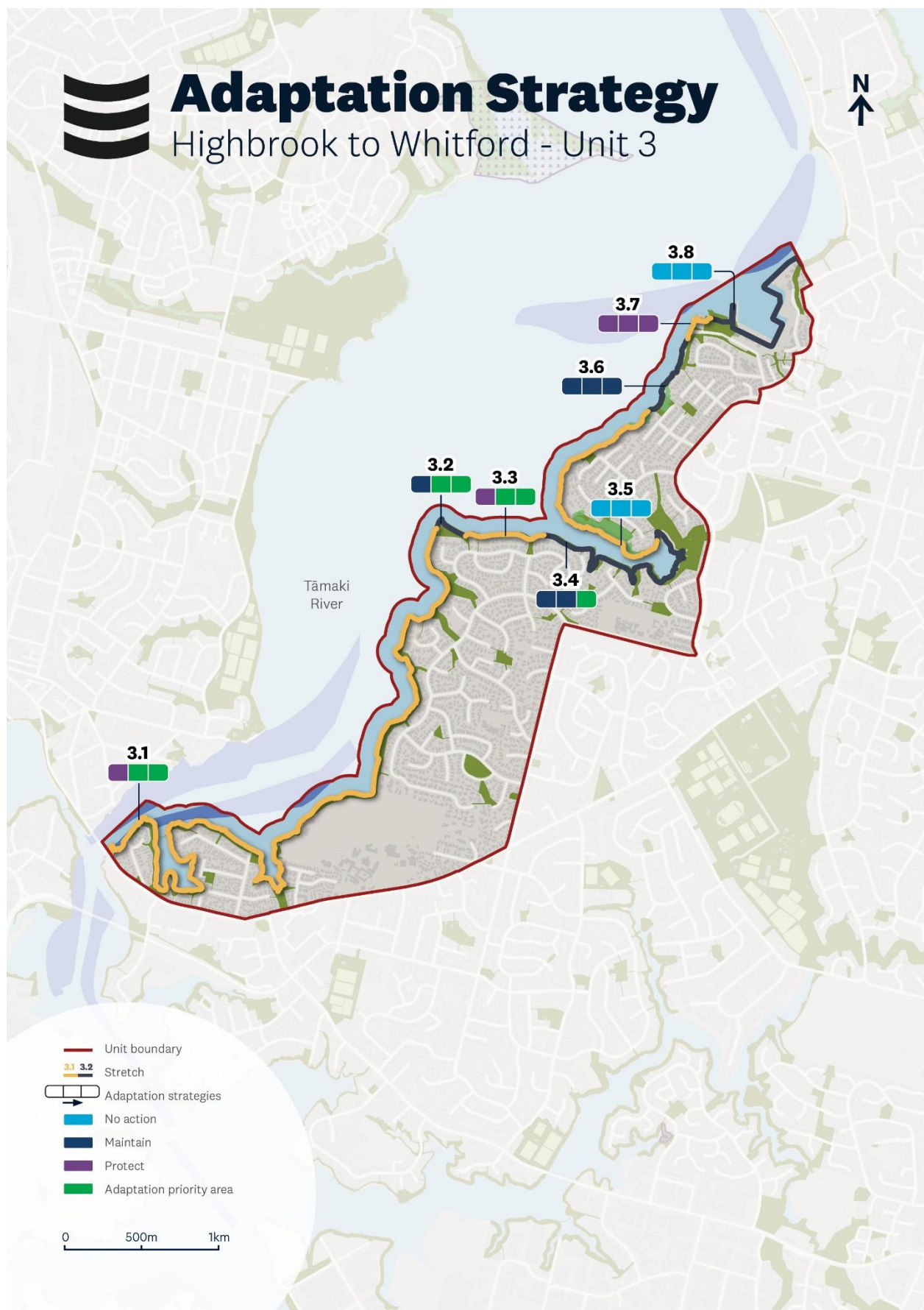


- The foreshore in this unit is recognised as having high ecological value. The small inlet south west of St Kentigern school is classified SEA. The 'Tāmaki River East Roost' is one of the roosting sites used by some of the hundreds of wading birds that feed within the Tāmaki Estuary.
- The wider intertidal area extending north to Half Moon Bay marina is classified as SEA because the intertidal bank 'Tāmaki East Bank' which acts as a feeding ground for hundreds of wading birds. There are also significant mangrove, saltmarsh and salt meadow sequences present in Wakaaranga Creek. This area also includes part of the Farm Cove ignimbrite, most of which is above MHWS.

**Who did we hear from?**

Feedback was received via digital platforms, Social Pinpoint and 'AK Have Your Say'. Key themes in community submissions included but were not limited to:

- Protecting critical public transport infrastructure, such as the Half Moon Bay ferry terminal, from coastal hazards is seen as a priority to maintain reliable connections to the city and wider gulf. The need for service infrastructure (waste disposal infrastructure) to support marine activities was also identified in relation to the Half Moon Bay Ferry terminal.
- The need for ongoing public access to and along the coast. The Rotary Walkway is highly valued and well used by locals and visitors. Many people enjoy the sense of connection it provides and would like to see it expanded further north to enhance active transport, recreation, and accessibility for this unit.
- Coastal protection measures in this unit are viewed as generally effective, though ongoing maintenance and nature-based solutions/ ecological enhancement measures are encouraged.
- Appreciation for local biodiversity and encouragement for ongoing environmental stewardship. Shorebird feeding areas are highly valued and there is concern with the loss of coastal habitats and roosting sites supporting native species like Tōrea and Pōaka (protection of roosting sites is required/ needs to be factored into coastal management initiatives).
- Volunteer efforts and stewardship are important to the community, with calls for more opportunities to participate in planting, pest control (e.g. weed control at Wakaaranga Creek inlet), and environmental care that will contribute to improving the health and resilience of the coastal environment.
- Water-based sport and recreation is highly valued, with locals commenting on enjoying kayaking, waka ama, paddleboarding, sailing, windsurfing, and swimming — particularly in areas like Farm Cove Lagoon. Safe boat mooring and small vessel launching are noted as highly valuable community assets/ important features.
- Acknowledgement of cultural landscapes and respecting such history in coastal management initiatives.
- Water quality is a consistent concern, particularly regarding its impact on fishing, swimming, and general ecological health. Community members are calling for improvements to water quality to help ensure the coastline remains safe and clean. Feedback also noted the adverse effect of dumping of greenwaste that can flow into the waterway.

What can we do about it? Adaptation strategies for Unit 3.

3.1: Lagoon Drive Bridge to Pakuranga Sailing Club (Rotary Walkway)

This 5 km long stretch commences to the northeast of Lagoon Drive bridge, near Dayspring Way Esplanade Reserve and extends north along the Tāmaki River Inlet coast, before culminating near Pakuranga Sailing Club. The coastal walkway of Pakuranga Rotary Path runs through this stretch and is a significant coastal asset providing highly valued coastal access for walkers and cyclists that extends over 2 km from Pakuranga Bridge to Waka Aranga Creek. There are several pump stations near the coast.

Scenarios for change			
Low	Moderate		High
Protect 	Adaptation priority 	Adaptation priority 	
Explanation Pakuranga Rotary Path is a key feature of this stretch that is exposed to erosion and inundation across all climate change scenarios. The pathway is an important local and regional destination. Protect allows for the continued use and ongoing maintenance of the Rotary Walkway, noting that most of the shoreline is currently armoured with some form of structural protection. Adaptation priority under the moderate to high change scenario signals that while the coastal edge is protected by existing seawalls there will be increasing coastal inundation with ongoing sea-level rise. Additional interventions (such as proactive realignment of the pathway where space permits and design changes to accommodate increased water levels) will be required to maintain safe function of this important community asset. Given the extensive nature of this coastal walkway and associated values (social, ecological and cultural), adaptation priority identifies the need for further engagement and consideration of risk management options.			
Implementation Notes • Water assets: water pump stations may require asset-specific responses to coastal hazard impacts. This may require design and location considerations as erosion and inundation risk increases. • Closed landfill: There is an area of historic closed landfill in this stretch (at Tāmaki Bay Drive Reserve) that will be managed through the Closed Landfill Asset Management Plan.			

3.2: Bramley Drive Reserve

This short stretch covers the low grass reserve adjacent to the sandspit to the north of Pakuranga Sailing Club and extends a short distance east along the Wakaaranga Creek until the Snakes and Ladders playground. The shoreline has been modified by reclamation; however it retains some natural character in that no coastal protection structures armour the reserve and there is a wide open grass area along the backshore.

The reserve is highly used and is an important local community hub with Pakuranga Sailing Club holding a ground lease for club buildings. In addition, there is a carpark area and park amenities including toilets and exercise equipment, as well as a section of the Rotary Walkway that is set landward of the immediate coastal edge.

Scenarios for change			
Low		Moderate	High
Maintain		Adaptation priority	
Adaptation Priority 			
Explanation This modified coastal edge, including beach sand levels along the narrow beach and sandspit, fluctuate naturally. Localised scour of beach sand can be exacerbated by surface water runoff (from the land). Maintain provides for the dynamic management of this section of the coast and supports the use of nature-based solutions such as increasing the beach sand buffer. Maintain provides direction for the management of risk to assets that should be considered in response to coastal hazards, including localised realignment of assets (as required). Adaptation priority in the moderate and high change scenario reflects that the extent of the inundation hazards will present a considerable challenge for management through use of existing protective mechanisms alone. Proactive engagement to explore design and adaptation options or realignment will be necessary to allow continued use/function of multiple asset types.			
Implementation Notes • Maintain signals that localised realignment of assets should be considered for existing and new assets within the wider reserve. • Ecology and amenity outcomes: Maintain, under the low climate scenario, responds to the preference for a dynamic coastal area as opposed to increasing engineered armouring of this low-lying reserve area. • Proactive planning: There is opportunity to consider how uses and assets may be maintained within the local area while responding to increased inundation risk at the coastal edge. Proactive relocation of these facilities further inland away from hazard-prone areas may be considered prior to reaching a high climate change scenario.			

3.3: Farm Cove (Rotary Walkway to Belmere Rise)

Stretch 3.3 commences east of the Snakes and Ladders Playground and extends towards the head of Wakaaranga Creek along the armoured section of Bramley Drive Reserve to the small ramp structures east of Belmere Rise. Pakuranga Rotary Path continues along this stretch and is protected by existing seawalls with regular coastal access points to the foreshore. The walkway is a significant coastal asset providing a highly valued coastal access for walkers and cyclists that extends over 2 km from Pakuranga Bridge to Waka Aranga Creek.

Scenarios for change					
Low		Moderate		High	
Protect		Adaptation priority		Adaptation priority	
Explanation As identified for the adjacent Stretch 3.1, coastal erosion and instability and coastal inundation with increased sea levels is identified as impacting this highly valued narrow coastal connection prompting consideration of the management of risk and importance of coastal connections. Protect allows for the continued use and ongoing maintenance of the Rotary Walkway, confirming the continued location of the existing armoured shoreline. Adaptation priority in the moderate to high change scenario reflects that the extent of the erosion, inundation and sea-level rise hazards will become increasingly difficult to mitigate through protective mechanisms. Adaptation priority signals the need to consider how uses and assets may be maintained within the local area, along with opportunities for nature based options recognising existing coastal squeeze and in response to increased inundation risk at the coastal edge.					
Implementation Notes • Community: The Rotary Walkway that transverses this stretch is highly valued by locals and visitors alike, noting ongoing maintenance and protection of this walkway was a common theme in community feedback. Adaptation strategies set out for this stretch reflects this feedback. • Proactive planning: There is opportunity to consider how uses and assets may be maintained within the local area, responding to increased inundation risk at the coastal edge. Opportunity for proactive relocation of these facilities further inland away from hazard-prone areas may be considered prior to reaching a high climate change scenario.					

3.4: Upper Waka Aranga Creek

This stretch extends from Belmere Rise around the mangrove infilled inlet of Waka Aranga Creek, culminating at the northern end of Waka Aranga Creek Reserve. Pakuranga Rotary Path runs through the entire length of this stretch; this is a key community asset and is also part of the Farm Cove cycling network. There is water infrastructure (Pakuranga North pumping station) exposed to coastal inundation flooding in the high change scenario.

Scenarios for change					
Low		Moderate		High	
Maintain		Maintain		Adaptation priority	
Explanation					
Maintain reflects action to manage and maintain paths (pedestrian and cycle) in the low to moderate change scenarios due to their importance to the community. In the high change scenario, the walkway network and water infrastructure will be increasingly impacted by coastal inundation. Adaptation priority is identified to allow for further engagement and consideration of how the continued use of this important, valued community asset can be achieved noting the limited existing reserve space.					
Implementation Notes					
Ecology: This stretch contains the 'Tāmaki East Bank' which is a known foraging area for hundreds of shorebirds. Ongoing consideration of ecological values associated with this site to identify opportunities to support shorebird habitats will be required. This includes support for planted buffers to stabilize banks and enhance ecological health.					

3.5: Curacao Place Esplanade Reserve to Falstaff Place Reserve

Stretch 3.5 begins slightly north of Curacao Place Esplanade Reserve and extends along the eastern shoreline of Tāmaki River until the western boundary of Falstaff Place Reserve. This stretch has limited esplanade reserve and limited public access connections.

Scenarios for change					
Low		Moderate		High	
No action		No action		No action	
Explanation					
No active intervention reflects the limited Council-owned land, infrastructure or assets in this stretch.					
Implementation Notes					
No action supports maintenance of a vegetated and natural shoreline noting ecological values and the role of existing vegetation providing a nature-based buffer to the reserve.					

3.6: Falstaff Place Reserve to Compass Place Reserve

Stretch 3.6 includes the shoreline from Falstaff Place Reserve to Compass Place Reserve near the Half Moon Bay Passengers Ferry Terminal. The landward land use within this stretch is mainly residential, with the two coastal reserves providing access to Falstaff Place Reserve and the Compass Point cycling network allowing for walking and cycling access along the coast, connecting to the Half Moon Bay Ferry Terminal. This is a key community asset.

Scenarios for change		
Low	Moderate	High
Maintain 	Maintain 	Maintain 
Explanation Maintain reflects the need to manage risk to highly valued reserve and coastal access locations within this coastal stretch and the continued management of risk to the Compass Point cycling network allowing for walking and cycling access along the coast, connecting to the Half Moon Bay Ferry Terminal. Maintain seeks to support connections by managing risk through the resilient design and appropriate location of assets.		
Implementation Notes Maintain applies to the management of risk to Council-owned land and assets, and not private land. The use of coastal protection is not envisaged for this coastal stretch.		

3.7: Half Moon Bay Ferry Terminal

This stretch begins southwest of the Half Moon Bay Ferry Terminal and extends to the breakwater that forms the western boundary of Half Moon Bay Marina. Half Moon Bay ferry terminal is a critical link in the transport network servicing the local and wider communities in this area; ferries from the terminal connect to and from several destinations across Auckland including the City Centre and Hauraki Gulf Islands. Assets within this stretch support the continuation of ferry services from Half Moon Bay.

This stretch contains other key Auckland Council assets including the all-tide boat launching ramp, and adjacent hardstand area for dinghy storage that is important for accessibility to the nearby mooring management area.

Scenarios for change		
Low	Moderate	High
Protect 	Protect 	Protect 
Explanation Protect over all change scenarios reflects the degree of coastal modification, armouring and the role of the facilities to support critical links to the Hauraki Gulf Islands and access to central city areas. The all-tide boat launching ramp is a regionally important harbour access, servicing wider south Auckland. The facilities, including all-tide boat ramp, are highly valued by the community. Half Moon Bay is a significant marine facility and limited similar facilities are located within proximity within coastal areas, east of the central city area.		

Scenarios for change		
Low	Moderate	High
Implementation Notes Protect recognises the need to protect and retain assets within this stretch in their current location. There is a functional need for the infrastructure as it provides important public transport and connectivity through provision of ferry services. - Further management of risk to activities near the coastal edge may be required over the high climate change scenario within increasing inundation impacts. Future signals and triggers of change will determine the need for future action.		

3.8: Half Moon Bay private marina

This stretch commences to the east of the breakwater and includes the privately-owned Half Moon Bay Marina.

Scenarios for change		
Low	Moderate	High
No action 	No action 	No action 
Explanation Half Moon Bay Marina is a private marina. Pedestrian access along this stretch is available around the perimeter of the marina and the inland Takutai Avenue Esplanade Reserve walkway path located along the eastern side of the road between the marina hardstand and vegetated cliffs landward, connecting to the boardwalk to Little Bucklands Beach.		
Implementation Notes No action reflects that there are no Council assets at risk within this stretch. A no action strategy does not preclude management of risk to Council-owned coastal accessways, if required. Management: Half Moon Bay marina is a privately-owned non-Council facility.		

Unit 4

Highbrook to Whitford



Te Naupata headland



Te Naupata / Musick Point

Te Naupata has strong spiritual significance as a wāhi tapu and sacred place for Ngāi Tai and has considerable traditional value for its associations with several important ancestors

Musick Point Path



Musick Memorial Radio Station



Howick Golf Club

Pest-Free Howick, in conjunction with Ngāi Tai ki Tāmaki, Howick Local Board, Auckland Council and MPI are restoring Te Naupata Reserve



Eeya's Rock

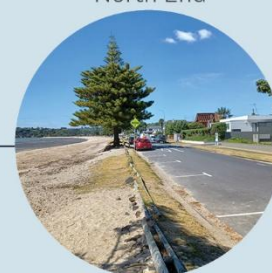


Bucklands Beach Domain

"I love swimming at Eastern Beach. I swim along the beach and enjoy looking at the beach and what is happening around me and looking out to sea and the islands. I also enjoy walking on the beach and again seeing all of the different people - so many different ethnicities, cultures and languages. The landscape and the diversity of bird life is great."



Eastern Beach North End



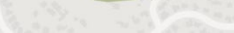
Eastern Beach



Eastern Beach walking path



Highly valued coastal walkways along Eastern Beach, aspirations to maintain walking connections and natural landscapes



Highly valued open space used for a range of activities - community aspirations to remove invasive species and restore native vegetation within the park



Bucklands Beach Path



Bucklands Beach Yacht Club



Unit 4: Te Naupata / Musick Point (Half Moon Bay to Eastern Beach)

Unit 4 begins at the boundary of the North Pier at the Half Moon Bay Marina and extends along Tāmaki River Inlet, past Bucklands Beach around Te Naupata/Musick Point, including Te Waiarohia Pā Reserve, and ends at the southern end of Eastern Beach. This unit encompasses both residential zones and reserve / parkland. There are highly valued beaches within Unit 4, including Little Bucklands Beach, Bucklands Beach and Eastern Beach. This unit is located within the Howick Local Board area.

What is happening?

In this unit, the Tāmaki Strait shoreline to the eastern side of Te Naupata/Musick Point is more exposed than the western, Tāmaki Estuary inlet side.

Within Tāmaki Estuary, the shoreline is exposed to waves generated in south-westerly to northerly wind conditions, however Tahuna Torea spit restricts wave formation across this fetch during high tide. Coastal processes, including sediment transport within the inlet are influenced by a range of factors including the predominant south-westerly wind wave direction, net northerly current flow, accretion of the Tahuna Torea Spit, ferry and recreational boat wakes and wave reflection off the seawalls and stormwater outlets.

Little Bucklands Beach is situated in the embayment formed between the East Coast Bays cliffs adjacent to Half Moon Bay Marina to the south and Granger Point to the north. Granger Point is an outcrop separating Little Bucklands Beach from Bucklands Beach. Bucklands Beach extends 1.2 km northward to Te Naupata/Musick Point. Bucklands Beach is situated on the edge of a deep channel with strong tidal flows but is within a relatively low wave energy environment. Local topography provides sheltering from the northeast.

On the Tāmaki Strait shoreline, Eastern Beach is a 1.6 km long sandy beach fronted by wide intertidal flats between two cliff (20-25m high) headland promontories. Beach material is predominantly coarse sand with high shell content originating from extensive cockle beds. Sandstone reef outcrops are exposed within the mid and lower-beach platform and extend along the length of the beach. Macleans Park Stream discharges at the south-eastern end of the beach.

Eastern beach is orientated to face the northeast and is subject to wind and waves from the northeast to the southeast sector (clockwise). The wave climate is fetch limited by the short distance across to the inner Hauraki Gulf Islands (Motutapu, Motuihe, Waiheke and Ponui), and depth limited by the shallow water depth in Tāmaki Strait. However, due to the larger fetch distances to the east, the shoreline can experience moderate wave energy during more easterly storm events.

Coastal erosion and instability

Tāmaki Estuary shoreline

Since the 1960s, Little Bucklands Beach has been modified with reclamation of the road reserve and construction of stormwater outlets at the southern end of the beach, along with a reclamation at Granger Point. The reclamation is used as boat hardstand by Bucklands Beach Yacht Club, with an

associated slipway and cleaning grids. Historic observations of the shoreline indicate that most of the sand has moved to the southern end of Little Bucklands Beach as a result of these modifications, and the disruption to sediment transport caused by Granger Point reclamation.

