Ngā mahere whakaurutau mō te takutai

Shoreline Adaptation Plan

Pākiri to Mathesons Bay / Te Kohuroa
Volume 3: Adaptation Strategies

July 2025, Version 1.0

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Reviewed and recommended for issue by:

Name: Natasha Carpenter

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

Approved for issue by:

Name: Paul Klinac

Position: General Manager, Engineering, Assets & Technical Advisory

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Front Cover image

Shoreline Adaptations Plan area overview map for Pākiri to Mathesons Bay / Te Kohuroa. Prepared for Auckland Council by Tonkin +Taylor 2025.

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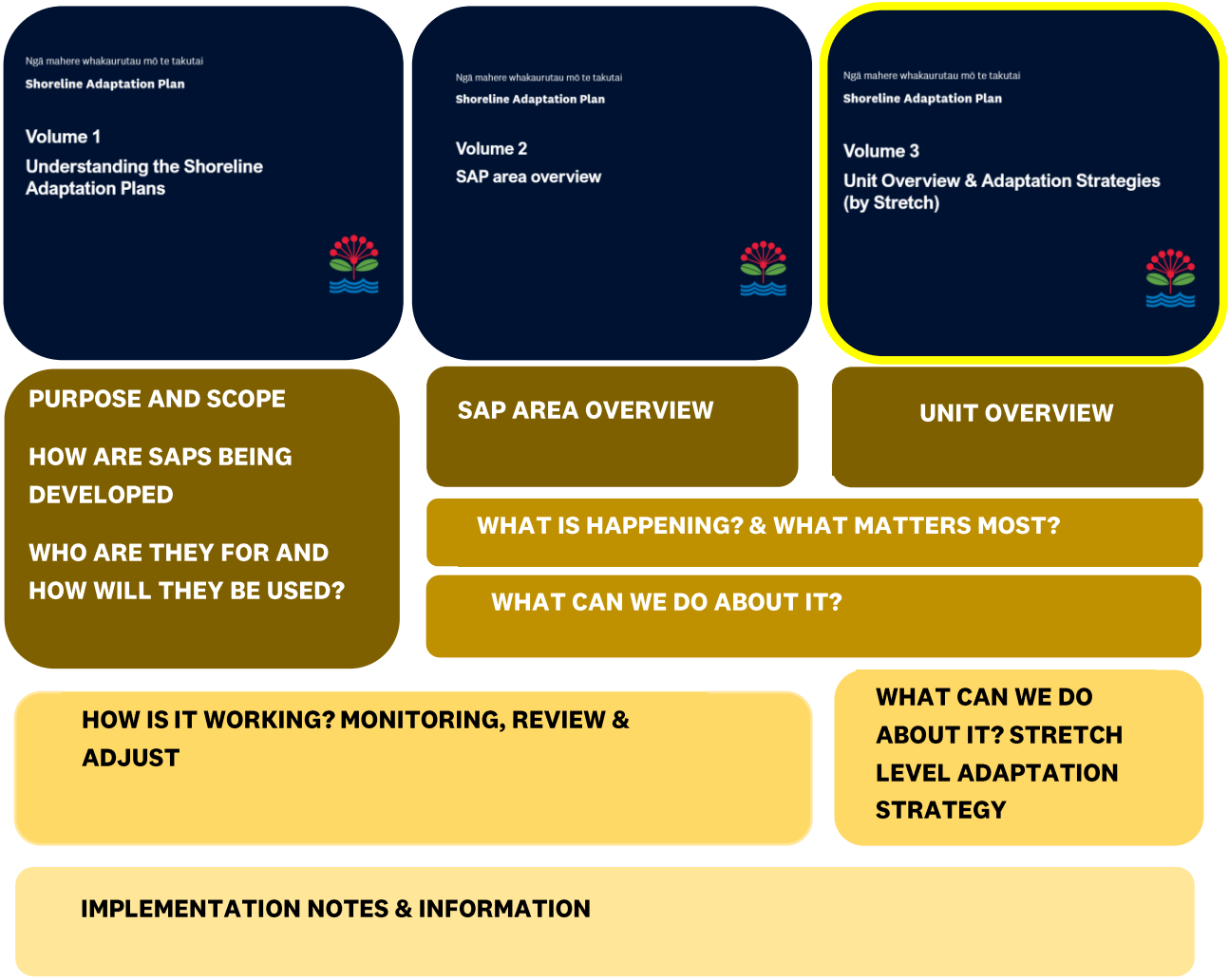
Quick Reference