The backshore of Bucklands Beach has been significantly modified over time with encroachment onto the upper beach through road widening and extensions. Erosion has exposed tree roots along the upper beach, and loss of beach sand has exposed foundations of coastal protection structures armouring The Parade at the southern end of the beach.

The Little Bucklands and Bucklands Beach shoreline has been extensively modified with areas of reclamation and coastal armouring. In 2018 a study was commissioned by Auckland Council (Tonkin & Taylor 2018)¹ which explored the erosion issues and provided an options analysis for Bucklands Beach Little Bucklands Beach and Cockle Bay. This report can be referred to for a more comprehensive explanation of the coastal setting and options identified in response to the erosion issues at these specific coastal locations. Examples of some of the structures located along the coastal margin are as follows:

Little Bucklands Beach:
Auckland Transports stepped
basalt seawall armours The
Parade.



Seawall at Little Bucklands Beach, Auckland Transport asset (Source: Auckland Council)

¹ Tonkin and Taylor, 2018, Bucklands Beach, Little Bucklands and Cockle Bay Erosion issues and options analysis. Accessed August 2025 [Agenda of Howick Local Board - 18 February 2019](#)

Granger Point: Masonry wall armours the Granger Point reclamation used as hardstand area.



Granger Point masonry seawall (Source: Auckland Council)

Bucklands Beach (southern end): Tiered masonry seawall and concrete seawall armouring The Parade (opposite Wharf Road).



Bucklands Beach opposite Wharf Road (Source: Auckland Council)

Bucklands Beach: Auckland Transport emergency works (2016) to install a section of sandbags opposite 13 & 14 The Parade.



Sandbags protecting The Parade opposite 13 & 14 The Parade (Source: Auckland Council)

Bucklands Beach (northern end): There are a range of structures along and perpendicular to the beach including a stepped stone basalt wall along the southern and northern extents of the beach, groynes, boat ramps and outfalls.



Stepped masonry wall and groyne field at the northern end of Bucklands Beach (Source: Auckland Council)

Tāmaki Strait shoreline

At Eastern Beach, the net sediment transport is from north to south, with sand accumulating in a small delta in front of Macleans Park stream. The beach has progressively lost volume through a combination of sand/shell extraction, both for commercial application (historic lime production) and for raising ground levels on the adjacent reserve, as well as natural shell degradation. Monitoring of the redistribution of sand has shown that there is a net southerly drift of sand along the beach and that the boat ramp forms a localised barrier to sand supply near the southern end. The southern stream mouth channel in-fills at a rapid rate and can become blocked by sand within a period of 2-3 months following clearance. The stream outlet can periodically shift direction, when the stream flow cuts alongshore a section of the reserve and pōhutukawa trees can be exposed to scour. Large-scale sand transfer at Eastern Beach is generally required every 2-4 years, depending on the frequency of storm events, to maintain beach levels in the north.

There is no natural dune system or natural coastal vegetation along the backshore of Eastern Beach, with a mown grassed strip between the road and beach area. During periods when beach sand levels drop, erosion of the grass reserve continues. Wave overtopping and inundation during extreme storm events combined with king tides can result in damage to the grass reserve and flooding of the road.

Coastal management at Eastern Beach includes the following:

Four scheduled Norfolk Pine trees (located in the central beach area) are protected by a backstop timber seawall, with boardwalk and timber steps which provide access to the beach.



Timber backstop seawalls around trees at the northern end of Eastern Beach (Source: Auckland Council)

Beach nourishment has been carried out at Eastern Beach in 1996 and 2005 with 12,800 m³ imported sand sourced from the outer Hauraki Gulf (Pakiri). Operational sand transfers from the southern stream end of the beach to the central and northern end have been undertaken periodically since that time to maintain beach levels and contribute to reducing both erosion and inundation effects as wave energy can dissipate on the sloping foreshore.



Northern end of Eastern Beach following operational sand transfer deposition (Source: Auckland Council)

Auckland Transport placed sandbags along parts of the northern beach as backstop to protect the road from erosion during periods of low sand levels as a result of storm events.



Sandbags placed as backstop protection along The Parade, northern Eastern Beach (Source: Auckland Council)

Grouted rock walls train the stream channel that discharges from Macleans Park at the southern end of the beach.



Stream training walls: southern end of Eastern Beach (Source: Auckland Council)

The ASCIEs demonstrate the susceptibility of this coastline to erosion without coastal protection and human intervention (sand transfers). The parking spaces along the edge of the road at the northern end and central part of the beach are within the predicted ASCIE in the low change scenario, along

with the retaining walls and trees near the intersection with Eastern Beach Road. In the low to moderate change scenario, the sealed parking area adjacent to the boat ramp and the stream training walls at the southern end of the beach are within the predicted ASCIE. In the high change scenario, the entire width of road along the full length of Eastern Beach is within the susceptibility area.

Coastal inundation

Tāmaki Estuary shoreline

Transport infrastructure is at very high risk from coastal inundation under a low climate change scenario (e.g. The Parade, Hattaway Avenue and Devon Road at Bucklands Beach and Little Bucklands Beach). Council community facilities are at moderate risk from coastal inundation under a low climate change scenario, increasing to high risk in the medium term (e.g. Buckland and Eastern Beaches War Memorial Hall and community lease buildings at Granger Point).

Little Bucklands Beach generally has a slightly higher topography than Bucklands Beach and is not as frequently exposed to coastal flooding inundation. During present day conditions during a 1% AEP storm event only the fringe of the grass reserve is predicted to be impacted. However, ongoing sea-level rise will increase wave heights and tide levels over time, resulting in more frequent inundation events. In the low change scenario, the southern end of The Parade is predicted to be inundated, with a greater extent of road and the open grass reserve inundated in moderate change scenario.

The reclamation at Granger Point is elevated above the present day 1% AEP storm inundation. The seaward side is predicted to be impacted in the low change scenario, and the extent of coastal inundation flooding will increase in the future to impact the area around Bucklands Beach Yacht Club building (community ground lease).

The backshore of Bucklands Beach is low lying and susceptible to periodic inundation. The northern end of The Parade around the intersection with of Devon Road, is inundated during present day conditions with 1%AEP storm event. The full road reserve and adjacent low-lying residential development is impacted in the low change scenario with 0.5 m SLR, and with greater extent predicted to be impacted in the moderate to high change scenario.



Coastal inundation at The Parade, Bucklands Beach (Source: Stuff.co.nz)

Tāmaki Strait shoreline

On the Tāmaki Strait shoreline, during onshore storm events at high tide, waves can overtop the reserve at Eastern Beach, resulting in inundation flooding of the reserve and road area at the northern end of the beach. The reserve area at the southern end of the beach in the vicinity of the stream outlet is also impacted in the low change scenario. In a moderate change scenario, the low-lying backshore area of the entire Eastern Beach including the reserve, road and majority of seafront properties will be impacted by a 1 m sea-level rise. The greatest impact will be at the northern end of the beach.



Coastal inundation at Eastern Beach, March 2022 (Source: Lesley Sands)

Flooding

A series of short catchments drain to the coast in this unit. Localised flooding is experienced at Bucklands Beach with overland flow paths mapped to generally low-lying areas on the western side of the Te Naupata headland. Some stormwater outfall modification has been undertaken at Bucklands Beach to stop backflow and prevent tidal infiltration of stormwater drains (e.g. WaStop check valve in the manhole outside 22 The Parade).

Areas of floodplains and overland flow paths associated with tributaries that drain east to the Tāmaki Strait shoreline are identified in proximity to Macleans Stream catchments and smaller catchment at northern Eastern Beach.

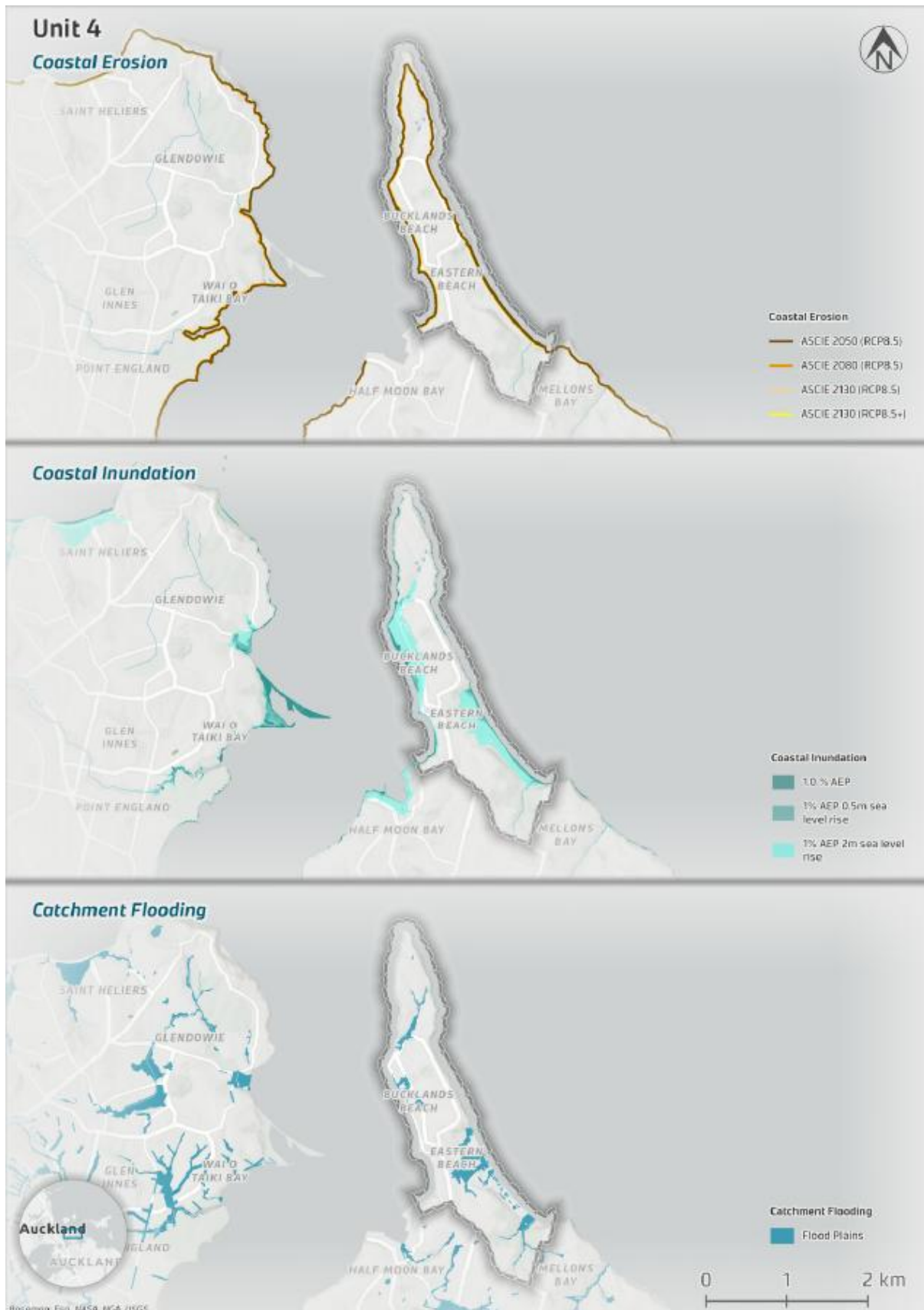


Figure 4-1: Coastal hazardscape for Te Naupata | Musick Point (Half Moon Bay to Eastern Beach) Unit reflecting coastal erosion susceptibility for 2050, 2080 and 2130 considering RCP4.5 and RCP8.5 emission scenarios, coastal inundation for 1%AEP storm surge for present day and with 0.5 m, 1 m and 2 m sea-level rise and the identification of flood plains.



Risk assessment

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

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

Council-owned land			Council community facilities			Transport infrastructure			Water infrastructure		
Park and reserve land (63.5 ha)			Park amenity structures, car parks, accessways, buildings (0.7 ha) Buildings, wharves (16 No.)			AT roads (16.8 km) Bridges (716.4 m ²)			Water pipes (106.4 km)		
Short	Medium	Long	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Coastal erosion and instability susceptibility											
Moderate	Moderate	Moderate	Moderate	Moderate	High	High	High	High	Moderate	Moderate	High
Coastal inundation											
Moderate	Moderate	Moderate	Moderate	High	High	High	Very High	Very High	Moderate	Moderate	High
Key											
Very Low		Low		Moderate		High		Very High			

What matters most



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



Parks: (non-exhaustive list) Bucklands Beach Esplanade (includes Little Bucklands, Granger Point Bucklands Beach), Te Naupata Reserve, Musick Point Esplanade Reserve, Clovelly Road walkways, Eastern Beach Reserve, Rogers Park, Eastern Beach Playground Park, Eastern Beach Caravan Park Macleans Park.



Key park amenities and Council facilities: Bucklands Beach: public toilets Granger Point, Bucklands and Eastern Beach War Memorial Hall. Eastern Beach: Rogers Park Toilets/changing rooms and playground, Eastern Beach Playground Park toilets/changing block and playground, Eastern Beach South toilet block.



Water infrastructure: In addition to piped water infrastructure within The Parade at Little Bucklands Beach, there are wastewater pump stations at Bucklands Beach wastewater pump station (Granger Point) and The Parade pumpstation (Bucklands Beach). Granger Point hardstand storage tank.



Key roading: The Parade (Little Bucklands Beach and Bucklands Beach); Clovelly Road, The Esplanade (Eastern Beach).

Key pathway connections: Bucklands Beach Path, Musick Point Path, Macleans Park tracks.



Harbour access: Granger Point (boat ramp and boat haul out facilities); Bucklands Beach boat ramp; Eastern beach 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 (inclusive of catchment flooding) over changing climate scenarios.



- Site of cultural significance to mana whenua, at Naupata Reserve - Te Naupata / Musick Point.
- 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 been identified in Volume 2.



- Site-specific consideration of mature trees, including historical botanic sites (e.g. Phoenix palms at Eastern Beach, and Te Tuhi a Manawatere pōhutukawa at the eastern end of Cockle Bay).
- Bucklands and Eastern Beach War Memorial Hall.
- There are several geological features that are recognised as Outstanding Natural Features (ONF) including the Musick Point Cannon Ball concretions and the Eastern Beach anticline.



- Small remnant patches of coastal broadleaved forest dominated by pōhutukawa and scheduled as SEA-Terrestrial are found along the cliffs between Te Naupata / Musick Point Esplanade Reserve and Eastern Beach.
- The reserve at Te Naupata / Musick Point contains several regionally threatened vascular plant species.
- The intertidal reef around Te Naupata / Musick Point is recognised as a SEA Marine because the area of rocky intertidal marine habitat is easily accessible and in reasonably good condition dominated by common marine invertebrates. The reef and small stony beaches also support coastal shorebirds including variable oystercatchers and pied shag.
- Macleans Park contains an SEA with regenerating kānuka scrub along the riparian margins of Macleans Stream discharging as a small river mouth at Eastern Beach. Notably, there are chenier plains (naturally uncommon ecosystem) that flood frequently in this location. The beach and adjacent grassed reserves support common coastal shorebirds including red-billed gulls, black-backed gulls and variable oystercatchers.

**Who did we hear from?**

Feedback was received via digital platforms, Social Pinpoint and 'AK Have Your Say'. Key themes in community submissions included but were not limited to:

- Concerns about the erosion, flooding and deterioration of sea walls and other coastal infrastructure, particularly at Bucklands Beach and surrounding areas, including concern on the impact of boat wake damage around Bucklands Beach.
- Concern that erosion is reducing footpaths and green spaces for visitors to Eastern Beach and Bucklands Beach. Exposure of rocks, oyster shell growth and remnants of old structures due to erosion and sand loss from the beaches. Existing pressure on parks amenities from high visitor numbers was also noted with the need for increased upkeep of amenities.
- There is a desire for more effective and sustainable solutions and thoughtful, locally tailored approaches to coastline protection. Including calls for increased coastal planting of salt- and drought-tolerant species to improve effectiveness in buffering the coastal edge, including replacing Norfolk pines with native pōhutukawa trees along the Eastern Beach Esplanade. Benefits of planting of shade trees to improve comfort and enjoyment of outdoor spaces.
- Restoration planting efforts are currently in progress around Te Naupata Reserve, with comments on supporting community initiatives to restore the natural environment and support the resilience of coastal landscapes alongside local iwi. Advocacy for restoration efforts for wetlands at Macleans Park and ongoing upkeep of beach amenities.
- Safe and easy access to the water for swimming and water sports. Advocacy for maintaining boat ramps and ensuring clean, accessible water quality to support safe swimming and boating activities. Ideal windsurfing launch sites noted within this unit, with nearby parking and a friendly community of wind and water sport enthusiasts; the estuary provides near-perfect condition.
- Desire for a continuous walkway along the coastline, with advocacy for beach board walkways where possible. Commentary around limited or no public access in certain areas of this unit, noting that walking paths at Musick Point could be improved for better accessibility. The importance of existing shared pathways and footpaths was emphasised, and connections to the wider transport network including possible expansion along the Eastern Busway where feasible.
- Regard for protecting ecological values in the unit including Grangers Point Reef and status of shellfish beds at Eastern Beach, with emphasis on the need for stronger oversight and enforcement to prevent overfishing.
- Concern about subdivisions on erosion-prone and unstable cliffs, along with issues such as insufficient parking, increased fire hazards, and obstruction of views. There is also a concern that private developments are being neglected.

What can we do about it? Adaptation strategies for Unit 4.

4.1: Half Moon Bay Marina to Te Akau Crescent

This stretch covers the Takutai Avenue Esplanade Reserve shoreline between Half Moon Bay and Little Bucklands Beach.

Scenarios for change			
Low	Moderate	High	
Maintain 	Maintain 	Adaptation priority	
Explanation			
The boardwalk traversing this stretch is an important, highly valued local connection between residential areas and the marina services. Maintain in the low to moderate change scenario is specific to ensuring the provision of ongoing connectivity and safe use of this coastal walkway. Adaptation priority is signaled in the high change scenario because with future sea-level rise, the walkway design may need to be adapted, including the low-lying transition points from the reserve to the structure.			
Implementation Notes			
• Management: The cliff area of Takutai Avenue Reserve is largely unmodified apart from a short length of rock revetment and planting on a slip scarp. No additional coastal armouring structures are envisaged along this shoreline.			

4.2: Little Bucklands Beach

The Little Bucklands Beach stretch commences in the south where the Half Moon Bay boardwalk joins the grass reserve and extends north along The Parade to the transition from stepped seawall to rock revetment opposite Whitcombe Road.

Scenarios for change			
Low	Moderate	High	
Protect 	Adaptation priority 	Adaptation Priority	
Explanation			
Multiple asset types are exposed to coastal hazards over all climate change scenarios in this stretch, including The Parade, carparking, and coastal walking tracks. These assets provide important functions and levels of service in terms of connectivity and access to the coast for the local community. There is limited space to move these assets further inland noting residential density along the beachfront. Protect in the low change scenario reflects the need for maintenance of the existing sea walls that protect the road and other uses from erosion. The road is exposed to frequent overtopping with residents noting wave spray across the road, and also displaced rocks and berm scour. The strategy of protect provides for maintenance of protection structures acknowledging the Howick Local Board advocacy and community interest in localised protection of roading connections. In the moderate to high change scenario, the present day temporary impacts of coastal flooding inundation will increase in frequency and magnitude with predicted sea-level rise. This will significantly impact beachfront assets, including over topping of the existing seawall, road and other areas. Adaptation priority in the moderate scenario signals the need to consider options for future management of risk, including engagement with iwi, communities and			

Scenarios for change		
Low	Moderate	High
other stakeholders to determine how risks can be managed. Under a high climate change scenario, existing coastal protection structures may no longer be sufficient to protect multiple asset types, noting the projected extent of inundation and erosion and need to manage stormwater discharge to the coast. Consideration of the location, use, and design of assets, and ongoing safe access to beachfront properties may be required.		
Implementation Notes		
• Management: The Parade and fronting seawall are exposed to erosion/instability and coastal inundation flooding. This strategy provides for interventions as required for roading connections. Auckland Transport, the asset manager, will monitor the condition of these structures and future implementation options. • Local options assessment: In 2018 a study was commissioned by Auckland Council (Tonkin & Taylor 2018) which explored the erosion issues and provided an options analysis for Little Bucklands Beach. This report can be referred to for a more comprehensive explanation of the coastal setting and options identified in response to the erosion issues at these specific coastal locations.		

4.3: Granger Point and Southern Bucklands Beach

Stretch 4.3 begins at the northern end of Little Bucklands Beach including the sloping rock revetment and extends around Granger Point to include the southern end of Bucklands Beach, adjacent to Wharf Road.