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

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



Glossary

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

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

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

Shoreline Adaptation Plan Areas

Tāmaki Makaurau, Auckland, is a coastal city, bounded to the east and west by the South Pacific Ocean and the Tasman Sea. The region has around 3,200 km of dynamic coastline and encompasses three major harbours: the Kaipara, Manukau and Waitematā. Due to its location, much of the city's urban development and supporting infrastructure is concentrated in coastal areas and exposed to coastal processes such as erosion and inundation. These natural processes are considered hazards when they impact on things or locations of value. Climate change related to greenhouse gas emissions is contributing to rising sea levels, which have a range of impacts including increasing the frequency and magnitude of coastal hazard events. Auckland Council began developing a series of Shoreline Adaptation Plans (SAPs) in 2021. These area-based plans form the first step for the SAP programme in achieving a resilient future for Auckland's coasts. A more detailed discussion on the SAP Program can be found in *Volume 1: Understanding the Shoreline Adaptation Plans.* Twenty separate SAPs make up Auckland's ~3200 km of coast as follows:

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

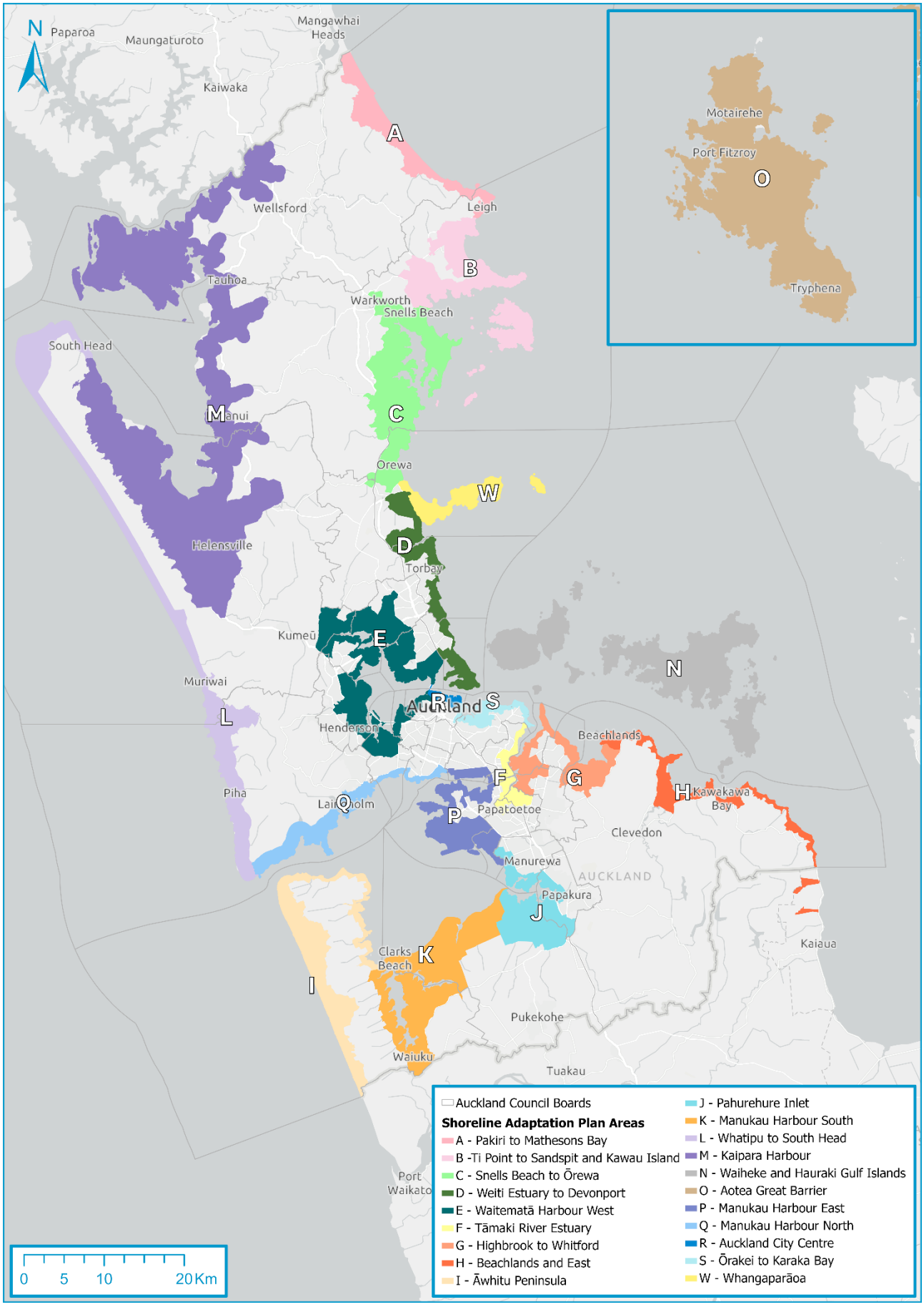
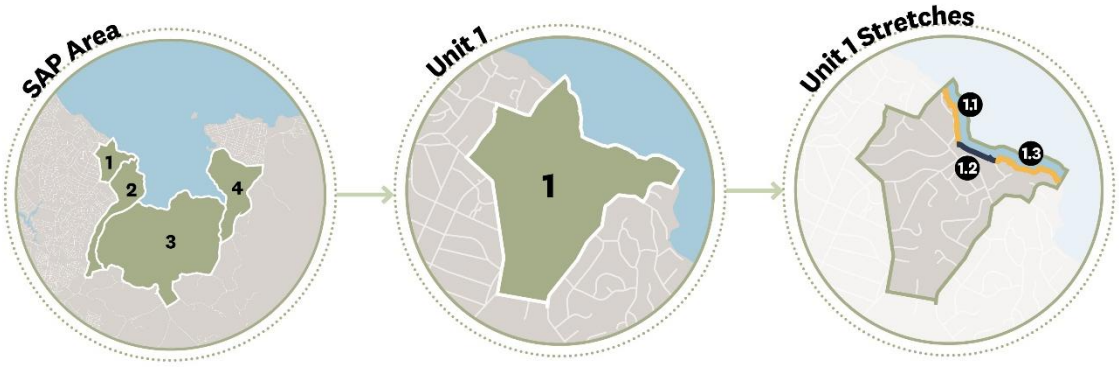


Figure 1: Shoreline Adaptation Plans (regional)

SAP areas, units & stretches

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



Climate change scenarios (timeframes for change)

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

Table 1-1: 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
Pākiri to Mathesons Bay / Te Kohuroa

N

Te Ārai and the wider coastal landscape is of high cultural significance to local iwi with numerous known sites of significance. Those within the park include the pā site and a number of midden and pits representing Māori settlement activity; Ngāti Manuhiri, Te Uri o Hau, Te Kawerau ā Maki, Ngāi Tai ki Tāmaki and Ngāti Paoa settlement acts each outlining statutory acknowledgements in relation to this coastline and the association with the coastal area.

Community feedback highlighted this section of coast for its ecological values, and valued fishing and surfing spots.

A number of rare and endangered native shorebirds use the inter-tidal zone along the beach frontage for feeding, and the sand flats and lagoon at the mouth of the Te Ārai Stream for breeding and roosting, including the variable oystercatcher, the northern NZ dotterel, and the threatened NZ fairy tern.

This unit sits within the Te Ārai drainage district

A public access easement through private land that is in favour of both the Crown and Council (known as Pacific Road) provides public access to a car park and the coast

Te Ārai Regional Park covers over 467.8ha and stretches 11km along the Te Ārai coastline. The park has three distinct areas: Te Ārai Point is the initial central area held as regional park, with two additions of land at Te Ārai North and Te Ārai South.