Scenarios for change		
Low	Moderate	High
Protect 	Protect 	Adaptation priority 
Explanation		
The reclaimed reserve at Granger Point is highly exposed to erosion and inundation. The hardstand area is utilised for maritime related activities with facilities that include holding tanks. The road is an important community asset, providing for connectivity and access to the reserve, coast and residential properties along with access to Bucklands and Eastern Beach War Memorial Hall. Protect recognises the existing armoured coastal edge. In the low-moderate change scenario, this strategy reflects the need to continue to protect use of Granger Point and the road connections given its importance for marine related activities. The transition to Adaptation Priority in the high change scenario reflects that ongoing protection will be challenging with increasing coastal inundation of low-lying land and the narrow beach area to the north. Degradation of existing armoured and the future projected extent of increased inundation will pose risk to Council assets including the Bucklands and Eastern Beach War Memorial Hall. This also signals the need for engagement with users and leaseholders that future land uses on reserve land that is at high risk to erosion and inundation.		
Implementation Notes		
• Collaboration: will be required with numerous parties, including leaseholders such as the Bucklands Beach Yacht Club. • Local Board views: Opportunities to restore the beach (noting the modification from reclamation), improve water access and protect the toe of the seawall are advocated for by the Local Board.		

4.4: Bucklands Beach

This stretch includes the majority of Bucklands Beach from opposite Wharf Road and extending north along Bucklands Beach Reserve to opposite Morrow Avenue. It encompasses a residential area. The beach is a popular recreational and visitor destination with the white sandy beach suitable for swimming. With the main tidal channel close to shore, the area is popular for fishing, and boat moorings in the deeper water.

Scenarios for change					
Low		Moderate		High	
Protect		Adaptation priority		Adaptation priority	
Explanation					
The Parade (road) is highly exposed to erosion and inundation, and there is currently coastal armouring along the majority of this stretch. The road is an important community asset providing for connectivity and access along the coast and to residential properties, as well as harbour connection via the boat ramp. Protect in the low change scenario reflects existing coastal armouring and the current need to protect use of the road given its importance as well as protection of wastewater infrastructure. In the moderate to high change scenario, ongoing degradation of existing armouring and erosion of remaining small areas of grass reserve (undermining existing trees) and further loss of sediment from the narrow sand beach is anticipated with the projected extent of coastal inundation flooding. Adaptation priority (in the moderate to high change scenario) signals that proactive stakeholder engagement and planning with asset owners is required in relation to potential options to improve resilience noting the significant constraints and challenges associated with roading access and narrow beach area and ensuring ongoing functionality of wastewater infrastructure.					
Implementation Notes					
• Management: The Parade is exposed to erosion/instability and coastal inundation flooding. This strategy does not preclude localised interventions as required for roading connections. Auckland Transport, the asset manager, will monitor how coastal hazards may impact on operation of these assets and future implementation options. • Local Board views: Howick Local Board identified concerns with erosion and undermining of sections of The Parade. The strategy of protect provides for maintenance of protection structures in their current location, acknowledging the community interest in localised protection of roading connections. • Local Options analysis: In 2018 a study was commissioned by Auckland Council (Tonkin & Taylor 2018)² which explored the erosion issues and provided an options analysis for Bucklands Beach. This report can be referred to for a more comprehensive explanation of the coastal setting and options identified in response to the erosion issues.					

² Tonkin and Taylor, 2018, Bucklands Beach, Little Bucklands and Cockle Bay Erosion issues and options analysis. Accessed August 2025 [Agenda of Howick Local Board - 18 February 2019](#)

4.5: Te Naupata / Musick Point

This stretch starts at the northern end of Bucklands Beach opposite Morrow Road and extends around the Te Naupata headland to Clovelly Road Walkway No 1 park/access on the eastern side of the peninsula.

Scenarios for change			
Low		Moderate	High
Maintain		Maintain	
			Adaptation priority
			
Explanation			
The coastal cliffs are exposed to progressive coastal erosion and instability over all scenarios. The maintain strategy recognises the high value of existing walkways around the perimeter of the headland and recognises that localised interventions, primarily realignment to avoid hazard areas and nature-based options such as additional coastal revegetation, are appropriate to reduce hazard risk whilst enabling continued safe access. Adaptation priority in the high change scenario reflects the risk to the section of Musick Point Road that is currently aligned close to cliff tops along the eastern shoreline and signals that proactive engagement with mana whenua and other stakeholders is required to consider potential options and need for access, recognising the high cultural values of Te Naupata.			
Implementation Notes			
• Cultural: Te Naupata, also known as Musick Point, has a rich history deeply connected to the Ngāi Tai ki Tāmaki, noting historically this headland was the site of Te Waiarohia Pā, a fortified village strategically positioned for defence and observation of the Hauraki Gulf. Ongoing engagement with Ngāi Tai ki Tāmaki will be required through implementation of adaptation strategies to ensure coastal management approaches reflect cultural landscapes and cultural values. • Management: Musick Point Road is exposed to erosion/instability. This strategy does not preclude localised interventions as required for roading connections. Auckland Transport, the asset manager, will monitor how coastal hazards may impact operation of these assets and future implementation options. • Ecology: The area has high ecological value with the vegetated cliff margin recognised as a SEA terrestrial and the adjacent intertidal rock reef, a SEA Marine. Engagement with the Ecology Team to seek advice on specific implementation actions to support ecological values.			

4.6: Clovelly Road to Rogers Park

This stretch includes the northern cliff shoreline adjacent to residential properties along Clovelly Road and finishes at the northern end of Eastern Beach where Rogers Park joins Clovelly Road Walkway No 3.

Scenarios for change			
Low		Moderate	High
No action		No action	
Explanation			
There is limited Council reserve along the cliff shoreline, with residential properties extending along most of this stretch. No action reflects the absence of Council land and few assets at risk. Landslips have damaged coastal cliff access points, some of which have been permanently closed due to the ongoing hazard risk.			
Implementation Notes			
No action is reflective of the absence of Auckland Council-owned land and assets requiring management of risk from coastal hazards. - This strategy does not preclude ongoing monitoring and localised intervention of the remaining cliff access point subject to ongoing geotechnical assessment. Clovelly Road is not identified as susceptible to coastal erosion or instability in the ASCIE scenarios utilised by the adaptation plan process.			

4.7: Eastern Beach

This stretch covers the entire 1.5 km length of Eastern Beach. The beach is backed by a grassed reserve along the complete length of the beach. The Esplanade Road is located immediately landward.

The northern and central beach is backed by a narrow width of grass reserve (1- 5 m wide). At the southern end of the beach, the grass reserve widens up to approximately 20 m near the boat launching facilities. Macleans Park borders the coast at the southern end of Eastern Beach and has an extensive path system throughout the park as well as open spaces that are used as a throughfare for passive recreation. The Macleans Park Stream outlet to the beach has a concrete-lined channel and rock training walls that extend to the upper beach.

Scenarios for change			
Low		Moderate	High
Maintain		Adaptation priority	
Explanation			
Numerous assets including The Esplanade Road, open space grass reserve and toilets are exposed to coastal erosion and inundation in this stretch, with risk increasing in the moderate to high change scenario.			
In the low change scenario, maintain reflects the existing backstop seawalls in the northern/central beach area that protect four scheduled Norfolk Pine trees and the ongoing operational maintenance required to manage a sand beach			

Scenarios for change		
Low	Moderate	High
to buffer the northern reserve area and prevent undermining of the existing walls. Operational maintenance of natural sand build-up at the southern end of the beach (that can block the stream outlet) has been undertaken over the last 20+ years. Sand that is cleared is transferred to the northern beach, for beneficial reuse buffering the reserve and retaining sediment within the beach cell system. In the moderate to high change scenario, The Esplanade Road will be increasingly impacted by erosion and inundation (noting Esplanade Road provides access both to the beach and to residential properties along the beachfront). Adaptation priority is signalled for these scenarios, recognising the existing coastal squeeze with only narrow reserve between the existing road, assets and beach, limits options for retreating assets. Proactive engagement with residents, stakeholders and mana whenua is necessary for road asset managers to plan for continued use of these assets.		
Implementation Notes • Maintain supports renewal of the existing stream training walls at Macleans Park end of the beach (current coastal renewal project), noting support for nature-based options, where practical. This promotes opportunities for naturalising the stream outlet, where possible, to adapt to coastal hazards and accommodate natural beach change in this highly valued recreational area. • Ecology: Macleans Park contains SEA areas and there are chenier plains along Eastern Beach, which are naturally uncommon. Eastern Beach provides habitat for several species of 'At Risk' coastal birds. Ongoing consideration of opportunities to support ecological values across all climate change scenarios will be supported via adaptation strategies set out for this stretch. • Cultural: Eastern Beach holds significant cultural importance rooted in its cultural landscape with specific reference to Ngāi Tai ki Tāmaki. Ongoing engagement across all climate change scenarios will be required to ensure adaptation strategies reflect cultural values and landscapes.		

4.8: Bleakhouse Road Promontory Reserve

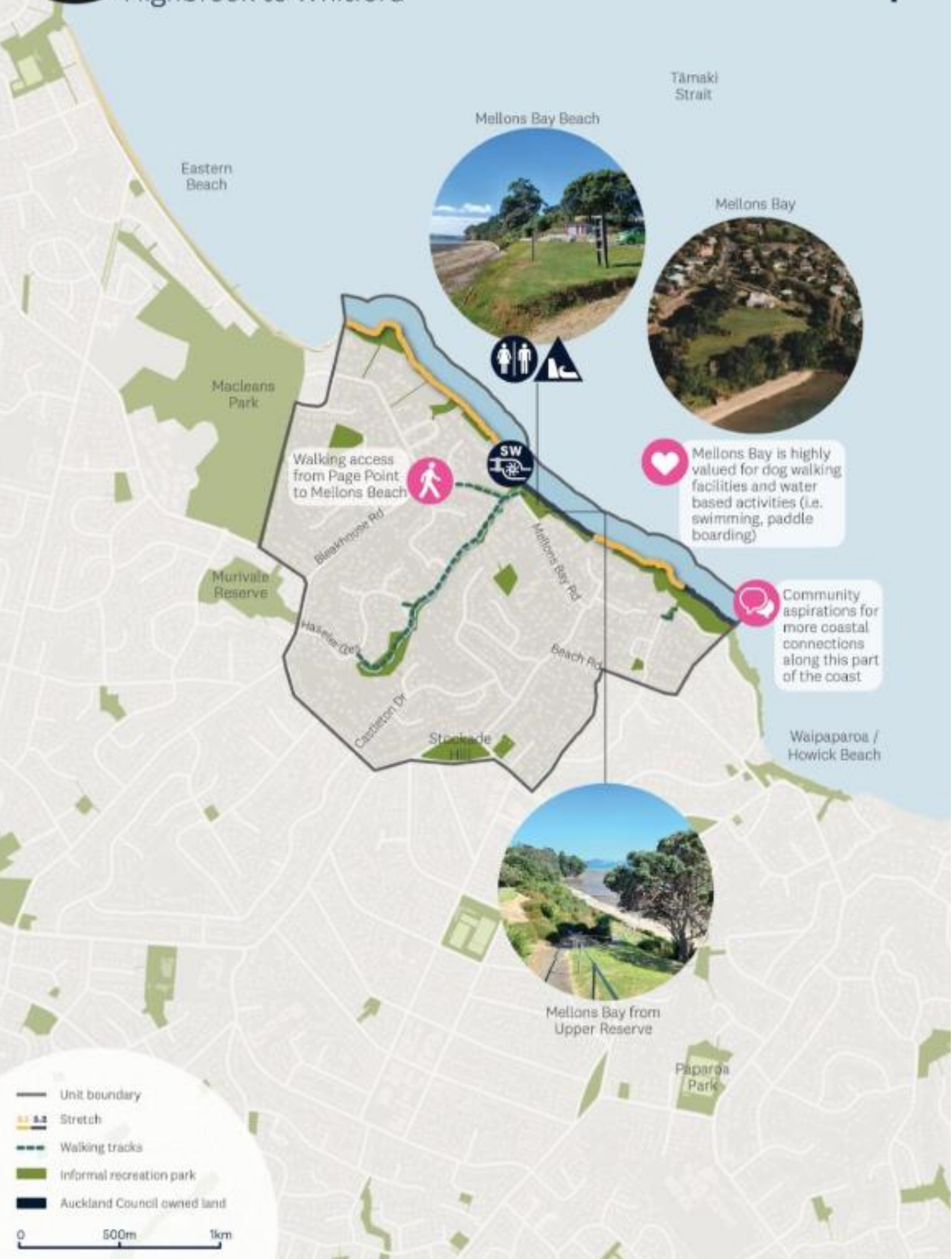
Stretch 4.8 begins at the southeastern end of Macleans Park and continues to the midway point of Bleakhouse Road Promontory Reserve, encompassing the northwest facing portion of this reserve.

Scenarios for change		
Low	Moderate	High
No action 	No action 	No action 
Explanation The majority of this cliffed stretch of shoreline is private land, with undeveloped Council reserve at Bleakhouse Road Promontory Reserve located on the cliff headland. There are no Council assets developed on the reserve.		
Implementation Notes • No action is reflective of the absence of Auckland Council-owned land and assets requiring management of risk from coastal hazards.		



Unit 5

Highbrook to Whitford



Unit 5: Mellons Bay

The Mellons Bay unit covers approximately 1.4 km of mostly cliff shoreline, with a small beach in the central area indented between headlands. The beach is narrow and consists of a thin veneer of sand that fluctuates over the rock platform.

What is happening?

The northeast-facing shoreline is in the lee of the prevailing south-westerly wind, however it is exposed to the easterly and northerly sectors, although the limited fetch across Tāmaki Strait and the wide, shallow intertidal shelf restricts the wind wave climate. The steep cliffs at the northern end of Mellons Bay are fronted by extensive intertidal areas of rock reef.

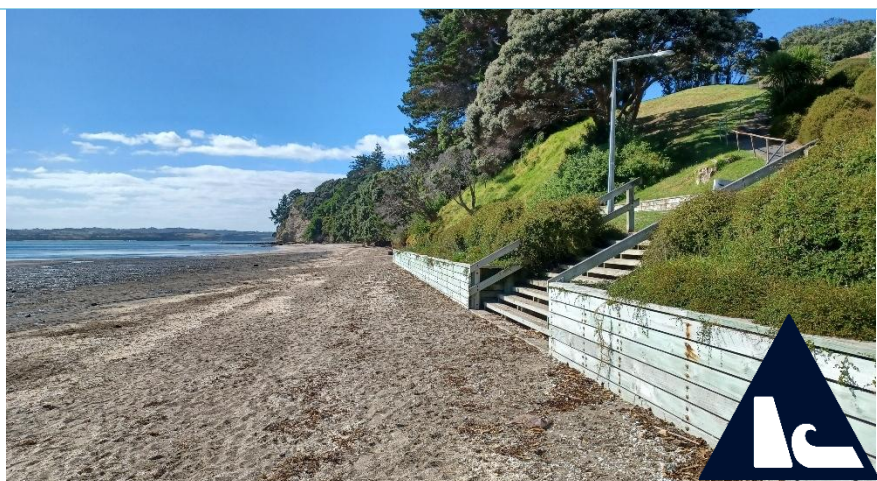
In the central beach area, Mellons Bay stream outlet has been infilled, and the low-lying reclaimed backshore area has been developed as a reserve with car parking and toilet facilities. A large stormwater outlet discharges catchment flows via a 1350 mm diameter pipe at the northern end of beach adjacent to the carpark. The Mellons Bay branch sewer line runs from the pump station located on the northern side of the lower car park, through the reserve along the foreshore at the base of the cliff towards Howick Beach in the south.

Coastal erosion and instability

The lower carpark and lower terrace grass reserve along Mellons Bay is susceptible to coastal instability and erosion hazards (within the moderate change predicted regional ASCIE), however the area is currently armoured with a timber seawall and rock revetment. In the absence of these structures, the extent of erosion in the high change scenario would extend to the seaward edge of the lower and upper carparks.

Key coastal protection structures in this unit are depicted below:

Mellons Bay: A two-tiered timber seawall was constructed in 2015 to protect the eroding edge of the grass reserve.



Tiered timber seawall, Mellons Bay (Source: Auckland Council)

Mellons Bay: Rock revetment was added to the north of the timber wall following storm damage in January 2018 that eroded the unarmoured grass reserve in front of the carpark.



Mellons Bay rock revetment during construction 2018 (Source: Auckland Council)



2025 Mellons Bay rock revetment with established grass cover (Source: Auckland Council)

Coastal inundation

Coastal Inundation is predicted to be largely limited to the periphery of the coastline, because of the steepness and elevation of the reserve along this unit. In a 1% AEP storm event, the lower tier of the stepped timber seawall will be temporarily overtopped. In the moderate change scenario, the fringe of the reserve above the rock revetment and seawall will be inundated, along with the localised area on the banks of Mellons Bay stream channel landward of the piped section above the carpark. The carpark and toilet block amenities are not exposed to coastal inundation.

Flooding

Flooding in this unit is predominantly isolated to overland paths traversing the coastal margin, noting the catchment flooding is predominantly further inland, as shown in the figure below.

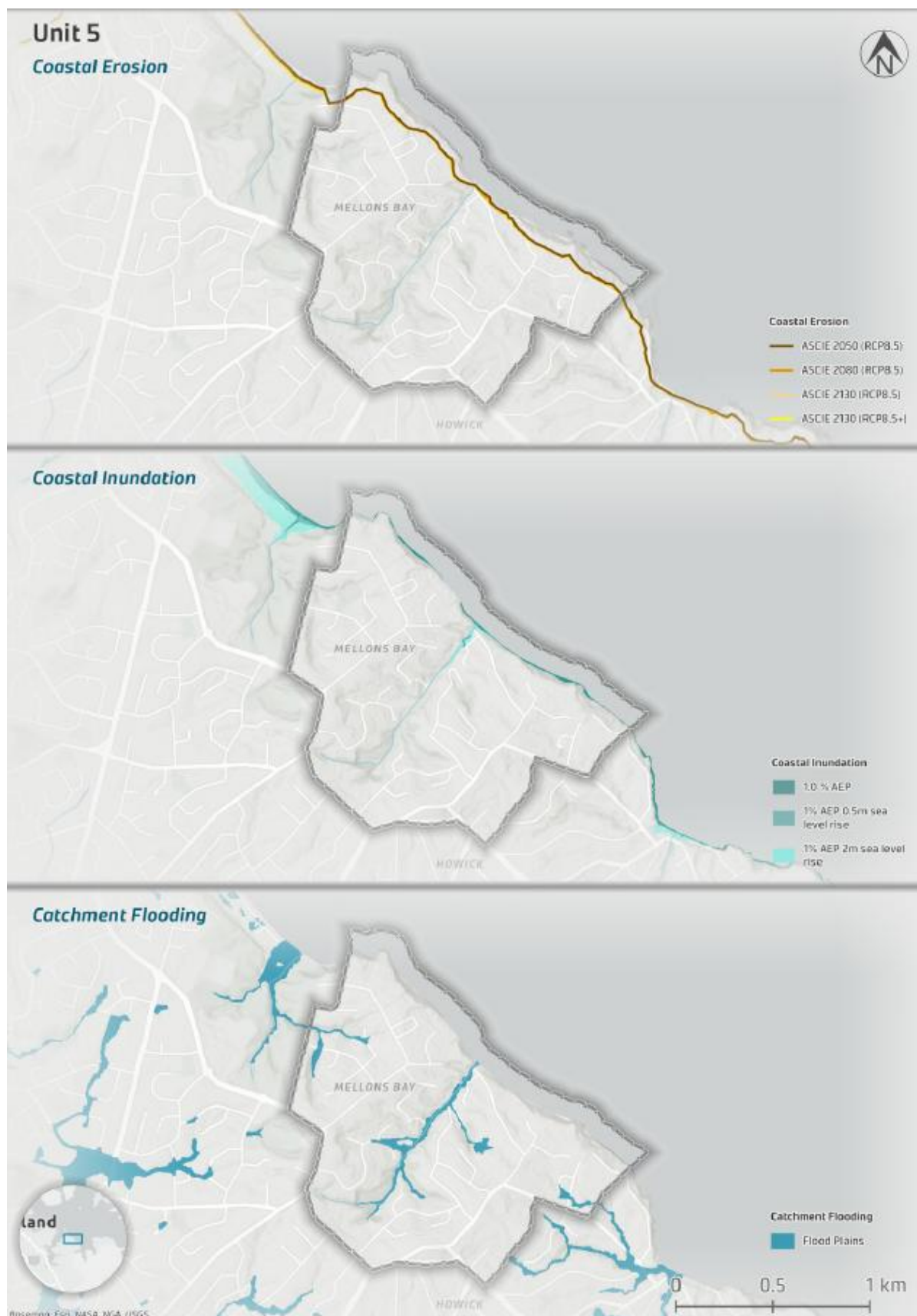


Figure 5-1: Coastal hazardscape for the Mellons Bay Unit reflecting coastal erosion susceptibility for 2050, 2080 and 2130 considering RCP4.5 and RCP8.5 emission scenarios, coastal inundation for 1%AEP storm surge for present day and with 0.5 m, 1 m and 2 m sea-level rise and the identification of flood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



Risk assessment

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

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

Council-owned land			Council community facilities			Transport infrastructure			Water infrastructure		
Park and reserve land (12.5 ha)			Park amenity structures, carparks, accessways, buildings (0.3 ha) Buildings, wharves (1 No.)			AT roads (10.6 km) Bridges (350.6 m ²)			Water pipes (82.1 km)		
Short	Medium	Long	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Coastal erosion and instability susceptibility											
Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Low	Low	Moderate	High	High	High
Coastal inundation											
Low	Low	Low	Very low	Low	Low	Very low	Very low	Very low	Low	Low	Moderate
Key											
Very Low		Low		Moderate		High		Very High			

What matters most



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



- **Parks and Reserves:** Glenoaks Reserve, Mellons Bay Reserve.