The beach and dunes of Te Ārai are part of a larger Mangawhai-Pākiri sand system which is the largest ocean exposed sandy beach on the east coast of the region.

Te Ārai Beach

Te Ārai Regional Park

Headland at Te Ārai Point

The name of the headland at Te Ārai Point is known as Te Ārai o Tāhuhu (the shelter of Tāhuhu) - this is one of a number of pā that guarded coastal kāinga between Te Ārai and Pākiri.

Te Ārai Links - North Course

Auckland Council Regional Parks Management Plan map of Te Ārai Regional Park

Community volunteer groups have made significant contributions to protecting rare and endangered native shorebirds, including predator control and monitoring of breeding programmes. These efforts have been focused around Te Ārai Stream and the headland. Te Ārai and Poutawa Streams and the dune lakes provide opportunities for further habitat restoration.

Recovery programmes that manage threatened species, including the management of Tara iti/NZ fairy tern led by the Department of Conservation.

Mangawhai Sand Dune

Mangawhai Harbour

Tara Iti Golf Club

Tara Iti Dr

Harbour Rd

Pacific Rd

Canal Rd

Te Ārai Point Rd

Unit boundary

1.1 1.2 Stretch

Regional park

0 500m 1km

Unit 1: Te Ārai North

Unit 1 is located within the northern area of the Auckland region, within the Rodney Local Board area. The northern boundary of the unit corresponds to the northern-most boundary of the Auckland region (Te Ārai Beach), including the coastal areas of Te Ārai Regional Park, culminating to the south of Te Ārai Point. This unit is approximately 6 km in length.

The coastline is characterised by the high-energy beach backed by the large transgressive dune system, with a stream discharging across the beach face part way up the beach. Te Ārai Point headland at the southern end of this unit is characterised by rocky and vegetated coastal cliffs.

The main public beach access point carpark is located at the southern end of Te Ārai Beach behind the sand dunes. A further public carpark associated with beach access is located at the northern end of this unit, at the end of the Pacific Road behind the sand dunes. Low-density residential development occurs behind the frontal dunes. Residential property boundaries are set back approximately 160 m from the seaward dune toe, with the vegetated frontal dunes of Auckland Council Reserve. Te Ārai Links golf course backs the dunes at the northern end.

The frontal dune system is vegetated in native spinifex and pingao which plays a key role in natural sand trapping, dune building, and mitigating wind erosion. Te Ārai Beach and the dune system is dynamic in response to coastal processes, going through cycles of erosion and accretion. Dune restoration work and planting has occurred along the Te Ārai sand dunes. This includes dune restoration involving removal of pest and non-native vegetation, including established pine trees that were present. There are defined pedestrian accessways through the dunes from the main carpark arrival point. Vehicle access onto the beach is restricted with a locked access gate at the southern carpark. There are no existing coastal protection structures, e.g. seawalls, for erosion management along this section of coastline.

The stream mouth can occasionally block or narrow. This has been manually opened in the past, to reduce potential inundation upstream or ponding at the mouth. This unit also includes an area identified as part of the Ta Ārai Drainage District, from the legacy Rodney District Drainage District under which Auckland Council has a role supporting the maintenance and management of private waterways and stormwater infrastructure in this area. This includes a discharge to the coast within this unit.

Figure 2: Te Ārai Drainage District

What is happening? Coastal context and hazardscape

The coastal area is susceptible to the impacts of sea-level rise and storm surges. The Point may experience land instability and the car park has already been managed to provide a wider grassed buffer. Threats from climate change and consideration of the identified 170 m coastal hazard zone will need to be assessed as part of any new park development.

Many of the cultural heritage sites at Te Ārai are in the coastal environment and are particularly vulnerable to the effects of climate change. Further work is required to prioritise sites for protection or recover archaeological information. Cultural heritage also needs to be considered when planning for coastal protection and managed retreat, to ensure sites are not adversely affected by revegetation or unplanned site disturbance.

Te Ārai Beach is characterised by a moderate to high wave climate and is backed by a substantial dune system along its length. This dune system ranges in widths from 50 m at the northern end where the dunes back the Te Ārai Links Golf Course and fronting the southern car park, to over 500 m at the widest points. The frontal dune system is vegetated in native spinifex and pingao which play a key role in natural sand trapping, dune building, and mitigating wind erosion. Te Ārai Beach and the dune system are dynamic in response to coastal processes, going through cycles of erosion and accretion.

The Te Ārai Point headland at the southern end of this unit is characterised by rocky and vegetated coastal cliffs. There is a stream mouth approximately 2 km north of Te Ārai Point that can occasionally block or narrow where it discharges onto the beach face. It has previously been manually opened to reduce potential inundation upstream or ponding at the mouth. There are no existing coastal protection structures (e.g. seawalls), for erosion management along this section of coastline (Auckland Council, 2024b).

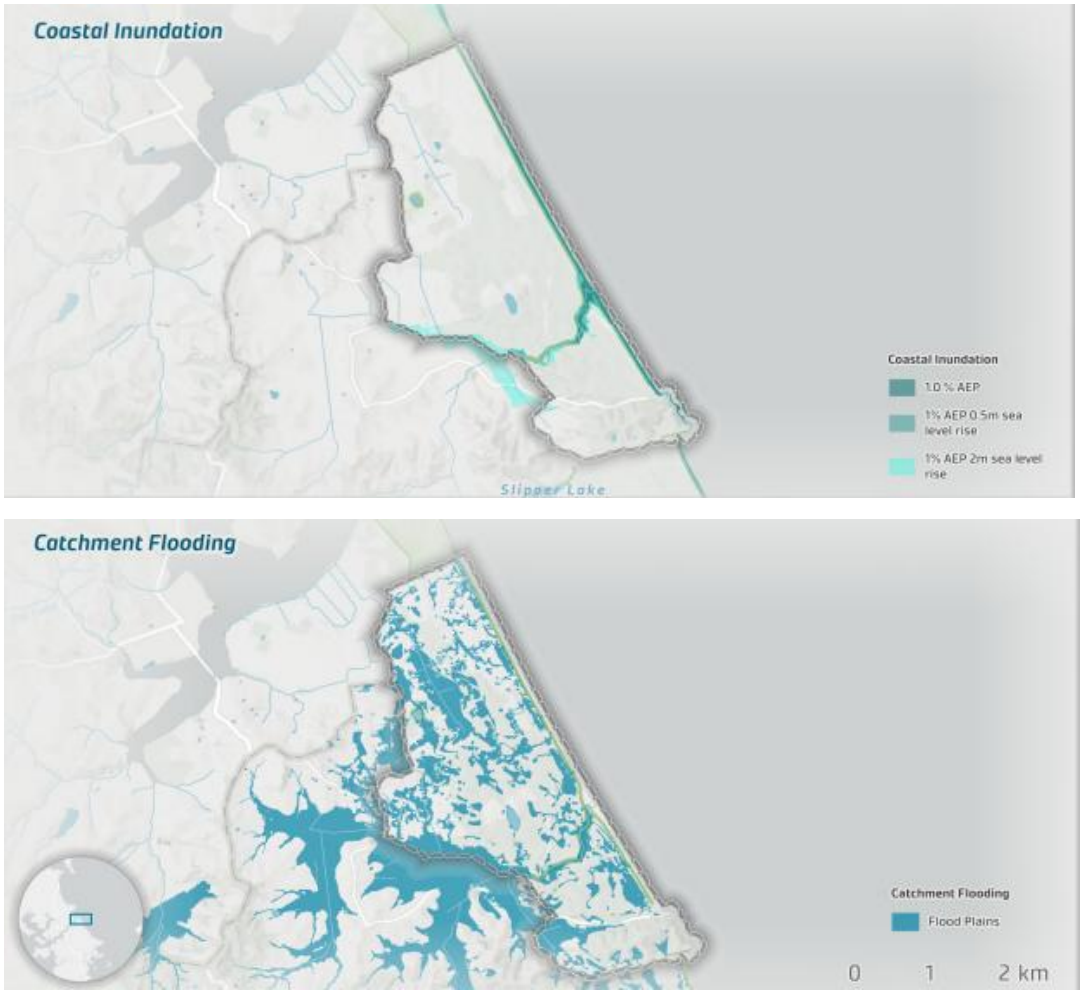


Figure 3: Coastal Hazardscape for the Te Arai Unit, reflecting coastal erosion susceptibility for 2050, 2080 and 2130 considering RCP4.5 and RCP8.5 emission scenarios, coastal inundation for 1%AEP storm surge for present day and with 0.5 m, 1 m and 2 m sea-level rise and the identification of flood plains.