- **Key park facilities:** Mellons Bay park facilities: toilets/changing facilities, carpark.



- **Water infrastructure:** Mellons Bay pump station.

Social, cultural and ecological context: This section identifies key social, cultural and ecological matters, identified throughout 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 been identified in Volume 2.



- Land use within this unit is primarily low density residential with open space areas provided set back from the coast. Town centre and commercial areas are located to the south along the ridge, set back from coastal areas.
- Coastal areas support both local and sub regional visitors.



- Small remnant patches of coastal broadleaved forest are located on the cliffs at Mellons Bay Reserve which is scheduled as a terrestrial SEA. These patches support a common range of non-threatened native and introduced passerine birds.



Who did we hear from?

Feedback was received via digital platforms, Social Pinpoint and 'AK Have Your Say'. Key themes in community submissions included but were not limited to:

- Advocacy for durable maintenance strategies to effectively manage erosion and ensure the stability of coastal infrastructure, whilst prioritising the maintenance of beach access.
- Support for enhancing walkways alongside waterways, including improvements to the MacDonald walkway.
- Commentary highlighting issues related to infill housing, extensive impermeable surfaces and changing weather patterns contributing to pollution of streams and beaches through black water discharges and silt runoff. Community feedback sought implementation of enhanced stormwater discharge systems to minimise beach pollution and support safe coastal water activities.
- Recognition and support for volunteer initiatives at Mellons Bay Reserve, which have enhanced birdlife and native vegetation; ongoing maintenance of these efforts is encouraged. Endorsement of groups such as Friends of Mellons Bay Reserve that help maintain pathways, plant indigenous species, and promote healthy aquatic ecosystems.
- Importance placed on preserving and restoring shell banks and mature trees to support local biodiversity and ecological health. Also value of increased planting of shade trees to improve comfort and enjoyment of outdoor spaces.
- Concern with cliff slumping and instability along Marine Parade, and impact of subsidence impacting nearby private properties during storm events.
- Local Boards Views (Howick): During development of the Highbrook to Whitford SAP, members from the Howick Local Board raised the issue of undermining of Marine Parade Reserve (because of coastal erosion), requiring urgent attention.

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

5.1: Oliver Twist Avenue to Mellons Bay Beach

Stretch 5.1 begins at the cliff shoreline near Oliver Twist Avenue and continues south to the northern end of Mellons Bay Beach. This stretch encompasses the southeastern portion of Bleakhouse Road Promontory Reserve located on the headland and Glenoaks Reserve.

Scenarios for change			
Low		Moderate	High
No action		No action	
Explanation			
The majority of this cliffed stretch of shoreline is private land, with undeveloped Council reserve at Bleakhouse Road Promontory Reserve located on the cliff headland. There are no Council assets developed on the reserve.			
Implementation Notes			
No action is reflective of the absence of Auckland Council-owned land and assets requiring management of risk from coastal hazards.			

5.2: Mellons Bay

This stretch begins at the northwestern edge of Mellons Bay and continues to the eastern edge of the bay, encompassing Mellons Bay Reserve and the walking tracks, carparking and toilet/ changing facility contained within this reserve. The esplanade reserve narrows south of the carpark and the cliff is densely vegetated and inaccessible, with residential properties along the cliff top.

Mellons Bay provides for informal recreation including swimming, water sports (kayaking and paddleboarding) and walking. The reserve is a well-used community resource with walkway connections to the wider neighbourhood.

Scenarios for change			
Low		Moderate	High
Protect		Adaptation priority	
Explanation			
The existing two-tiered timber seawall and rock revetment provide protection to fix the current coastal edge. Protect in the low change scenario reflects the existing armouring structures that will require ongoing maintenance. Adaptation priority in the moderate and high change scenarios reflects that increasing frequency of wave overtopping and exposure to coastal processes will impact the existing protection structures. Future adaptations to design and alignment will likely be required to increase resilience. Adaptation priority also supports engagement and provides for the consideration and realignment of assets in close proximity to the coastal edge. This may include more landward renewal of existing assets, including carparking areas, toilet facilities. Assets will be exposed to a greater extent under a high change scenario, including additional water infrastructure.			
Implementation Notes			
Ecology: Mellons Bay Reserve contains endangered coastal broadleaved forest. Ongoing consideration of opportunities to support ecological values via implementation of adaptation strategies is supported via strategies set out above.			

5.3: Mellons Bay South and Eastern Cliffs

Stretch 5.3 commences southeast of Mellons Bay Reserve and continues to Marine Parade Reserve. This stretch also encompasses Seymour Road Esplanade Reserve. There is a combination of private landholdings and reserve land extending to the toe of the cliff along the southern beach area with no access to the foreshore due to a steep cliff face. Towards the southern end of the beach there are a range of privately-owned seawalls and coastal protection works along the toe of the cliff. Several stormwater outfall pipes from private properties are visible discharging over the southern Mellons Bay cliffs.

Scenarios for change		
Low	Moderate	High
No action 	No action 	No action 
Explanation		
A narrow esplanade reserve extends along the vegetated cliff top. Remaining reserve areas are inaccessible with no identified assets present.		
Implementation Notes		
No action is reflective of the absence of Council-owned land and assets requiring management of risk from coastal hazards.		

5.4: Marine Parade Reserve

This stretch includes the southern cliff section along Marine Parade Reserve, ending at the western end of Howick Beach.

Scenarios for change		
Low	Moderate	High
No action 	No action 	Adaptation priority 
Explanation		
No action is reflective of the absence of Council-owned assets requiring management of risk from coastal hazards, primarily the road reserve areas of the coastal edge. Adaptation priority in the high change scenario signals that a section of the Marine Parade Road is within the regional ASCIE (areas susceptible to coastal erosion and instability) under a high climate change scenario. Adaptation priority identifies a need for proactive engagement with a range of parties to consider options to respond to coastal erosion processes and future access arrangements.		
Implementation Notes		
Monitoring and review: Erosional rates, and the impact of sea-level rise may require revision of strategies should a greater site-specific erosion risk be identified. Ongoing monitoring of this coastal edge is required to review coastal hazard risk and if a transition to adaptation priority is required sooner. Community: Concern in relation to coastal erosion for Marine Parade Reserve, was highlighted in community feedback and through engagement with the Local Board. Adaptation strategies reflect this feedback, based on coastal erosion predictions/susceptibility areas identified for this stretch.		



Unit 6

Highbrook to Whitford



Unit 6: Waipaparoa / Howick

This unit extends approximately 1.8 km from the rocky reef outcrops between Mellons Bay and Howick Beach, to the cliff headland at the point between Howick Beach and Cockle Bay.

What is happening?

The shoreline is relatively sheltered by the inner Hauraki Gulf islands. There is limited fetch for wind wave generation across Tāmaki Strait, with the greatest fetch of 12 km to the northeast. The shoreline is exposed to moderate wave energy during extreme storm events from the north to northeast sectors. Howick Beach is generally characterised as a narrow sandy beach overlying exposed rock shelf, fronted by a wide intertidal area. There is a smaller sandy beach area between indented headlands at the eastern end of the unit, backed by steep, high (up to 36 m) vegetated cliffs.

Coastal erosion and instability

Beach sand levels fluctuate naturally in response to storm events, with the varying extent of rocky shore platform exposed on the intertidal area and occasionally lowered sand on the upper beach exposing the toe of the seawalls. There is a slight alongshore trend of sand movement towards the northwest, with a small dry high-tide beach adjacent to the northern ramp. Stormwater discharges are a key influence on the movement of sand on the beach. The two main outfalls impact the beach by scouring beach sand from the upper (dry) beach area and transporting it out into the intertidal area during heavy rainfall events. During high flows, sand is scoured from the beach and transported seaward by concentrated stormwater from the central channel across the beach.

The regional ASCIE lines indicate that the esplanade reserve along entire Howick Beach is susceptible in the low change scenario, including key wastewater infrastructure and community lease buildings. The shoreline is currently armoured with a combination of masonry rock seawall and tipped rock revetment. In the high change scenario, a wider extent of coastal reserve would be impacted in the absence of coastal armouring.

Howick Beach is protected by existing seawalls of various forms including concrete, grouted basalt rock, scoria block and brick extend along 320 m of the beach. Some sections of seawall (scoria block) at the northern beach were constructed in the 1800s and are historic structures. The only unarmoured section of the beach is the bank between the northernmost ramp and Uxbridge outfall.

There is a current coastal renewal project to replace the failing section of shotcrete-faced seawall west of Howick Sailing Club, with a masonry seawall on a slightly more landward alignment consistent with the adjacent existing seawalls. This project will also raise the crest of the existing seawall immediately the east of the Howick Sailing Club building to prevent overtopping scour and extend the footings of the seawalls at the eastern end to prevent undermining.

Grouted basalt seawall in the central part of Howick Beach was modified in 2016 to raise the seawall crest to 3.0 m RL to prevent scour around pōhutukawa roots caused by frequent wave overtopping.



Masonry seawall at Howick Beach (Source: Auckland Council)

Rock revetment and masonry seawall armouring wastewater pumping station at the southern end of Howick Beach.



Rock revetment armouring the wastewater pumping station Howick Beach (Source: Auckland Council)

Red brick seawall at the southern end of Howick Beach.



Howick Beach south (Source: Auckland Council)

Coastal inundation

Coastal Inundation is largely limited to the periphery of the coastline because of the elevation of the reserve and height of the cliff coastline. However, overtopping of the existing seawalls and inundation of low-lying parts of the reserve is predicted to occur during a 1% AEP storm event. In a moderate change scenario during a 1% AEP event plus 1 m sea-level rise, additional areas are susceptible to coastal inundation including an area of carparking at the northwestern end of the beach.

Flooding

Natural stream outlets have been straightened with some localised reclamation. Six catchments discharge stormwater onto Howick Beach via five outfalls within this unit. The main catchments are Uxbridge and Liston which discharge stormwater through two relatively large outfalls onto the upper beach at the north-western end and central area respectively.

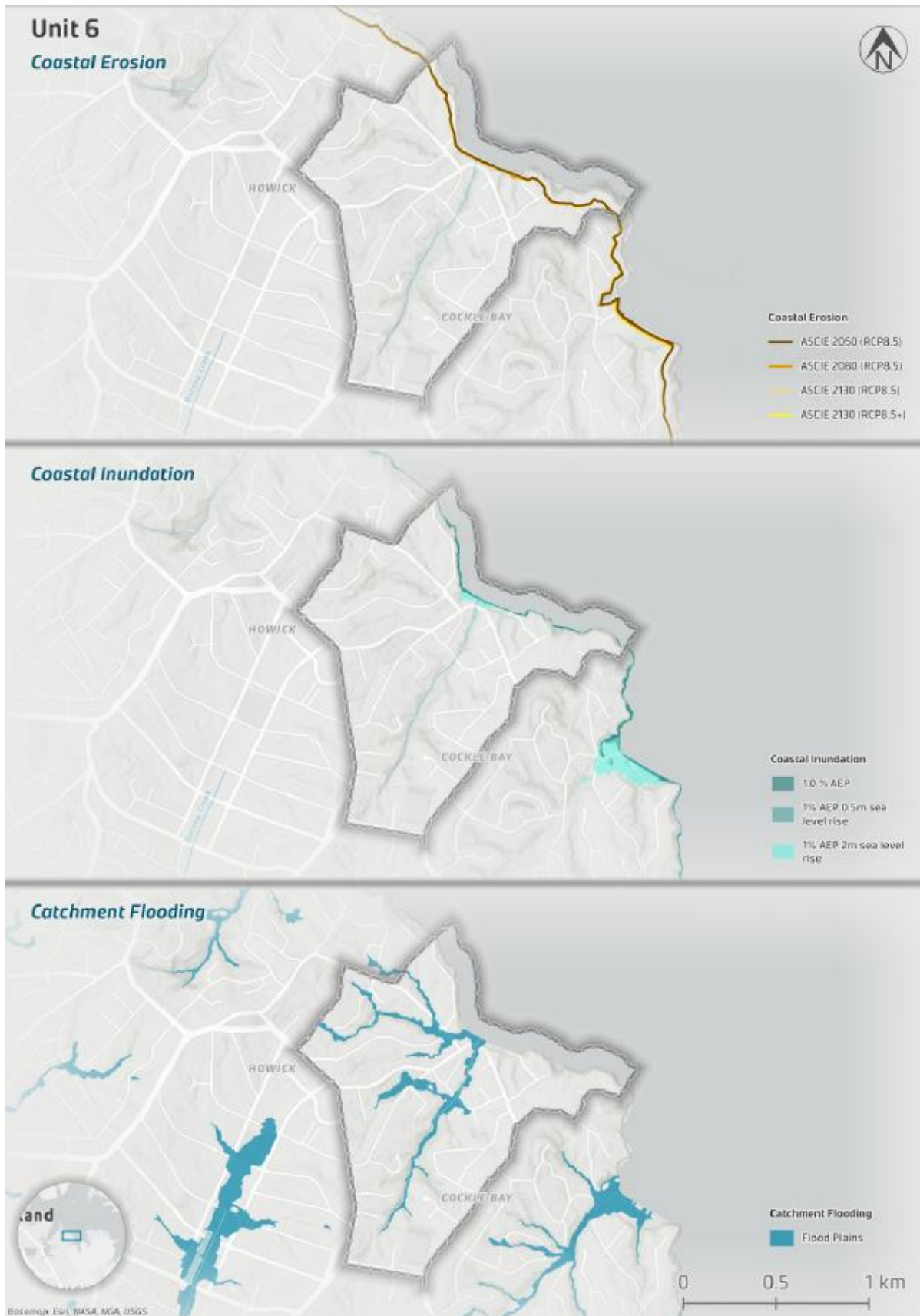


Figure 6-1: Coastal hazardscape for the Waipaparoa / Howick Unit reflecting coastal erosion susceptibility for 2050, 2080 and 2130 considering RCP4.5 and RCP8.5 emission scenarios, coastal inundation for 1%AEP storm surge for present day and with 0.5 m, 1 m and 2 m sea-level rise and the identification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



Risk assessment

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

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

Council-owned land			Council community facilities			Transport infrastructure			Water infrastructure		
Park and reserve land (13.5 ha)			Park amenity structures, carparks, accessways, buildings (1.2 ha) Buildings, wharves (28 No.)			AT roads (11 km) Bridges (2,557.5 m ²)			Water pipes (70.4 km)		
Short	Medium	Long	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Coastal erosion and instability susceptibility											
Moderate	Moderate	Moderate	High	High	High	Moderate	Moderate	Moderate	Moderate	Moderate	High
Coastal inundation											
Low	Low	Low	High	High	High	Low	Low	Low	Low	Moderate	Moderate
Key											
Very Low		Low		Moderate		High		Very High			

What matters most



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



- **Parks and Reserves:** Marine Parade Esplanade Reserve, Howick Beach Reserve.



- **Key park facilities:** Public toilets, car parks.



- **Wastewater:** Pump station (PS 30 Howick).



- **Key pathway connections:** Marine Parade cliff steps.
- **Key local roading:** Marine Parade, Beach Road, Rangitoto View Road.



- **Harbour access:** 3 public boat ramps at Howick 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 (inclusive of catchment flooding) 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 been identified in Volume 2.



- Community lease areas at Howick Beach: Howick Sailing Club, Howick Coastguard.



- **Marine Parade Esplanade** (southern portion) comprises eroding coastal cliff with mixed native-exotic trees including pōhutukawa which is scheduled as a SEA. Small remnants of coastal broadleaved forest are also present.
- **Howick Beach** includes an extensive intertidal rock platform located on the western end of the beach which has been the subject of several marine fauna studies. Red-billed and black-backed gulls commonly forage at low tide at the Paparoa Stream mouth while variable oystercatchers and grey-faced heron are occasionally present in the summer months.



Who did we hear from?

Feedback was received via digital platforms, Social Pinpoint and 'AK Have Your Say'. Key themes in community submissions included, but were not limited to:

- Concern regarding damage to the seawall and boat ramps at Howick Beach, affecting safety and usability, particularly for the Howick Sailing Club.
- Support for the communities' role (e.g. Howick Sailing Club) in teaching sailing and water safety, and support for club facilities at Howick Beach Reserve.
- Need for more resilient seawalls, with smoother surfaces to enhance comfort and the enjoyment of the surrounding views. The current Howick Seawall coastal renewal project is noted.
- Consideration for restricting beach access in certain areas.
- Water quality issues with frustration over beach closures caused by poor water quality from stormwater runoff and calls for effective measures to prevent stormwater pollution, and concern with littering impacting beach cleanliness. Importance of servicing and enforcement to manage waste and maintain public area tidiness.
- Issues with invasive pest plants such as privet, gorse, and pampas grass harming local ecosystems; calls for management or eradication strategies.
- Calls to ban net fishing near beaches due to concerns over catching undersized fish and perceived lack of enforcement from fisheries authorities despite reported issues.
- Observed a significant rise in landslips on the headlands.
- Development aspirations/ proposal to build a wharf at Howick Beach to enable ferry services, reducing car trips to the city and creating space for recreational activities. This comment related to support for rebuilding the Howick Beach jetty to allow the Beachlands ferry to stop.

What can we do about it? Adaptation strategies for Unit 6.

6.1: Marine Parade Reserve to Howick Beach

Stretch 6.1 begins at the rocky outcrops between Mellons Bay and Howick Beach and ends at the northwestern edge of Howick Beach. It encompasses the eastern portion of the Marine Parade Esplanade Reserve.

There is limited access to the foreshore from the northern cliff top reserve between Mellons Bay and Howick. Steps opposite 90 Marine Parade were decommissioned following a large slip in 2020, and the remaining steps opposite 38 Marine Parade were upgraded in 2023 and extended over the wave-cut shore platform. There is no beach access to or along the cliffs in the southern part of the unit.

Scenarios for change			
Low		Moderate	High
Maintain		Adaptation priority	Adaptation priority
Explanation Marine Parade Road located along the cliff top is within the area susceptible to coastal erosion and instability. Maintain in the low change scenario, recognises the importance of the existing Marine Parade cliff access steps and the ongoing need to monitor and maintain the structure for safe public use. Adaptation priority in the moderate and high change scenario signals that maintaining access in the future will be challenging and alternative design or location may be required.			
Implementation Notes Management: Marine Parade is exposed to erosion/instability. This strategy does not preclude localised interventions as required for roading connections. Auckland Transport, the asset manager, will monitor how coastal hazards may impact on operation of these assets and future implementation options.			

6.2: Waipaparoa / Howick Beach

Stretch 6.2 begins at the western edge of Howick Beach and continues to its eastern edge. The beachfront has high historic heritage value with remnant footings of piles from the historic 1898 wharf visible on the foreshore, along with older sections of 19th century seawall and stone steps associated with the wharf abutment. Howick Beach is popular with the local community, as well as the wider area as a key feature of the 'Eastern Beaches'. It is located approximately 5 minutes' walk from Howick's main street and functions as both a local and sub-regional attractor.