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).

Risk from coastal erosion and susceptibility to Auckland Council-owned land (e.g. Te Ārai Regional Park and coastal sand dunes) is very high and Auckland Council Community facilities (e.g. Te Ārai Point Walkway) is high from the short term. There is very low risk to transport infrastructure (i.e. Te Ārai Point Road) and water infrastructure in the short term from both coastal erosion susceptibility and coastal inundation. Risk from coastal inundation is high for Auckland Council-owned land and there is very low risk calculated for the other groupings.

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 (311.6 ha) Buildings, wharves (1 No.)			Park amenity structures, carparks, accessways, buildings (0.3 ha)			AT roads (1.4 km) Bridges (0 m^2)			Water pipes (0.02 km)		
Short	Medium	Long	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Coastal erosion and instability susceptibility											
Moderate	Very high	Very high	Very high	High	High	High	Very low	Very low	Very low	Very low	Very low
Coastal inundation											
High	High	High	Very low	Very low	Very low	Very low	Very low	Very low	Very low	Very low	Very low
Key											
Very Low			Low			Moderate			High		Very High

What matters most

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

- Auckland Council-owned land in this unit includes Te Ārai Regional Park, which covers a substantial portion of this unit and nearly all of the coastal area and beachfront land.

- Auckland Council assets are limited but include car parking and a toilet at the end of Te Ārai Point Road, more car parking at the end of Pacific Road Beach, and several walkways through Te Ārai Regional Park.
- The management plan for Te Ārai Regional Park identifies a 170 m coastal hazard zone and notes that the carpark has already been pulled back from the coast and may need to move again. It identifies the reconfiguration of the arrival area at Te Ārai Point as a management focus and states that any new park development will need to consider this buffer.

- This unit includes the Te Ārai Drainage District, a legacy of the Rodney District, which is one of few remaining areas of rural Auckland where Auckland Council has a role supporting the maintenance and management of private waterways and stormwater infrastructure in this area. This includes a discharge to the coast within this unit.

Social, cultural and ecological context: This section identifies key social, cultural and ecological matters, identified through the development of the SAP reports, that may be impacted by coastal hazards (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.
- Te Ārai and the wider coastal landscape is of high cultural significance to local iwi. Ngāti Manuhiri Claims Settlement Act 2012 includes a coastal statutory acknowledgment describing the association and connections Ngāti Manuhiri has with Te Ārai, and a statutory acknowledgement of association over the Ngāroto Lakes.
- The Te Uri o Hau Claims Settlement Act 2002 includes a statutory acknowledgment over the Mangawhai Marginal Strip adjacent to the park. The Te Kawerau ā Maki Claims Settlement Act 2015
- The Ngāi Tai ki Tāmaki Claims Settlement Act 2018 also includes a coastal statutory acknowledgement describing the iwi association with this area of the Hauraki Gulf.
- The Ngāti Paoa Deed of Settlement 2021 (still to be enacted) contains a statement of association with the coastal area.

- This unit is rural with no social infrastructure, with nearby Mangawhai (Kaipara District, Northland) the nearest urbanised area/retail and commercial centre.
- Te Ārai Beach is an isolated, yet highly regarded, destination for swimmers, surfers, and beachgoers.
- The car park at the southern end of Te Ārai Beach is used by overnight campers. Another public carpark associated with beach access is located at the end of Pacific Road behind the sand dunes.
- Community groups are involved in native bird breeding programmes, predator control and planting programmes which assist in managing coastal erosion as described in the Regional Parks Management Plan.
- Located behind the sand dunes is Tara Iti Golf Club, a major attractor to the area and which includes on-site accommodation, as well as some low-density residential properties.
- The vegetated frontal dunes are Auckland Council park land.
- No historic heritage features have been identified in this unit.