Scenarios for change			
Low		Moderate	High
Protect		Adaptation Priority	Adaptation Priority
Explanation The low-lying backshore reserve area is the main recreational access point along this coastline with three boat ramps. The reserve is used by community groups including Howick Coastguard and Howick Sailing Club. These groups have Community ground leases from Council. There is also significant water infrastructure at Howick Beach including a wastewater pump station and two large stormwater outfalls from the catchment. In the absence of existing coastal			

Scenarios for change		
Low	Moderate	High
structures, coastal erosion exposure to wastewater pumpstation, carparks and community lease areas (Howick Sailing Club) is projected from the present day. Protect in the low change scenario reflects that Howick Beach is protected by existing seawalls of various forms including sections of seawall (scoria block) at the northern beach constructed in the 1800s that are historic heritage structures. Protect recognises the high value of the reserve and range of uses accommodated, in particular, the boat launching access that is used by the Coastguard and provides an important function to the local community and wider boating community. Adaptation priority in the moderate climate scenario reflects the increasing inundation impacts with wave overtopping impacting areas which accommodate highly valued existing use and tenant-owned facilities owned by community groups (such as Howick Sailing Club). Adaptation priority signals proactive engagement with iwi, stakeholders and communities and planning is necessary to consider how highly valued coastal access points and uses of the wider coastal area can be supported and the function of piped water infrastructure continued.		
Implementation Notes		
• Historic heritage: Management of the historic seawalls at Howick Beach needs to consider the heritage values associated with these structures. Collaboration with Auckland Council's Heritage Team may be necessary to ensure appropriate management approaches via implementation of adaptation strategies. • Community: Water-based sport and recreation is highly valued, with locals commenting on enjoying kayaking, waka ama, paddleboarding, sailing, windsurfing, and swimming. Safe boat mooring and small vessel launching are noted as highly valuable community assets/ important features.		

6.3: Howick East

Stretch 6.3 begins at the eastern edge of Howick Beach Reserve encompassing the coastline through to the cliff headland point between Howick Beach and Cockle Bay.

Scenarios for change		
Low	Moderate	High
No action 	No action 	No action 
Explanation		
There are no identified Auckland Council assets or reserves within this stretch.		
Implementation Notes		
• No action is reflective of the absence of Council-owned land and assets requiring management of risk from coastal hazards.		



Tāmaki Strait

Cockle Bay



Community commentary that the "Howick Beach, Cockle Bay, and Shelly Park coastal strip have long experienced slips and cliff erosion."

Shelly Park Beach



Sandspit at Shelly
Park Beach



Pohutukawa
Walkway

"I have lived in Eastern Beach and Cocker Bay since 1984. The area allows for relaxed living but also provides numerous opportunities for swimming, walking, hiking. Further to Whitford, Beachlands etc, as well as more city ward towards Pakuranga, Farm Cove, Panmure, Glen Innes and Glendowie are all exceptional value when you live in the area. Combination of coastal and native shrub lands is very much appreciated"

Community aspirations to see paths maintained and expanded for walking and cycling into the future

Mangemangeroa
Reserve

Hayley Lane
Reserve

Keltaway
Reserve

- Unit boundary
- 7.5 Stretch
- Walking tracks
- Informal recreation park
- Mooring management area
- Auckland Council owned land

0 500m 1km

Unit 7: Cockle Bay to Mangemangeroa

This unit covers the western shoreline of the Whitford embayment and extends from the cliffs north of Cockle Bay towards the upper reaches of Mangemangeroa Creek including Shelly Park Beach.

What is happening?

This coastline is generally a low wave-energy environment with restricted fetch across Tāmaki Strait and wide intertidal flats reducing wave energy. However, during northerly storm events moderate wave energy can impact the Cockle Bay shoreline. Beach sand levels fluctuate in response to prevailing conditions, and from wave interaction with existing seawalls that armour the reclamation at the stream mouth.

In the south, Mangemangeroa Creek is the smallest of the three estuarine inlets that drain to the wider Mangemangeroa- Tūranga -Waikopua embayment. The headland of the creek is narrow with the funnel-shaped inlet widening towards the sandspit at the entrance with mud and sand flats fringed with pockets of saltmarsh.

Coastal erosion and instability

The reclamation at the western end of Cockle Bay and areas of carparking along Shelly Beach Parade are within the predicted area susceptible to erosion over a low change scenario. The reclamation is armoured, and the seawall has been extended east to 'fix' the coastal edge to protect the most susceptible section of the road. However, wave overtopping of engineered structures can cause scour of the reserve. The toilet block and edge of Shelly Beach Parade Road are at risk in a moderate climate change scenario. In a high change scenario, a wider part of the road will be susceptible to erosion as well as the seaward edge of the eastern carpark.

Shelly Park Beach and the entire sandspit at the entrance to Mangemangeroa Creek are dynamic and susceptible to coastal erosion in a low change scenario. This includes the entire length of Pōhutukawa Avenue Esplanade Reserve to Mangemangeroa Reserve. The upper part of the inlet is a sheltered estuarine environment, however the steep, vegetated slopes are subject to instability and there have been numerous land slips over recent years that have impacted parts of the walking tracks.

Coastal management interventions within this stretch are primarily within Cockle Bay. Prior to the seawall extension (below), beach sand levels were managed to maintain a buffer at the eastern end of the seawall, with sand transfer to move sand accumulated at the southeastern stormwater outfall back to the northwestern end. In 2018 a study was commissioned by Auckland Council (Tonkin & Taylor 2018)³ which explored the erosion issues and provided an options analysis for Bucklands Beach Little Bucklands Beach and Cockle Bay. This report can be referred to for a more comprehensive explanation of the coastal setting and options identified in response to the erosion issues at these specific coastal locations.

³ Tonkin and Taylor, 2018, Bucklands Beach, Little Bucklands and Cockle Bay Erosion issues and options analysis. Accessed August 2025 [Agenda of Howick Local Board - 18 February 2019](#)

Cockle Bay: Concrete seawall armouring reclamation and rock toe protection at Cockle Bay following significant storm damage in 2018, the seawall was extended east to provide some protection to the carparking area along Shelly Beach Parade, and rock armour was placed along the toe of the grouted basalt seawall to reduce wave reflection effects on the adjacent shoreline.



Concrete seawall and rock toe protection at Cockle Bay (Source: Auckland Council)

Shelly Beach: The coastal edge along Pōhutukawa Avenue is largely armoured with private structures of ad-hoc design in various states of repair, with isolated stands of coastal rushes.



Private seawall structures fronted by naturally established saltmarsh adjacent to Pōhutukawa Avenue esplanade reserve (Source: Auckland Council)

Coastal inundation

Coastal inundation will have a significant impact at Cockle Bay. In the moderate change scenario, the reclamation at the stream mouth, beachfront reserve and Shelly Beach Road will be inundated along with parts of the eastern carpark. Community buildings (Sea Scouts and Wind Ross restaurant) at Cockle Bay Reserve are slightly elevated and while predictions indicate those buildings will not be directly impacted, the access to and carparking areas will be inundated.

At Shelly Beach, the area of reserve on the sandspit and the coastal fringe of Pōhutukawa Esplanade Reserve are at risk of coastal inundation flooding in the low change scenario. With moderate change, several buildings (Shelly Park Cruising Club and Howick Sea Scouts) located on the sandspit are predicted to be exposed, along with a greater extent of the low-lying reserve fronting properties at Pōhutukawa Avenue and the lower sections of the Mangemangeroa Walkway.

Flooding

Areas of floodplain and overland flow paths are identified in proximity to the Cockle Bay stream catchment. Flood plains and overland flow paths are mapped to these generally lower-lying areas and areas further inland of the catchment.

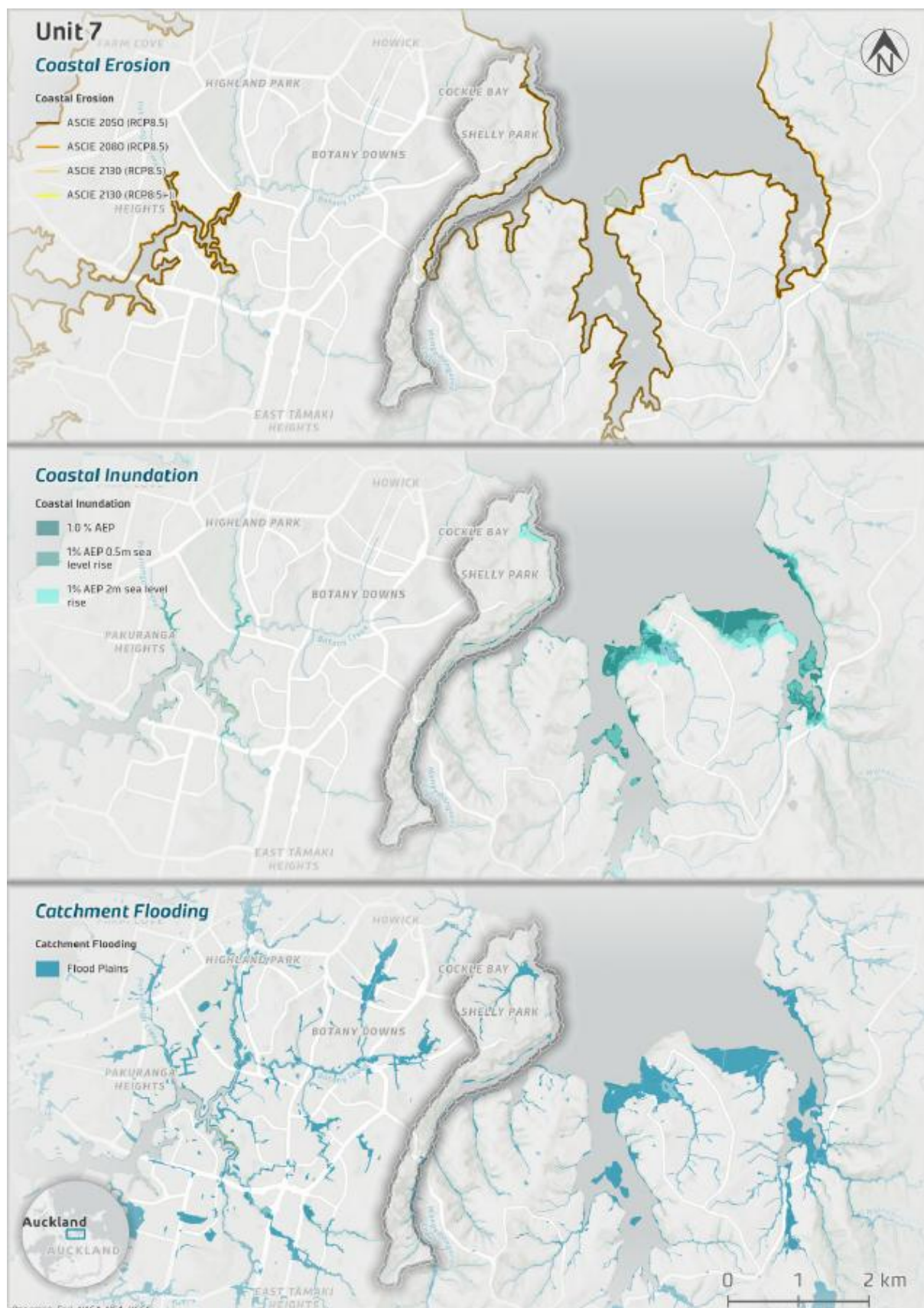


Figure 7-1: Coastal hazardscape for the Cockle Bay to Mangemangeroa Unit reflecting coastal erosion susceptibility for 2050, 2080 and 2130 considering RCP4.5 and RCP8.5 emission scenarios, coastal inundation for 1%AEP storm surge for present day and with 0.5 m, 1 m and 2 m sea-level rise and the identification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



Risk assessment

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

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

Council-owned land			Council community facilities			Transport infrastructure			Water infrastructure		
Park and reserve land (54.6 ha)			Park amenity structures, carparks, accessways, buildings (0.3 ha) Buildings, wharves (14 No.)			AT roads (19.1 km) Bridges (136.2 m ²)			Water pipes (97.3 km)		
Short	Medium	Long	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Coastal erosion and instability susceptibility											
High	High	High	High	High	High	Moderate	Moderate	High	High	High	High
Coastal inundation											
Moderate	Moderate	Moderate	High	High	High	Moderate	Moderate	Moderate	Low	Moderate	Moderate
Key											
Very Low		Low		Moderate		High		Very High			

What matters most



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



- **Reserves:** Wikitoria Reserve, Cockle Bay Reserve, The Sandspit Reserve, Pōhutukawa Avenue Esplanade Reserve, Chisbury Terrace Reserve, Mangemangeroa Reserve.



- **Key park amenities:** Cockle Bay playground, carparks, toilet amenities, Windross House.



- **Wastewater:** Cockle Bay pump station, Sandspit Road pump station (Shelly Beach), Pōhutukawa Avenue pump station.



- **Key pathway connections:** Cockle Bay walkway, Pōhutukawa Avenue Path (pedestrian access to private properties), Mangemangeroa Walkway.
- **Key local roading:** Shelly Beach Parade (Cockle Bay), Whitford Road.



- **Harbour access:** Cockle Bay boat ramp; Shelly Park Cruising Club facilities.

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



- Specific cultural values and outcomes for this unit will be developed through ongoing involvement with local iwi identified in Volume 2. Guiding objectives and outcomes which have informed the development of adaptation strategies have been identified in Volume 2.



- Site-specific consideration of mature trees, including historical botanic sites (e.g. Phoenix palms at Eastern Beach, and Te Tuhi a Manawatere Pōhutukawa at Cockle Bay's eastern end).
- Community leases: Cockle Bay – Cockle Bay Scouts; Shelly Beach – Howick Sea Scouts, Shelly Park Cruising Club.



- The intertidal habitat at Cockle Bay and wider estuarine habitat of the Mangemangeroa-Turanga-Waikopua embayment is recognised as a SEA Marine as the large bay has a complex of intertidal mud, sand and shell flats. The physical variety provides a similarly varied range of habitat for an assortment of animal and plant communities. The intertidal banks are a rich feeding ground and important mid-tide roost for a large variety of international migratory and New Zealand endemic wading birds including several threatened species.
- Turunga Creek is the largest estuarine habitat, including mangrove shrubland ecosystems, in the Hunua Ecological District.
- The series of reserves situated on the west-facing slopes of Mangemangeroa Creek encompass patches of coastal broadleaved forest and regenerating native forest dominated by mānuka and kānuka. Mangrove forest dominates the upper and lower reaches of Mangemangeroa Creek. The gradient from saline vegetation to terrestrial vegetation at Mangemangeroa Creek is recognised as a regionally important sequence and one of only two remaining areas of coastal ponga and taraire forests and coastal shrubland on coastal sediments in the ecological district and is recognised as a SEA Marine. The saline vegetation provides high quality habitat for cryptic coastal fringe birds.

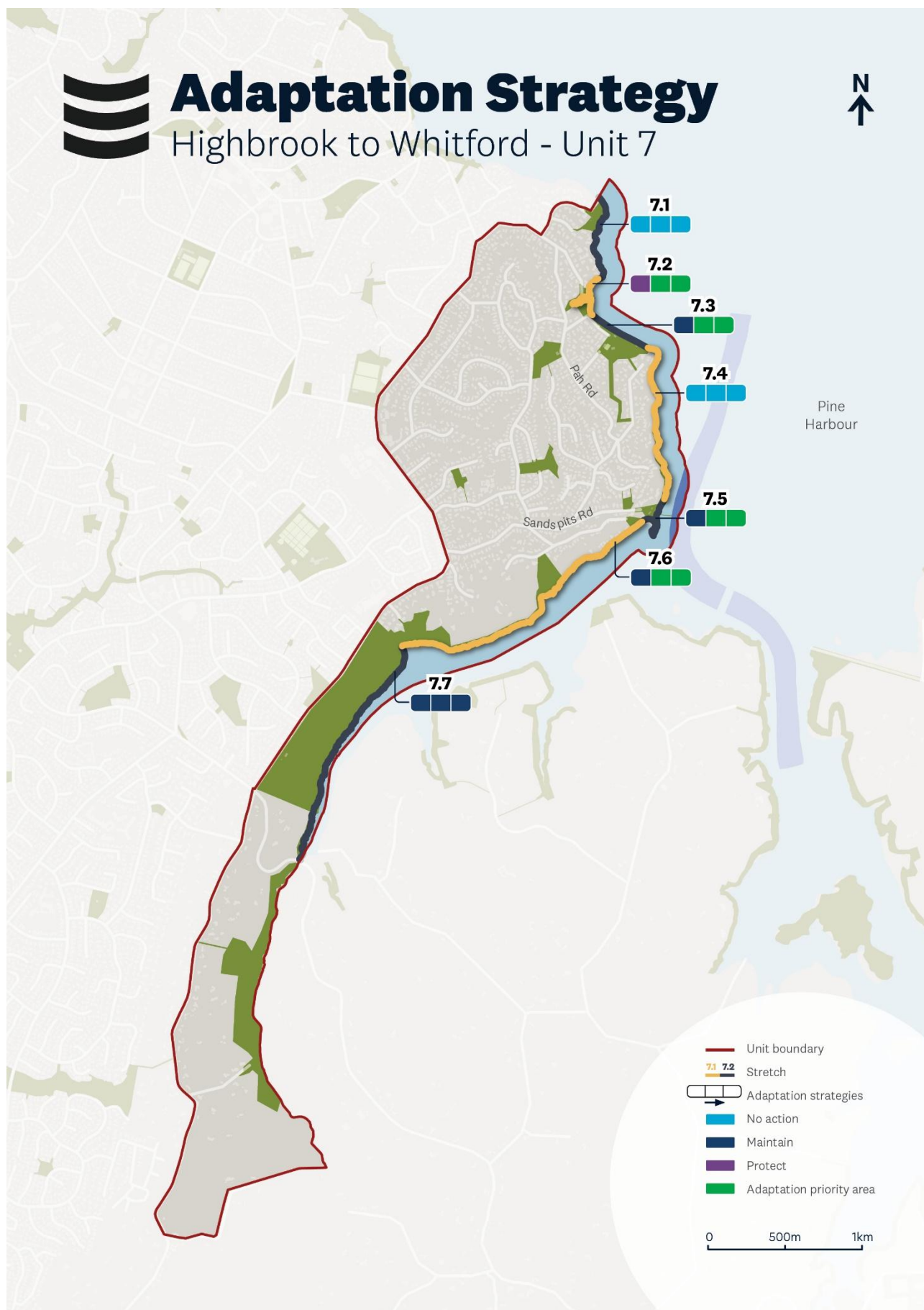


Who did we hear from?

Feedback was received via digital platforms, Social Pinpoint and 'AK Have Your Say'. Key themes in community submissions included but were not limited to:

- Requests for additional boat launch sites and jetties along the coast (within this area) to reduce congestion at Half Moon Bay and promote recreational activities like paddle boarding.
- Commentary regarding significant slippage and cliff erosion along Howick Beach, Cockle Bay and the Shelly Park coastal areas including advocacy for a buffer zone to stop people from building/living on the cliff edges. Support for initiatives to plant native trees for cliff stabilisation and erosion prevention versus concern that over-engineered fixes such as concrete walls and netting to stabilise cliffs are unsustainable and visually intrusive.
- Recognition of the need for adequate parking for vehicles and boat trailers to accommodate visitors. Importance was also placed on maintaining and expanding existing amenities such as walkways, car parks, rubbish bins, benches, and picnic tables.

- Concern about slips and resulting path closures in Mangemangeroa Reserve. Importance of access along footpaths, bush tracks, and free access to the shoreline, including calls to restore native bush tracks and enhance stream water quality. Requests to keep walkways in good condition to enable continued nature enjoyment and exercise. There was also a proposal for a pedestrian bridge connecting Mangemangeroa Reserve across the estuary, improving access and connectivity for recreation.
- Concerns about mud and mangrove build-up in Turanga and Mangemangeroa Estuaries, limiting activities like kayaking. There were mixed views expressed on the role of mangroves.
- Desire for increased native plantings, enhanced biodiversity, and installation of predator-proof bird boxes to support native birdlife.
- Concerns that rain runoff reduces water quality at beaches, impacting safe swimming opportunities and emphasis on caring for streams in this unit to help reduce flooding and runoff into the sea.
- Strong support for preserving the operations of historic boating clubs through shared management between the Council and clubs.
- Appreciation for volunteer contributions in Mangemangeroa Reserve and advocacy for ongoing Council support and recognition.
- Engagement in restoration projects targeting pest plant removal, native replanting, water quality improvement, and stream habitat protection for native fish.
- Call for more inclusive decision-making involving residents and property owners on erosion management and coastline conservation.
- Suggestion to install educational signage highlighting the area's history, wildlife and Māori cultural heritage.

What can we do about it? Adaptation strategies for Unit 7.

7.1: Waikiteora to Cockle Bay

This stretch commences at the cliff headland point between Howick Beach and Cockle Bay and continues to the north-eastern edge of Cockle Bay Stream. This stretch encompasses Waikiteora Reserve and Cockle Bay Reserve.

Scenarios for change			
Low		Moderate	High
No action		No action	
Explanation			
The majority of this cliffed stretch of shoreline is private land, except for Waikiteora Reserve located on the cliff headland. There are no Council assets developed on the reserve.			
Implementation Notes			
No action is reflective of the absence of Auckland Council-owned land and assets requiring management of risk from coastal hazards.			

7.2: Cockle Bay North (stream)

This stretch encompasses the northeastern end of Cockle Bay Reserve including the armoured reclamation adjacent to the stream. The stream at the northern end of Cockle Bay is separated from the beach by an armoured reclamation. This reserve area is fringed with mature pōhutukawa trees above the seawall, and a playground and picnic area have been developed on the reclaimed reserve. There is a wastewater pumping station adjacent to the stream on the reclamation.

Scenarios for change			
Low		Moderate	High
Protect		Adaptation Priority	
Explanation			
Protect in the low change scenario refers to the existing coastal protection structures around the perimeter of the reserve. The seawall has been extended towards the east in response to end effects (erosion), and additional rock toe protection has been added to increase resilience of the reserve to wave overtopping scour. Adaptation priority in the moderate and high change scenario reflects that coastal hazards along with catchment flooding will impact structures, uses and water infrastructure within this stretch, including increasing overtopping of existing structures. Adaptation priority signals the need for proactive engagement with iwi, communities and key asset owners and reflects the value of the uses, walkway connections across the stream, and the playground facilities within the reserve areas.			
Implementation Notes			
Collaboration: will be required to consider how hazard risks are responded to including both flooding inundation from the catchment and the coast requiring consideration of how uses can be managed and located.			

7.3: Cockle Bay Beach

This stretch includes the main Cockle Bay Beach area east of the reclamation. Council park facilities include a toilet and changing block, carparks and the historic Windross Restaurant. The grass reserve widens from a narrow grass reserve between the end return of the seawall and gravel carparking area in the central beach, to a low, flat grass reserve at the southern end that has been developed with a parking area and toilet amenities.

Scenarios for change			
Low		Moderate	High
Maintain		Adaptation Priority	Adaptation Priority
			
Explanation			
The beachfront carparking and toilet block are exposed to coastal erosion in the low change, and coastal flooding inundation in the moderate change scenario. Maintain in the low change scenario recognises that these are highly valued community assets and there is space within the reserve for localised realignment of assets (carparking and park amenities) to avoid hazard areas. Inundation of Shelly Beach Parade in the moderate change scenario will impact access to the southern boat ramp and community facilities on the reserve including to community leased areas (Cockle Bay Scouts) and the restaurant. In the high change scenario, a greater extent of reserve will be inundated that will impact buildings within the reserve. Due to the exposure of multiple uses, community assets (including Shelley Beach Parade, carparks, toilet block) to coastal hazard areas adaptation priority is identified to signals that the projected extent of inundation and erosion will require proactive engagement and planning to manage risk to assets and potential reconfiguration of uses to improve resilience to coastal hazards.			
Implementation Notes			
• Maintain: To support the amenity of coastal areas, landward alignment and design of asset is preferred in preference to extending armoring towards the east. • Management: Shelly Beach Parade is exposed to erosion/instability and coastal inundation flooding. This strategy does not preclude localised interventions as required for roading connections. • Local options analysis: In 2018 a study was commissioned by Auckland Council (Tonkin & Taylor 2018)⁴ which explored the erosion issues and provided an options analysis for Cockle Bay. This report can be referred to for a more comprehensive explanation of the coastal setting and options identified in response to the erosion issues at these specific coastal locations.			

7.4: Pah Road to Shelly Park

This stretch begins at the southeastern edge of Cockle Bay Reserve continuing to the northern edge of Shelly Park Beach. This stretch encompasses the vegetated cliffs backing onto residential areas.

⁴ Tonkin and Taylor, 2018, Bucklands Bach, Little Bucklands and Cockle Bay Erosion issues and options analysis. Accessed August 2025 [Agenda of Howick Local Board - 18 February 2019](#)

Scenarios for change					
Low		Moderate		High	
No action		No action		No action	
Explanation					
The majority of this cliffed stretch of shoreline is private land. There is a narrow esplanade reserve at the southern end of the stretch adjoining Shelly Park. This cliff reserve is densely vegetated and there are no Council assets present.					
Implementation Notes					
No action is reflective of the absence of Auckland Council-owned land and assets requiring management of risk.					

7.5: Shelly Park Beach (The Sandspit)

This stretch starts begins at the northern edge of Shelly Park Beach and continues to its southern edge. It includes a walking track providing access to Shelly Park (and Mangemangeroa Reserve further south). Shelly Park Beach has a narrow, dry, high-tide sandy beach and shell bank area fronted by a sandy intertidal area that extends to the main tidal channel of the Turanga Creek embayment. There is a low-lying grassed reserve landward of the beach that is used by several community groups for boating related activities.

Shelly Park Cruising Club and Howick Sea Scouts have buildings on Sandspit Reserve at Shelly Park Beach, with the boat club facilities including a slipway and two cleaning grids on the edge of Turanga Creek channel. The reserve is used to access the adjacent boat mooring area. There is no road access to the reserve, with access via a zig zagged walking track down the steep, vegetated slope from Sandspit Road.

Scenarios for change					
Low		Moderate		High	
Maintain		Adaptation priority		Adaptation priority	
Explanation					
The entire sandspit is within the predicted regional ASCIE from the current day, and the area including adjacent cliffs are predicted to be impacted by coastal erosion from the moderate change scenario. Community facilities (tenant-owned ground leases) including the Howick Sea Scouts, Shelly Bay Cruising Club and slipway are vulnerable to erosion and inundation. Maintain reflects the need for continued management of risk and the recognises the high value of these facilities to the community. Adaptation priority in the moderate to high change scenario signals that there is limited available space along this shoreline to accommodate relocation of the existing facilities within the existing area. Proactive engagement with iwi, communities, leaseholders and other stakeholders is required to consider options for adapting or reconfiguring use of the low-lying reserve to avoid or mitigate hazard risk.					
Implementation Notes					
Ecology: Several ‘At Risk’ shorebirds use the shoreline. Engagement with the Ecology Team to seek advice on specific implementation actions to support ecological values.					

7.6: Pōhutukawa Avenue Esplanade Reserve

This stretch begins at the southern edge of Shelly Park Beach, continues to the northern edge of Chisbury Terrace Reserve encompassing Pōhutukawa Avenue Esplanade Reserve. Mangemangeroa Shelly Park Beach Path traverses through this stretch. The narrow esplanade reserve extends along the front of private properties between 37 and 65 Pōhutukawa Avenue. Public access is available along Pōhutukawa Avenue Esplanade Reserve, connecting with Shelly Park Beach in the north and Mangemangeroa Walkway paths in the south, although there is currently no formalised pathway.

The low-lying reserve through this section is fringed with native vegetation and there are no Council-owned coastal protection structures, although there are various ad hoc structures along the coastal edge owned by adjacent private property owners.

Scenarios for change					
Low		Moderate		High	
Maintain		Adaptation priority		Adaptation priority	
Explanation					
Pōhutukawa Avenue Reserve and the pump station are exposed to coastal hazards across all scenarios. The reserve land and wastewater pump station provide important functions for the local community. Maintain under the low change scenario provides for management of risk through interventions (including but not limited to raising/creating boardwalk sections of walkway) may be needed to allow for continued use of the highly valued walkway that connects to Mangemangeroa tracks and to gain access to the waste water pump station. The public access connection and wastewater pump station are increasingly exposed to coastal flooding inundation under the moderate to high change scenario. Adaptation priority signals that options will need to be considered to manage risk from erosion and inundation and that proactive engagement with iwi, communities, private residents, assets owners and other stakeholders will be required.					
Implementation Notes					
Collaboration: The residential properties landward of Pōhutukawa Avenue Esplanade Reserve have no landward road access and rely on pedestrian access along the reserve. This access is also used to service the wastewater pumping station. Engagement with all parties will be required when considering implementation of strategies.					

7.7: Mangemangeroa Reserve

This stretch starts at the northern edge of Chisbury Terrace Reserve and continues to the Mangemangeroa Bridge. It encompasses Mangemangeroa Reserve, Chisbury Terrace Reserve and walking tracks (Mangemangeroa Kowhai Track, Mangemangeroa Rotary Loop and Mangemangeroa Shelly Park Beach Path).

Scenarios for change					
Low		Moderate		High	
Maintain		Maintain		Maintain	
Explanation					
Mangemangeroa Shelly Park Beach Path runs along the length of this stretch. This is a popular 5 km long path / boardwalk which can be accessed from several of the reserves in this stretch. The walkways cumulatively provide for					

important access through the community, and to and from the coastline. Three walkways are exposed to coastal inundation in the low change scenario in parts and exposed to coastal erosion where they cross through the cliffs/ cliff ASCIE lines. **Maintain** across all scenarios, provides for the management of risk through localised interventions to repair the walkway and promoting realignment where there is space or resilient design (such as elevated boardwalks) through the estuarine environment to allow continual access to this coastline.

Implementation Notes

- Ecology:** The reserves along Mangemangeroa Creek contain endangered coastal broadleaved forest, and mangrove forest along the upper and lower reaches of the creek. The saline to terrestrial gradient change is a SEA of regional importance, and one of the only remaining areas of coastal shrubland and forest on coastal sediments in the ecological district. The vegetation provides high quality habitat for cryptic coastal fringe birds. Engagement with The Ecology Team to seek advice on specific implementation actions to support ecological values.
- Closed landfill:** Mangemangeroa Bridge closed landfill is managed under the Closed Landfill Asset Management Plan.



Unit 8: Whitford

Located within the Franklin Local Board area, this unit covers the head of the Whitford embayment from the eastern shoreline of Mangemangeroa Creek, the entire Turanga Creek inlet and the western shoreline of Waikopua Creek. Whitford Village is located at the head of the Turanga Creek Estuary in an otherwise rural catchment. There are two areas of historic closed landfill in this unit in the upper reaches of Turanga Creek at Pōhutukawa Reserve and Clifton Road.

What is happening?

The Whitford embayment faces short fetch across Tāmaki Strait and shallow water depths over expansive intertidal flats create a low wave-energy environment. The tidal arms of the shallow drowned valley estuaries are fringed with mangroves and larger areas of saltmarsh in the upper reaches. Turanga Creek channel is the deepest in the embayment, with navigable water depths available in the lower reaches. There are small pockets of narrow, sandy beach and shell banks along the indented shoreline. Wades Island is a large, vegetated, low-relief island located in the middle reaches of the creek.

Coastal erosion and instability

The regional ASCIE lines indicate the area predicted to be affected by erosion and instability hazard over time widening from 5 m around the fringe of the esplanade in a low change scenario up to 19 m in response to a high climate change scenario. However it is noted that this is a regional scale assessment. Erosion of banks along the tidal creeks is primarily attributed to natural weathering from repeated wetting and drying of exposed soils with the tidal cycle and biological processes including burrowing crabs.

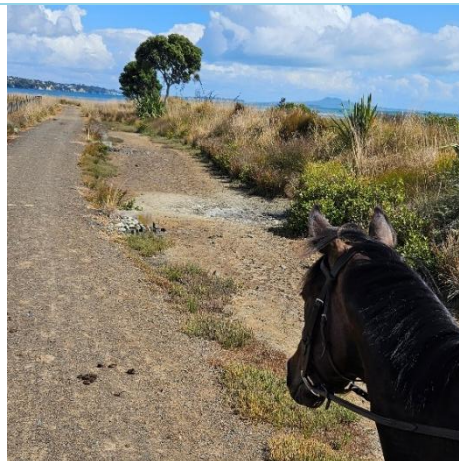
There are few coastal management interventions within this unit that is a low energy estuarine environment, with isolated structures retaining areas of reclamation in the upper reaches of the tidal inlet (e.g. in proximity to Whitford Village).

Broomfields Reserve: There are remnants of coastal armouring and farm fencing around Broomfields Reserve, and large areas of low-lying land around the entrance to the creek. Inlets have been historically modified with drainage and stop banks for farmland.



*Remnant structures along coastal margin of Broomfields Reserve
(Source: Auckland Council)*

Porterfield Reserve: Some of the older earth bunds along the edge of drained pasture adjoining Porterfield Reserve have weathered and ingress of saltwater indicated by dominance of saltmarsh vegetation in adjacent paddocks (visible in the photo included right).



Portersfield esplanade reserve, looking north (Source: Community feedback)

Whitford boat ramp: Timber retaining walls.



Timber retaining walls, Whitford boat ramp (Source: Auckland Council)

Whitford Beach and Water gardens

Historic coastal modification to provide for roading connections (Clifton Road) has modified the Clifton Road wetland mosaic at Ayrles Garden and Wetlands located south of the road revetment. Tidal influence can be observed in roadside drains in this area.



Whitford Beach (Source: Auckland Council)

Pōhutukawa Reserve (Closed landfill) The finished contour of the closed landfill at Pōhutukawa Reserve is flat over much of the surface which results in ponding across the central area in rainfall events. The total area is low-lying, and the fringe is also predicted to be inundated in long term during a 1% AEP event plus 1 m sea-level rise.



Pōhutukawa Park, Whitford (Source: Auckland Council)

Coastal Boardwalks, Whitford Village (Stretch 8.9)



Whitford Village boardwalk (Source: Auckland Council)

Coastal inundation

The walking tracks developed on the low-lying esplanade around the inlet are at greater risk to coastal inundation flooding, specifically the reserve areas at Whitford Village including Pōhutukawa Reserve (closed landfill), Potts Road Esplanade and the Clifton Road to Porterfield Road Esplanade.

The finished contour of the closed landfill at Pōhutukawa Reserve is flat over most of the surface which results in ponding across the central area in rainfall events. The total area is low-lying, and the fringe is also predicted to be inundated in the long term during a 1% AEP event plus 1 m sea-level rise.

Flooding

Flooding in this unit is predominantly isolated to overland paths traversing the coastal margin and expansive areas of low-lying wetlands in the estuarine inlet.

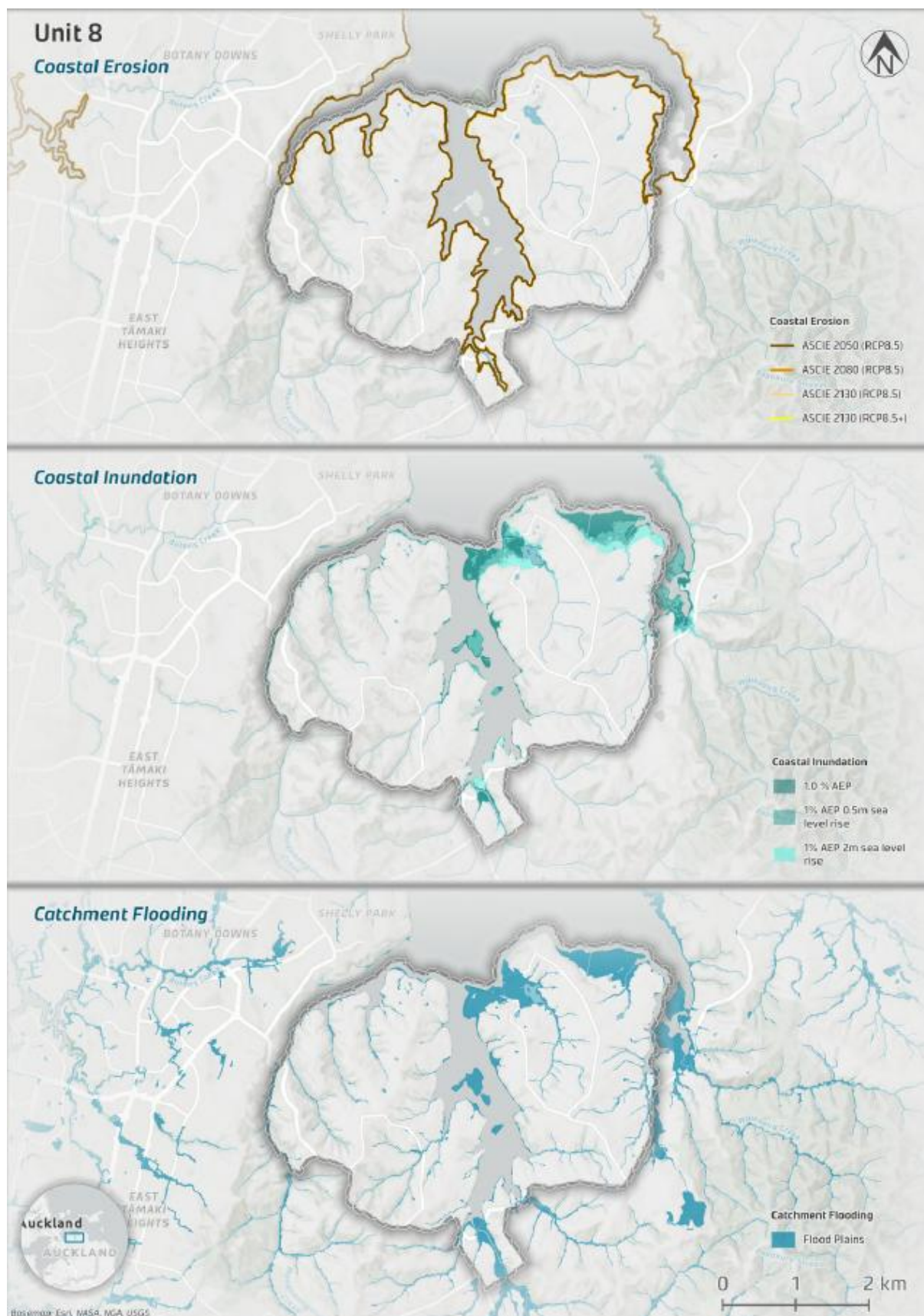


Figure 8-1: Coastal hazardscape for the Whitford Unit reflecting coastal erosion susceptibility for 2050, 2080 and 2130 considering RCP4.5 and RCP8.5 emission scenarios, coastal inundation for 1%AEP storm surge for present day and with 0.5 m, 1 m and 2 m sea-level rise and the identification of flood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



Risk assessment

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

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

Council-owned land			Council community facilities			Transport infrastructure			Water infrastructure		
Park and reserve land (70.4 ha)			Park amenity structures, carparks, accessways, buildings (2.0 ha) Buildings, wharves (21 No.)			AT roads (23.8 km) Bridges (2,867.0 m ²)			Water pipes (4.9 km)		
Short	Medium	Long	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Coastal erosion and instability susceptibility											
High	Very High	Very High	Very High	Very High	Very High	High	Very High	Very High	Low	Low	Low
Coastal inundation											
High	High	High	Very High	Very High	Very High	High	Very High	Very High	Low	Low	Low
Key											
Very Low			Low			Moderate			High		
									Very High		

What matters most



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



- **Parks and reserves:** Broomfields Point Reserve, Strathfield Lane Esplanade Reserve, Turanga Reserve Wade Walkway, Whitford Wharf Road Reserve, Whitford Village Green, Pōhutukawa Park, Potts Road Esplanade, Porterfield Road Esplanade.



- **Key park facilities:** Pōhutukawa Park playground; Whitford Village Green - carpark, pedestrian bridge, lookout platform; Potts Road Esplanade carpark.



- **Closed landfills:** Pōhutukawa Park; Potts Road Esplanade Reserve.



- **Key pathway connections:** Turanga Reserve Wade Walkway, Whitford Path, Potts Road Esplanade Walkway, Porterfield Road Esplanade Walkway.
- **Key local roading:** Whitford Maraetai Road, Clifton Road.



- **Harbour access:** Whitford Wharf Reserve boat ramp, Broomfields Reserve earth bank cutting ramp access point.

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



- Specific cultural values and outcomes for this unit will be developed through ongoing involvement with local iwi identified in Volume 2. Guiding objectives and outcomes which have informed the development of adaptation strategies have been identified in Volume 2.
- Tainui Anchor Stone (Heritage ID 19395) listed as Māori Heritage Areas in the Cultural Heritage Inventory is located within this unit.
- The Tūranga Creek Conservation Area is an area referred to in the deed of settlement between Ngāi Tai ki Tāmaki and the Crown. The Tūranga Creek Conservation Area is located at the end of Clifton Road at Whitford Beach in Whitford.



- Whitford Cruising Club (tenant-owned facilities) at Strathfield Lane.
- The development and maintenance of coastal walking tracks and other recreational areas are important to community members, ensuring they are used regularly by local residents and visitors.
- Horseback riding and cycling along bridle paths are also popular activities.
- Ayrilies Water Gardens (private) are located within this unit.
- The Whitford Bypass connecting the Whitford-Maraetai Road / Trig Road intersection to the Saleyard Road / Sandstone Road / Whitford Park Road roundabout has been identified as a future roading link, providing future resilience for transport connections toward the eastern area of Beachlands.



- Tūranga Creek is the largest estuarine habitat, including its mangrove shrubland ecosystems, in the Hunua Ecological District. A proportionately large area of kauri, podocarp, broadleaved forest occurs to the west of the town centre of Whitford.
- There is a small flaxland to the east of the Mangemangeroa Creek and on Tahoramaurea Island (one of the islands located in the channel of Tūranga Creek).
- An important shellbank is located adjacent to the Whitford Beach - Tūranga Creek Conservation Reserve which is used as a high-tide roost by a variety of coastal bird species, including South Island pied oystercatcher and tūturiwhatu / New Zealand dotterel.