The following regionally important and/or vulnerable ecosystems and species have been recorded within this unit:

- There are a variety of vegetation types bordering the coastline: spinifex, pīngao dunelands, sand coprosma, several areas of mānuka, tangle fern, scrub, fernland and *Machaerina sedgeland*.
- These coastline ecosystems are utilised by a variety of shorebirds, including black shag and white-fronted tern, katipō spider and shore skink.
- The Te Ārai Regional Park is a BFA. Its coastal cliffs are dominated by pōhutukawa and spinifex, pīngao duneland. A shallow reef and rocky shore system is below the coastal cliffs. It also contains three regionally important dune lakes which are further described under Unit 2.

Community feedback

- Key uses and activities included nature watching, walking and running along the coastal area and water-based activities such as swimming.
- Flooding due to heavy rainfall and coastal storms were frequently identified as hazards of concern by most respondents. Other respondents noted sea-level rise as another hazard of concern.
- No responses were received regarding the draft adaptation strategies.

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

1.1: Te Ārai (North)

This stretch commences at the boundary with the Northland Region/ Kaipara District at the northern boundary of the Regional Park, and culminates to the south of the point and the end of the Regional Park landholding.

Scenarios for change		
Low	**Moderate**	**High**
No action 	**No action** 	**No action** 
Explanation		
No action reflects the management intentions of the Regional Park's Management Plan to preserve the natural character of the park. This does not preclude ongoing ecological enhancement such as dune planting but rather signals the ongoing intention for no coastal engineering structures of hazard management in this area.		
Implementation notes		
• **Social**: The Regional Parks Management Plan notes community groups are involved in native bird breeding programmes, predator control and planting programmes which assist in managing coastal erosion. The strategy of no action does not preclude ongoing collaboration with these groups to achieve broader environmental outcomes.		

1.2: Te Ārai Central (Drainage District and roading connections)

This stretch commences at Pacific Road South and extends southwards to Te Arai Point Road and carpark. It encompasses the Te Arai Drainage District.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Adaptation priority** 	**Adaptation priority** 
Explanation		
This stretch includes Te Ārai Drainage District which is one of the limited remaining areas of rural Auckland where Auckland Council provides ongoing stormwater management services to private landowners. **Maintain** in the low change scenario reflects the ongoing management of the stormwater network and roading connections. A transition to **adaptation priority** under a moderate to high climate change scenario recognises the ongoing risk to access roads.		
Implementation notes		
• **Management**: This stretch is within the Te Ārai Drainage District; one of the few remaining areas of rural Auckland where Auckland Council provides ongoing stormwater management services to private landowners.		

1.3: Te Ārai (Point and Park Area)

This stretch encompasses Te Arai Point, including the Te Arai Point Conservation Area and park assets.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Maintain** 	**Maintain** 
Explanation		
Maintain over all change scenarios provides for the ongoing management of assets located on the headland, including numerous walking tracks and car parking facilities. Maintain indicates that the coastline is not fixed and realignment may be required, e.g. of the carpark to support the dry high-tide beach areas, ecological outcomes and coastal character. Maintain enables the ongoing preservation of this important cultural landscape.		
Implementation notes		
• Acknowledging the importance of highly utilised coastal accessways, the maintenance and ongoing provision of accessways to the coast will be a central focus under all climate scenarios.		

Unit 2

Pākiri to Mathesons Bay / Te Kohuroa

Slipper Lake

Spectacle Lake

Tomorata Lake

Te Ārai and the wider coastal landscape is of high cultural significance to local iwi with numerous known sites of significance. Those within the park include the pā site and a number of midden and pits representing Māori settlement activity; Ngāti Manuhiri, Te Uri o Hau, Te Kawerau ā Maki, Ngāi Tai ki Tāmaki and Ngāti Paoa settlement acts each outlining statutory acknowledgements in relation to this coastline and the association with the coastal area.