Who did we hear from?

Feedback was received via digital platforms, Social Pinpoint and 'AK Have Your Say'. Key community **uses and values** identified included but were not limited to:

- Key water access locations including ramps and jetties at Whitford Village, Broomfields, Strathfield Lane Esplanade Reserve. Concerns about mud and mangrove build up in Turanga and Mangemangeroa Estuaries since 1992, limiting activities such as kayaking (mixed views on mangroves).
- Key activities including beach kayaking and fishing located at Broomfield/Strathfield coastal access points. Horseback riding, walking and cycling along bridle paths are a popular recreational

activity for local community and visitors and key community aspirations have identified a desire for further connections, protection and expansion of this network.

- Outstanding area for bird roosting/watching at Whitford Beach and wider areas within the unit, including freshwater wetlands. Loss of shell banks and bird roosts with rising tides.
- Concerns about coastal access and damage (quad bikes) to the shell banks near Porterfield's Road.

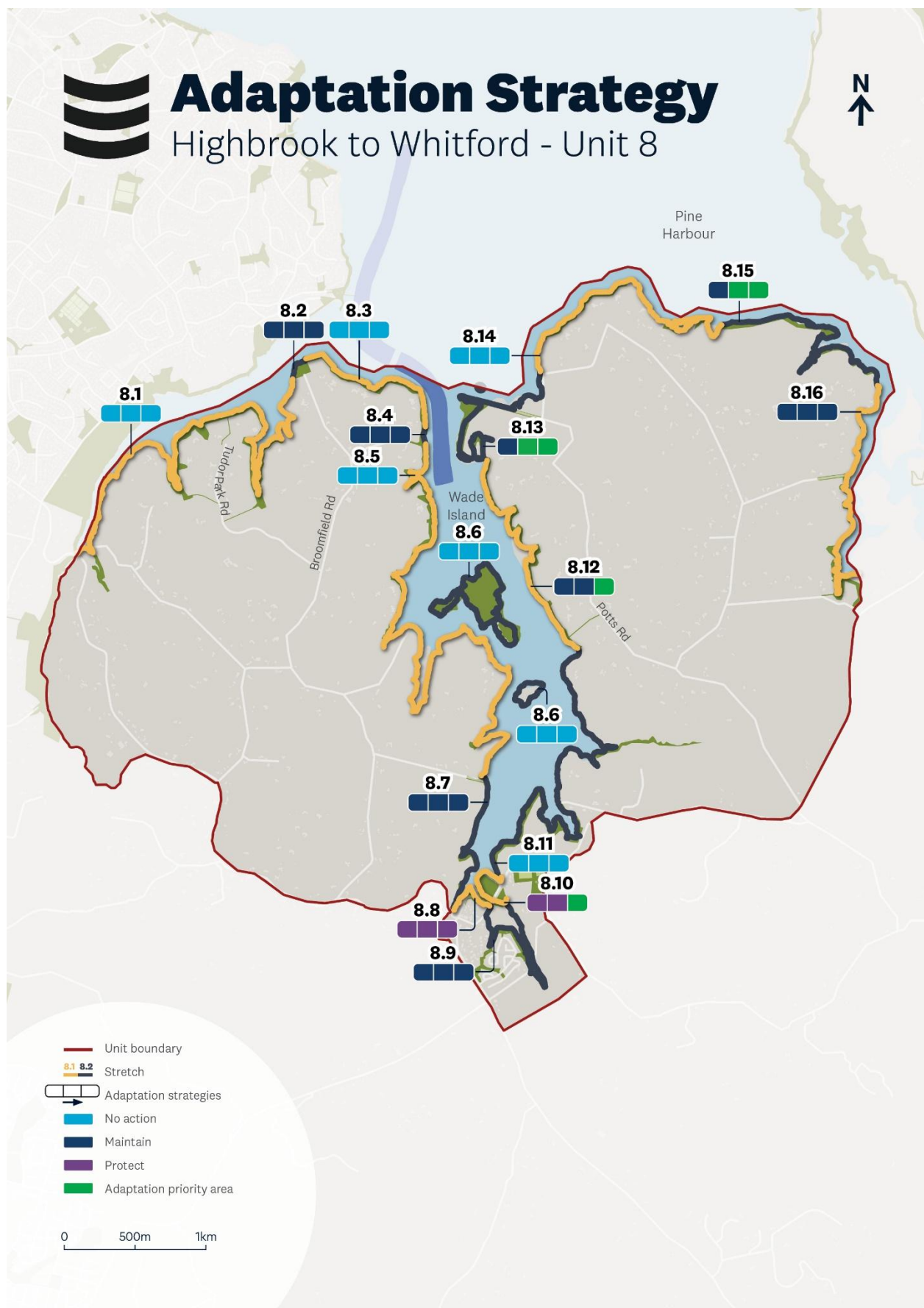
Community **experience of hazards** identified:

- Flooding issues: Concern for impact of catchment flooding occurring alongside coastal inundation and king tide events has been highlighted by the Local Board as a risk to roading connections (Whitford Maraetai Road) to the east.
- A need for 'managed retreat' at Clifton Beach. Community observed the walkway is flooding during high tides.
- Cliffs are eroding. Private properties at risk with varied views on funding responsibility and collaboration protect areas.
- Community recollection of the development of historic stop banks and floodgates (Ayrlires Gardens).

Community **aspirations and feedback** in relation to strategies identified:

- Aspirations for future walking connections to extend the current network.
- Ensure that strategies do not preclude the ability for new assets (paths) to be developed.
- Support generally for the strategies where this confirms maintenance of assets/walkways.
- Taking an adaptive approach - use and invest in the trails (acknowledging things may change in the future).
- There is frequent marine pollution in the waterways. Concerns for wastewater infrastructure constraints and management.
- Water access needs to be supported and a desire by some for increased mangrove management.

Local board aspirations for the exploration of alternative and adaptive roading connections to the south and east of Whitford Village (utilising paper road routes) to future proof critical eastern roading connections to Beachlands and beyond.

What can we do about it? Adaptation strategies for Unit 8.

8.1: Mangemangeroa Bridge to Broomfields Point Reserve

Stretch 8.1 begins at the Mangemangeroa Bridge and continues to the edge of Broomfields Point Reserve.

Scenarios for change			
Low		Moderate	High
No action		No action	
Explanation			
This stretch includes undeveloped esplanade reserve (Tudor Park Drive). There are limited Auckland Council assets within this stretch that are exposed over all climate scenarios.			
Implementation Notes			
• No action is reflective of the absence of Council-owned land and assets requiring management of risk from coastal hazards. • No action does not preclude the advancement of community aspirations for future coastal connections via pathways/ bridle paths within this coastal stretch, noting ecological and cultural values may require further engagement and analysis. • Ecology: There are several SEAs along the Mangemangeroa Creek. No action supports the coastline to remain dynamic in response to future climate change.			

8.2: Broomfields Point Reserve

This stretch includes the 170 m shoreline of Broomfields Point Reserve which can be accessed from Broomfields Road and has a picnic table, grassed area and carparking space.

Scenarios for change			
Low		Moderate	High
Maintain		Maintain	
Explanation			
Broomfields Point Reserve is identified as susceptible to coastal erosion from the low change scenario. While the existing carparking and formed tracks are set back, maintain across all scenarios recognises the limited opportunities for the public to access to the coast at Mangemangeroa Creek from Whitford. This includes the use of an existing bank cutting that is accessible for small craft.			
Implementation Notes			
• Maintain supports management of the coastal edge through revegetation and localised reconfiguration of access that supports the coastline to remain dynamic in response to future climate change. Coastal protection structures are not envisaged for this stretch with a preference for the management of risk through design and location of assets. • Ecology: There are several SEAs along the Mangemangeroa Creek. Opportunity for enhancement and support of ecological outcomes should be considered through implementation of strategies.			

8.3: Strathfield Lane Esplanade Reserve (north)

This stretch includes Strathfield Lane Esplanade Reserve between Broomfields Reserve and the Whitford Cruising Club facilities on the western shoreline of Turanga Creek.

Scenarios for change		
Low	Moderate	High
No action 	No action 	No action 
Explanation This stretch includes undeveloped esplanade reserve. There are no other Auckland Council assets within this stretch.		
Implementation Notes • No action is reflective of the limited Council-owned land and assets requiring management of risk from coastal hazards. • Ecology: There are several SEAs along the Mangemangeroa and Turanga Creeks. No action supports the coastline to remain dynamic in response to future climate change. • Cultural: This coastal stretch includes sites of cultural significance. No action does not preclude actions to manage risk to cultural sites, as appropriate.		

8.4: Strathfield Lane

This short stretch covers that part of Strathfield Lane Esplanade Reserve adjacent to the Whitford Cruising Club facilities. The reserve and road end in this location have good access to the deep-water channel in Turanga Creek and are highly valued by the community.

Scenarios for change		
Low	Moderate	High
Maintain 	Maintain 	Maintain 
Explanation The strategies recognise that there are retaining structures on the esplanade reserve that provide for public access to Turanga Creek noting that the ramp and jetty facility are owned by Whitford Cruising Club. Maintain provides for continuing harbour access (boat ramp) and for the consideration of options to respond to a dynamic changing environment including adapting the boat ramp and road access areas.		
Implementation Notes • Beyond the maintenance of access to the coast, coastal protection structures are not envisaged, rather the coastal edge can be managed with revegetation and localised reconfiguration of access that supports the coastline to remain dynamic in response to future climate change.		

8.5: Strathfield Lane Esplanade (south) to Wades Road

Stretch 8.5 begins at the southern edge of Strathfield Lane water access and continues to the northern edge of Whitford Path. It encompasses Strathfield Lane Esplanade Reserve, Wades Road Esplanade Reserve, and multiple upper reaches of the estuary. The estuary has extensive areas of ecologically significant mangrove shrubland habitat that provides habitat for a range of native coastal and shore birds.

Scenarios for change			
Low		Moderate	High
No action		No action	
Explanation Wade Road Esplanade 150r and Strathfield Lane Esplanade Reserve are exposed to coastal inundation and erosion from the low change scenario, however there are no developed Auckland Council assets within this stretch that are exposed on any timeframes. There are also no identified walking tracks through this stretch. No action allows the coastline to remain dynamic in response to future conditions.			
Implementation Notes No action is reflective of the absence of Council-owned land and assets requiring management of risk from coastal hazards. Ecology: There are several SEAs along the Turanga Creek. No action supports the coastline to remain dynamic in response to future climate change. Engagement with the Ecology Team to seek advice on specific implementation actions to support ecological values.			

8.6: Tūranga Creek Islands

This stretch includes the islands within Turanga Creek.

Scenarios for change			
Low		Moderate	High
No action		No action	
Explanation There are no other Auckland Council assets within this stretch that are exposed under all climate scenarios.			
Implementation Notes No action is reflective of the absence of Council-owned land and assets requiring management of risk from coastal hazards. Ecology: There are several SEAs along the Turanga Creek. No action supports the coastline to remain dynamic in response to future climate change. Cultural: This coastal stretch includes an area of the coastal marine area and islands which are subject to statutory acknowledgement in relation to Ngāti Tai Ki Tāmaki. No action does not preclude actions to manage risk to cultural values.			

8.7: Whitford Path (Wades Road to Whitford Road)

This stretch begins adjacent to Wades Road and continues south to the upper inlet ending at Whitford Road. Whitford Path starts at Wade Road and follows the western shoreline of Tūranga Creek to finish at Whitford Village Green. The path connects residential properties north of Whitford to the Whitford Village Green.

Scenarios for change		
Low	Moderate	High
Maintain 	Maintain 	Maintain 
Explanation Maintain provides for the continued maintenance of a highly valued community asset in a manner which supports a natural shoreline. Maintain supports management of risk through localised realignment of assets to avoid hazard risk, and adapted design to mitigation inundation risk. Coastal protection structures are not envisaged, rather the coastal edge can be managed with revegetation and localised reconfiguration of access that supports the coastline to remain dynamic in response to future climate change.		
Implementation Notes Ecology: There are several SEAs along the Turanga Creek. No action supports the coastline to remain dynamic in response to future climate change.		

8.8: Whitford Village

This stretch includes Whitford Village commencing at Whitford Road and continuing east to encompass Whitford Wharf Road Reserve and culminates at the main Whitford Maraetai Road Bridge. This stretch encompasses several bridges crossing Turanga Creek (Whitford Road, pedestrian bridge, a cycling/bridle trail bridge and the Whitford Maraetai Road Bridge). Areas of reclamation at Whitford Wharf Reserve adjacent to the boat launching ramp are also armoured with existing retaining structures.

Scenarios for change		
Low	Moderate	High
Protect 	Protect 	Protect 
Explanation Protect over all scenarios recognises that Whitford is a key local community area, and that recreational access (boat launching) and roads that traverse this stretch are regionally important.		
Implementation Notes Protect responds to the value of coastal access and existing modification of the coast. Protect does not confirm the management of the full extent of the coastal edge with further protection structures. Further analysis of options to manage risk may be required to confirm how strategies are implemented over changing scenarios.		

8.9: Whitford South

This stretch commences east of the Whitford Maraetai Road extending around the upper reaches of the mangrove-filled inlet to Pōhutukawa Park boundary on the northern side of the inlet. Walking tracks have been developed around the esplanade and stormwater reserves set adjacent to recent development. A boardwalk provides a pedestrian connection from the reserves to Whitford Village.

Scenarios for change		
Low	Moderate	High
Maintain 	Maintain 	Maintain 
Explanation Maintain recognises the importance of local walking access and the existing boardwalk and is identified to manage continued access. Maintain supports a natural shoreline. Coastal protection structures are not envisaged, rather the coastal edge can be managed with revegetation and localised reconfiguration of access that supports the coastline to remain dynamic in response to future climate change.		
Implementation Notes Ecology: There are several SEAs along Turanga Creek. Engagement with the Ecology Team to seek advice on specific implementation actions to support ecological values. Local Board views: Identified opportunity for alternative roading connections within the southern and eastern areas of the Whitford area, reducing dependence on existing low-lying road links to the north of this stretch. Noting the Whitford Bypass (connecting the Whitford-Maraetai Road / Trig Road intersection to the Saleyard Road / Sandstone Road / Whitford Park Road roundabout) would be located landward of the coast within this coastal stretch.		

8.10: Pōhutukawa Park

Commencing at the boundary of Pōhutukawa Park within the sheltered upper inlet on the eastern side of Whitford Maraetai Road, this stretch extends northeast to include the full coastal edge of Pōhutukawa Park. This stretch includes a section of the Whitford Path, a popular 3.6 km path and includes a pedestrian bridge. This is identified as an important recreational community asset.

Scenarios for change		
Low	Moderate	High
Protect 	Protect 	Adaptation priority 
Explanation Pōhutukawa Park is exposed to coastal erosion around its perimeter from the low change scenario, and coastal inundation in the high change scenario. Access to/use of Whitford Path could be impacted by erosion and inundation. Protect recognises that Pōhutukawa Park and associated walkway is an important community asset, with additional management challenges being a historic closed landfill. Protect indicates the need to maintain uses and coastal margins in their current location within this low-energy coastal inlet.		
Adaptation priority in the high change scenario signals that coastal inundation will be an increasing hazard resulting in the need to consider how risks to walking connections, park uses, historic land uses and roading connections can be managed. Proactive engagement with communities, iwi and key asset owners to consider potential management options and the use of the low-lying area will be required in the future.		

Scenarios for change		
Low	Moderate	High
Implementation Notes		
Closed landfill: Whitford Village Green - Pōhutukawa Park is a historic closed landfill, that is managed separately under the Closed Landfill Asset Management Plan.		

8.11: Whitford Village Green to Potts Road

This stretch extends north along the eastern shoreline of Turanga Creek, from Pōhutukawa Park to the start of Potts Road Esplanade Reserve.

Scenarios for change		
Low	Moderate	High
No action 	No action 	No action 
Explanation		
This stretch is predominantly rural in land use and includes Whitford-Maraetai Road Esplanade 104r which is currently unmaintained and undeveloped with no continuous coastal access. No action is reflective of the limited presence of Auckland Council-owned assets exposed to coastal hazards.		
Implementation Notes		
No action does not preclude the advancement of community aspirations for future coastal connections via pathways/ bridle paths within this coastal stretch, noting ecological and cultural values may require further engagement and analysis. Ecology: There are several SEAs along the Turanga Creek. No action supports the coastline to remain dynamic in response to future climate change.		

8.12: Potts Road Esplanade Reserve

This stretch includes the Potts Road Esplanade Reserve along the northeastern shoreline of Turanga Creek, ending before Whitford Beach (Clifton Road end). A coastal walkway extends along Potts Road Esplanade Reserve connecting in the north to Clifton Road (Whitford Beach area).

Scenarios for change		
Low	Moderate	High
Maintain 	Maintain 	Adaptation priority 
Explanation		

Scenarios for change		
Low	Moderate	High
A coastal walkway that extends along Potts Road Esplanade Reserve access track is an important community asset that will be increasingly exposed to coastal erosion and in low-lying areas, coastal and catchment inundation flooding (overland flows to the coast). Maintain recognises the importance of local walking access and is identified to manage continued access that supports a natural shoreline. Coastal protection structures are not envisaged, rather the coastal edge can be managed with revegetation and localised reconfiguration of access that supports the coastline to remain dynamic in response to future climate change. Adaptation priority in the high change scenario signals that coastal hazards will continue to impact use of the access track. Proactive engagement is required to consider options to manage risk and address the needs of multiple users (including horseback riding and bikes).		
Implementation Notes Ecology: There are several SEAs along the Turanga Creek, ecological outcomes will require consideration when implementing adaptation strategies.		

8.13: Whitford Beach and North (road connection)

This stretch covers the open reserve area at the end of Clifton Reserve and foreshore area known locally as Whitford Beach and continues east around the shoreline to include the short length of Clifton Road that runs parallel to the coast.

Scenarios for change		
Low	Moderate	High
Maintain 	Adaptation priority 	Adaptation priority 
Explanation The low-lying reserve area is exposed to coastal inundation flooding in the low change scenario, impacting the open grass reserve area, gravel carparking and walking connections to Potts Road Esplanade Reserve. Sections of Clifton Road are also impacted in the low change scenario. Maintain recognises the reserve and walking tracks and roading connections are highly valued community assets and transport links. Adaptation priority in the moderate to high change scenario signals that coastal flooding inundation poses a significant risk to the reserves and to local road connections.		
Implementation Notes Ecology: This stretch encompasses Whitford Beach, which has important shellbank habitat and is a high-tide roost utilised by a diverse range of coastal bird species. Engagement with the Ecology Team to seek advice on specific implementation actions to support ecological values. Management: Clifton Road is exposed to coastal inundation flooding. This strategy does not preclude localised interventions as required for roading connections. Closed landfill: Potts Road Esplanade has areas of historic closed landfill, that will be managed through the Closed Landfill Asset Management Plan		

8.14: Clifton Road Esplanade Reserve

This stretch commences where Clifton Road turns inland (east) and covers the north-facing shoreline around to the start of Porterfield Esplanade Reserve. It is rural in land use with disconnected lengths of unmaintained esplanade (Clifton Road Esplanade Reserve).

Scenarios for change			
Low		Moderate	High
No action		No action	
Explanation This stretch includes undeveloped esplanade reserve (Clifton Road Esplanade Reserve). There are no other Auckland Council assets within this stretch that are exposed in any timeframes. No action is reflective of the absence of Council-owned land and assets requiring management of risk from coastal hazards.			
Implementation Notes Ecology: There are several SEAs along the Waikopua Creek and community feedback identified bird watching and habitat as of significant value and community interest in this area. No action supports the coastline to remain dynamic in response to future climate change.			

8.15: Porterfield Road Esplanade Reserve North

Stretch 8.15 begins at the western edge of Porterfield Road Esplanade Reserve, where the walkway connects from the road to the coast, and extends along the north-facing shoreline where a walkway has been developed on shell banks along the coastal margin. The walkway is a highly valued community asset accessed from the north via inland Clifton Road walkway, and extends along the western shoreline of Waikopua Creek to Porterfield Road ending at Henson Road in the upper inlet. There is a privately-owned jetty structure within this stretch.

Scenarios for change			
Low		Moderate	High
Maintain		Adaptation priority	
Explanation The walkway within this stretch is located on the dynamic coastal edge, with the shell banks exposed to erosion and coastal flooding inundation from the low change scenario. In the moderate and high change scenarios, the extent of inundation and exposure to coastal processes will significantly impact the coastal walkway surface and usability. Maintain recognises the importance of local walking access and is identified to manage continued access that supports a natural shoreline. Coastal protection structures are not envisaged, rather access can be managed through design and placement of accessways that support the coastline to remain dynamic in response to future climate change. Adaptation priority in the moderate and high change scenario signals that coastal inundation flooding will impact use of the access track and associated land. Proactive engagement will be required to support consideration of options for the management of risk and continued safe use of this coastal connection.			
Implementation Notes			

Scenarios for change		
Low	Moderate	High
• Ecology: There are several SEAs along the Waikopua Creek. No action supports the coastline to remain dynamic in response to future climate change. Engagement with the Ecology Team to seek advice on specific implementation actions to support ecological values. • Community: This walkway connection has been identified as having significant value for the local community with additional walking connections sought to be added to the existing network.		

8.16: Porterfield Esplanade Reserve south to Henson Road

This stretch follows the western shoreline of Waikopua Creek to the upper reaches, culminating towards Henson Road at the end of this unit.

Scenarios for change		
Low	Moderate	High
Maintain 	Maintain 	Maintain 
Explanation The walkway developed along the southern section of Porterfield Esplanade Reserve is slightly more elevated than the northern section, with a more sheltered coastal edge. While coastal flooding inundation extent will impact reserve land, the exposure of the walkway is not as significant as the northern section (Stretch 8.15). Maintain provides for the ongoing management of risk to the walkway, through design and location of the walkway including management of discharges to the coast.		
Implementation Notes • Maintain supports management of risk through revegetation and localised reconfiguration of access that supports the coastline to remain dynamic in response to future climate change. • Ecology: There are several SEAs along the Waikopua Creek. No action supports the coastline to remain dynamic in response to future climate change. Engagement with the Ecology Team to seek advice on specific implementation actions to support ecological values. • Community: This walkway connection has been identified as having significant value for the local community with additional walking connections sought to be added to the existing network.		



Unit 9

Highbrook to Whitford



Pine Harbour
Marina
Beachlands

Community groups such as 'Pest Free Beachlands' carry out pest control around the coast, working hard to protect and support natural environments around the coast



Jack Lachlan Drive
Esplanade Reserve

Waikopua
Creek



Rydgges Formosa
Auckland Golf
Resort



Highly valued
swimming spots
along the coast



Waikopua Creek
islands



Community aspirations for future
walkway/bridleway connections



Whitford Maraetai
Roading connection

Henson Rd

Pukerangi Rise

Whitford-Maraetai Rd

Sea Rise

Whitford-Maraetai Rd
Okaroro Rd

Karaka Rd

Beachlands Rd

Ninth View Ave

Jack Lachlan Dr

Kahawairahi Dr

Unit boundary

9.1 9.2

Stretch

Walking tracks

Informal recreation park

0 500m 1km

Unit 9: Whitford East to Pine Harbour

Unit 9, located within the Franklin Local Board area, extends approximately 5 km along the eastern shoreline of the Whitford embayment from the upper reaches of Waikopua Creek towards Pine Harbour Marina. The unit is largely rural land and lifestyle blocks with a narrow esplanade reserve extending along the coastal edge.

What is happening?

The narrow Waikopua Creek channel winds across a shallow, intertidal basin infilled with extensive saltmarsh and mangrove forest habitat, including two low-relief islands in the middle of the estuary. The estuary widens to a funnel shape at the entrance and the channel flows in a northeast direction across extensive intertidal sandflats at the head of the Whitford embayment.

To the north of Waikopua Creek, the shoreline faces west and is fronted by extensive intertidal sand and mudflats 800-1000 m wide, backed by a narrow sand and shell beach. This section of shoreline is relatively more exposed than the sheltered inlet, albeit to low energy wind waves generated from the west through northwest that are restricted by the short fetch across Tāmaki Strait and shallow water depth over broad intertidal flats. The backshore of the beach initially slopes gradually up the vegetated slope and then rises steeply to elevation of 15-20 m and is backed by rural farmland.

Coastal erosion and instability

Jack Lachlan Esplanade Reserve is identified as susceptible to coastal erosion and instability under a low climate change scenario (present day). There are no other assets currently developed on the reserve located within in areas identified as susceptible to coastal erosion.

Coastal inundation

The majority of the low-lying esplanade reserve areas are exposed to coastal inundation flooding in the present day 1% AEP. Areas further landward are exposed under a moderate and high climate change scenario. Areas of the walkway/bridle trail are identified as potentially exposed to inundation risks.

Whitford Maraetai Road crosses the southern area of the unit (Stretch 9.2) and due to the low-lying nature of this section of the coast, land is exposed to coastal inundation and flood hazards. Roading connections incorporate bridges (Waikopua Bridge) which traverse waterways that discharge to the coast in this area.

Flooding

Flooding in this unit is predominantly isolated to overland paths traversing the coastal margin and expansive areas of low-lying wetlands in the estuarine inlet in the area of Waikopua Road and adjacent stream area.

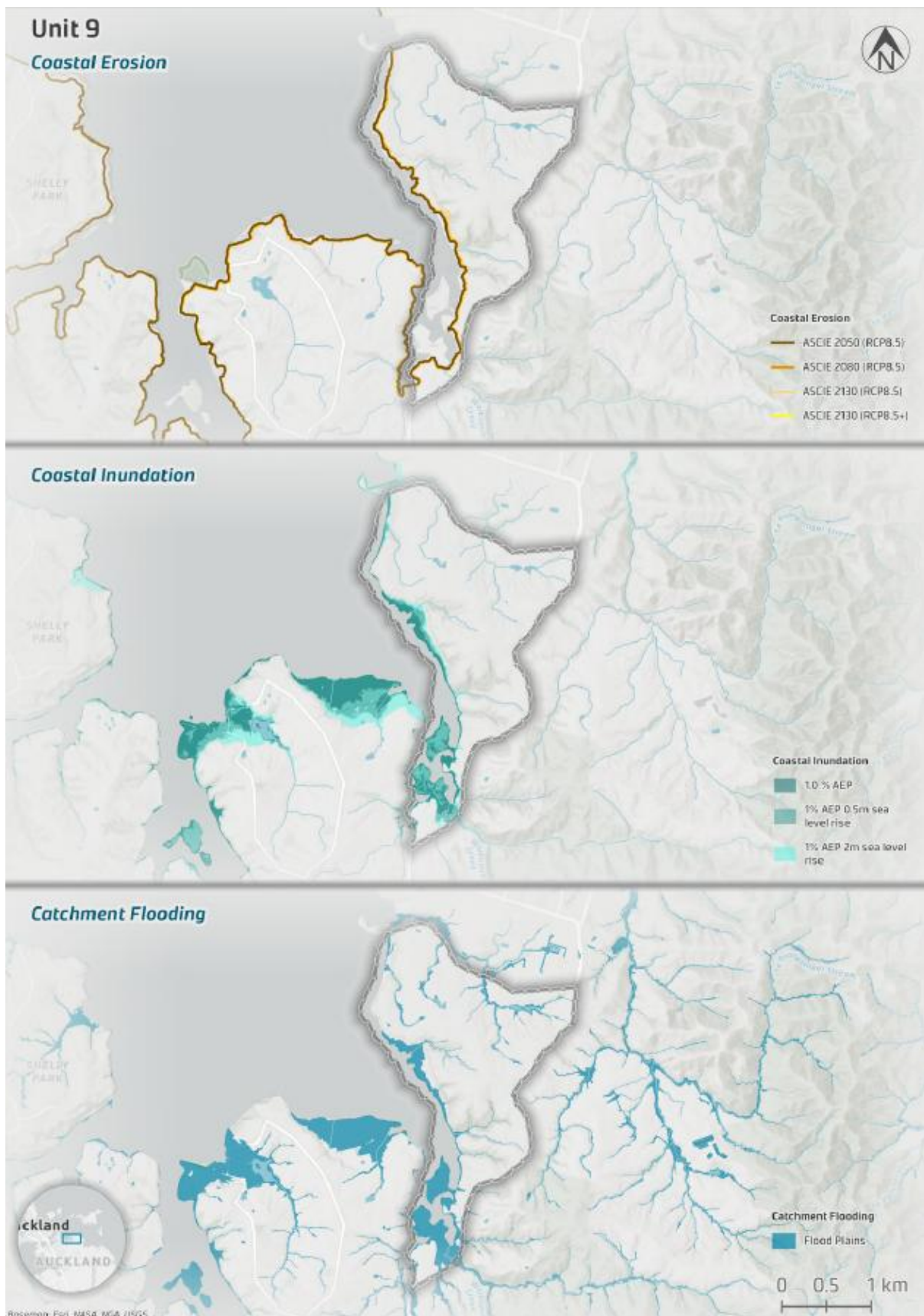


Figure 9-1: Coastal hazardscape for the Whitford East to Pine Harbour Unit reflecting coastal erosion susceptibility for 2050, 2080 and 2130 considering RCP4.5 and RCP8.5 emission scenarios, coastal inundation for 1%AEP storm surge for present day and with 0.5 m, 1 m and 2 m sea-level rise and the identification of flood plains.

Risk assessment

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

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

Council-owned land			Council community facilities			Transport infrastructure			Water infrastructure		
Park and reserve land (16.9 ha)			Park amenity structures, carparks, accessways, buildings (0 ha) Buildings, wharves (0 No.)			AT roads (2.9 km) Bridges (1,398.3 m ²)			Water pipes (1.8 km)		
Short	Medium	Long	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Coastal erosion and instability susceptibility											
Moderate	Moderate	Moderate	Very low	Very low	Very low	Very low	Very low	Very low	Very low	Very low	Very low
Coastal inundation											
High	High	High	Very low	Very low	Very low	Low	Low	Moderate	Very low	Very low	Very low
Key											
Very Low			Low			Moderate			High		
									Very High		

What matters most



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



- **Reserves:** 600 Whitford Maraetai Esplanade Reserve, Jack Lachlan Drive Esplanade Reserve.



- **Key pathway connections:** Walkways and bridle trails (located within the Whitford Maraetai Esplanade Reserve).
- **Key roading:** Whitford Maraetai Road.

Social, cultural and ecological context: This section identifies key social, cultural and ecological matters, identified through the development of the SAP reports, that may be impacted by coastal hazards (inclusive of catchment flooding) 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 been identified in Volume 2.



- The development and maintenance of coastal walking (and bridle trails) tracks and other recreational areas are important to community members, and are highly valued and used by local residents and visitors.
- The Beachlands South Plan Change rezones approximately 307 ha of land south of the Beachlands township to a mix of residential, commercial, and open space uses, which provides for future development of northern areas of this unit. Noting strategies can be updated to reflect future development of land and assets.



- The Whitford Bypass connecting the Whitford-Maraetai Road / Trig Road intersection to the Saleyard Road / Sandstone Road / Whitford Park Road roundabout has been identified as a future roading link, providing future resilience for transport connections toward the eastern area of Beachlands.
- **Waikopua Creek** is characterised by areas of sea rush, oioi salt marsh. There are two large shellbanks (approximately 0.8 ha in total) at the Waikopua Creek mouth. A variety of coastal birds, including several threatened species, utilise the wider intertidal habitat available within this area. Caspian tern have been found feeding and roosting on the Waikopua shellbanks.
- Small remnants of podocarp forest are situated on the eastern slopes of Waikopua Creek.
- Coastal cliffs dominated by pōhutukawa occur along the eastern side of the Whitford embayment mouth, adjacent to the Formosa Golf Course.



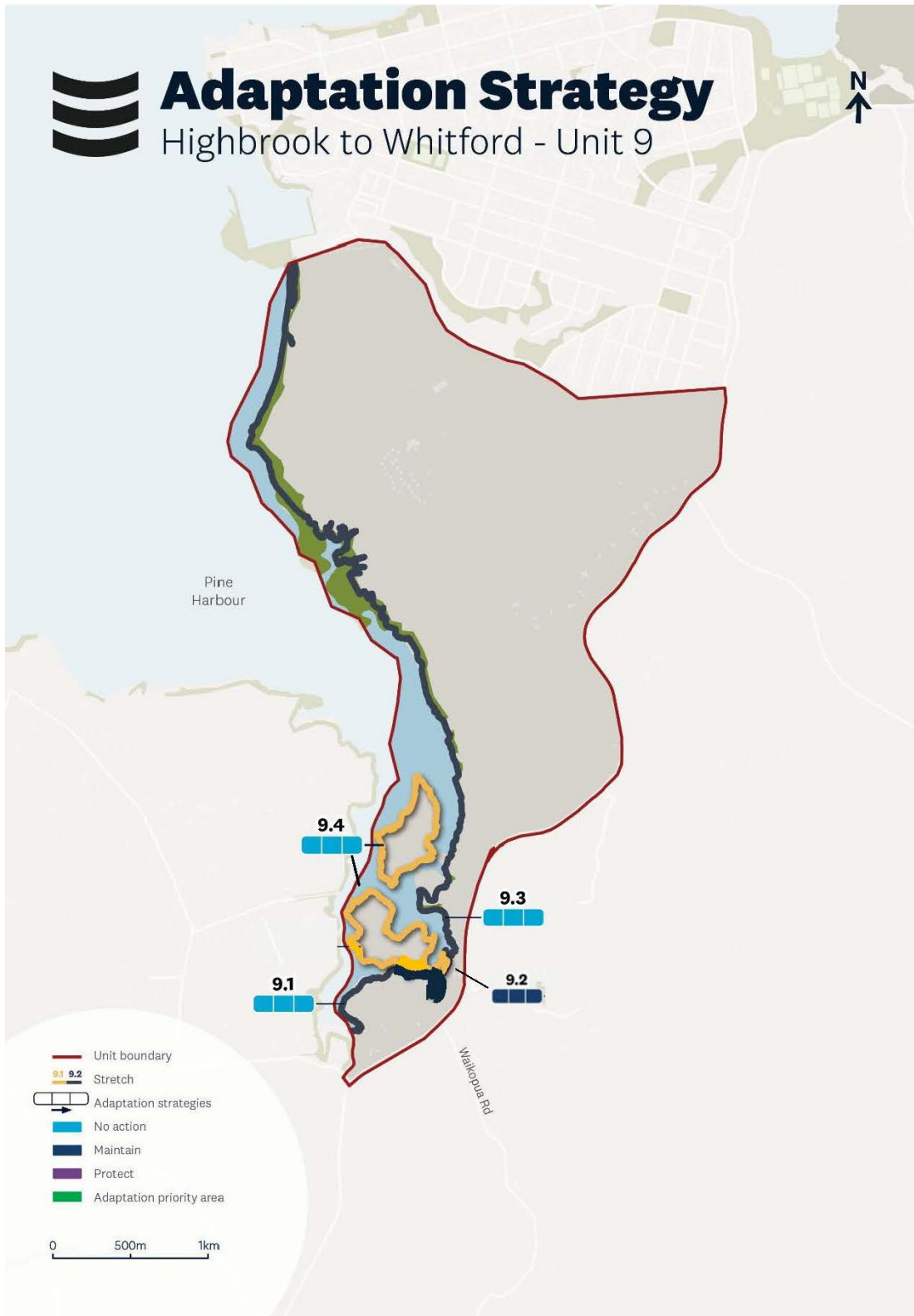
Who did we hear from?

Feedback was received via digital platforms, Social Pinpoint and 'AK Have Your Say'. Key themes in community submissions included but were not limited to:

- Maintenance of walking tracks, bridle ways and pathways to and along beaches and coastal areas and the further development of walkway networks to the north towards Beachlands and increased off-road connections to Whitford in the west.
- Maintain reliable access to Pine Harbour shops and ferry connections to Auckland City (utilising local road connections such as the Whitford Maraetai Road), highlighting the importance of these transport options for local connectivity to the wider region.
- Advocacy for preserving and maintaining key amenities such as bins, toilets, playgrounds, and other facilities to support community recreation and enhance quality of life.
- Need for accessible parking (further and new assets) close to beaches, walkways and amenities to accommodate visitors.
- A clear call to protect roads (and private land) from erosion and flooding caused by rising tides, with a focus on effective strategies to safeguard infrastructure and properties.
- Concerns over preserving the natural beauty of the coastline, with opposition to intrusive structures like retaining walls and large rock barriers that disrupt the shoreline's appearance (preserving natural landscapes and aesthetics where possible).
- Residents noted a significant drop in cockle numbers, once abundant and locally harvested, (this was speculated to be related to overfishing and disease) community feedback sought protect these species for ecological balance and biodiversity.
- Commentary that the Whitford to Maraetai coastal road is narrowing and deteriorating due to erosion, reducing parking availability and affecting accessibility. Timely repairs and erosion control measures are needed to maintain safe coastal access and protect the landscape.
- Efforts to improve water quality in waterways for healthier ecosystems and recreation.
- Encouragement of resident involvement in conservation via volunteer programs, track maintenance, weed removal, and habitat restoration to enrich the natural environment.

- Advocacy for sustainable management balancing human use with environmental protection, including responsible fishing, mindful coastal development, and raising awareness of ecosystem-community connections.

What can we do about it? Adaptation strategies for Unit 9.



9.1: Henson Road to Whitford Maraetai Road

This stretch commences at the head of Waikopua Creek and covers a relatively short length of rural shoreline. For this section of the coast, the Whitford Maraetai Road is located inland.

Scenarios for change		
Low	Moderate	High
No action 	No action 	No action 
Explanation A no action approach reflects an absence of Council land or assets in this stretch.		
Implementation Notes No action is reflective of the absence of Council-owned land and assets requiring management of risk from coastal hazards. Community and Local Board feedback identifies aspirations for future connections. Strategies can be updated to reflect the management of risk to future assets and uses as required, noting that assets should be located and designed to respond to coastal hazard risks. Ecology: There are several SEAs along the Waikopua Creek. No action supports the coastline to remain dynamic in response to future climate change.		

9.2: Whitford Maraetai Road

This stretch includes the short stretch of the upper Waikopua Creek shoreline, where the catchment is low lying and traversed by Whitford Maraetai Road.

Scenarios for change		
Low	Moderate	High
Maintain 	Maintain 	Maintain 
Explanation This short stretch of the coast captures the low-lying portion of the Whitford Maraetai Road. Maintain reflects the proactive management of risk to key roading connections for eastern areas with respect to coastal inundation and catchment flooding.		
Implementation Notes Community and Local Board views: Community and local board feedback highlighted that the Whitford to Maraetai coastal road is perceived to be impacted by natural hazards. Timely repairs and erosion control measures are sought and enabled by the strategy of maintain. Noting the Whitford Bypass (connecting the Whitford-Maraetai Road / Trig Road intersection to the Saleyard Road / Sandstone Road / Whitford Park Road roundabout) will support a more resilient future roading connection for eastern areas and will be a relevant consideration for the management of risk to roading connections in this area.		

9.3: Whitford Road and Whitford East

This stretch commences where the coast turns north away from Whitford Maraetai Road culminating at the end of the unit area south of Pine Harbour. It includes the eastern shoreline of Waikopua Creek, including Whitford Maraetai Esplanade Reserve and Jack Lachlan Drive Esplanade Reserve and associated shared path connections which traverse a section of this esplanade area.

Scenarios for change			
Low		Moderate	
High			
No action		No action	
Explanation			
This stretch includes Whitford Maraetai Esplanade Reserve and a section of the shared path network and the currently undeveloped esplanade reserve (Jack Lachlan Drive). Council-owned assets/ land within this area that are at risk from coastal hazards are limited, this is reflected by a no action approach across all climate change scenarios.			
Implementation Notes			
No action is reflective of the limited existing Council-owned land and assets requiring management of risk from coastal hazards and does not preclude the continued maintenance of shared pathways. Nor does it preclude the advancement of community aspirations for future coastal connections via pathways/ bridle paths within this coastal stretch, noting ecological and cultural values may require further engagement and analysis. Ecology: There are several SEAs along the Waikopua Creek. No action aligns with maintaining a dynamic and natural coastal edge in response to future climate change. Ongoing consideration of supporting ecological opportunities is recommended across all climate change scenarios. Community and Local Board views: Community and local board feedback highlighted that walking and shared path connections are sought to connect to the existing network of paths within the wider Whitford area. This is not precluded by the identification of 'no action' noting that future assets should be designed and located to respond to coastal hazard risks.			

9.4: Waikopua Creek Islands

This stretch includes the privately-owned islands in the upper inlet that are also recognised as areas of high ecological value (SEA terrestrial).

Scenarios for change			
Low		Moderate	
High			
No action		No action	
Explanation			
There are no Auckland Council assets within this stretch that are exposed in any timeframes.			
Implementation Notes			

Scenarios for change		
Low	Moderate	High
• No action is reflective of the absence of Council-owned land and assets requiring management of risk from coastal hazards. • Ecology: There are several SEAs along Waikopua Creek. No action supports the coastline to remain dynamic in response to future climate change. No action does not preclude advocacy and support for cultural and ecological outcomes and aspirations for the islands.		

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