Te Ārai Links - North Course

Western Boundary Rd

Te Ara Okiri Patuparaoa Anake

Te Ārai Links Golf Course

Te Araroa trail runs down the length of this coastline

The Tomarata – Te Ārai Dune Lakes biodiversity focus area in north-east Tāmaki Makaurau Auckland includes three small dune lakes in Te Ārai Regional Park and three larger, deeper dune lakes nearby (Lakes Tomorata, Slipper and Spectacle). These lakes are home to threatened plant species and provide habitat for cryptic wetland birds, black mudfish and other species with the fringes of the lakes lined with extensive freshwater wetlands.

Poutawa Stream - DOC marginal strips run along the entire coastal edge and along both banks of the Poutawa Stream

Tomarata Domain

Springbank Tomarata

Dune restoration has involved significant removal of pest and non native vegetation, including established pine trees that were present amongst the dunes

Pākiri Block Rd

Pakiri River Inlet

Pākiri Block Rd

Rahukiri Road

Unit boundary

2.1 2.2 Stretch

Regional park

0 500m 1km

Unit 2: Te Ārai South

Unit 2, located within the Rodney Local Board area, commences south of Te Ārai Point and extends approximately 11 km south including the northern end of Pākiri Beach, culminating at the Pākiri River mouth.

The coastline is characterised by the high-energy beach backed by a large transgressive dune system, with the Pohutawa Stream discharging across the beach face part way up the beach, and the larger Pākiri River mouth at the southern end of this unit. The frontal dune system is vegetated with native spinifex and pingao which play a key role in natural sand trapping, dune building, and mitigating wind erosion. Dune restoration work and planting has historically occurred and has included significant removal of pests and non-native vegetation, including established pine trees that were present amongst the dunes. Defined pedestrian accessways through the dunes from the main carpark arrival point will continue to be maintained and managed. The fronting Pākiri Beach is dynamic in response to coastal processes, going through cycles of erosion and accretion.

Public access to the beach is available at the northern end at the 'forestry access' via the public carpark. This is also referred to as the Te Ārai South recreational hub, and the Regional Parks Management Plan identifies the development of a spatial plan for this area. There was, historically, a vehicle access point onto the beach from the carpark at the northern end of this unit. In 2024 this was closed, and a dune restored at this access point preventing vehicle access onto the beach.

This unit also includes three regionally significant dune lakes (Tomarata, Spectacle and Slipper). These lakes are home to threatened plant species and provide habitat for cryptic wetland birds, Black mudfish and other species. A boat ramp provides access to Tomarata Lake and is a popular recreational destination.

Low-density residential development is occurring behind the frontal dunes, with residential property boundaries set back in the order of 150 m plus from the seaward toe of the frontal dunes. The beach is backed by a substantial dune system along its length, ranging in widths of approximately 150 m to over 350 m. As part of the Regional Park acquisition, Auckland Council is entitled to a park of a minimum width of 100 m between mean highwater springs mark and the landward side of the residential development. This includes the ability to move the park boundary should coastal erosion impact the width of the park, through further acquisition of an open space area, providing for the transgressive movement of the dunes within this area of the beach.

What is happening? Coastal context and hazardscape

Pākiri Beach is characterised by moderate to high wave energies and processes, and is dynamic in response to coastal processes, going through cycles of erosion and accretion. The beach is backed by a substantial dune system along its length, ranging in widths of approximately 150 m to over 350 m. The frontal dune system plays a key role as a natural and resilient buffer to coastal storms - naturally trapping sand, building the dune, and mitigating wind erosion.

Pākiri Beach A stream approximately 5 km south of Te Ārai point discharges onto the beach, and the larger Pākiri River mouth discharges onto the beach at the southern end of this unit. The Pākiri River mouth position is highly dynamic in response to coastal processes and rainfall (Auckland Council, 2024b). The mouth occasionally blocks or narrows, resulting in a lagoon forming above high tide. This can result in flooding or inundation, and amenity issues. Auckland Council can mechanically open the river mouth (under an existing resource consent) if deemed necessary, most recently being undertaken in February 2024. There are no existing coastal protection structures, e.g. seawalls, for erosion management along this section of natural coastline.

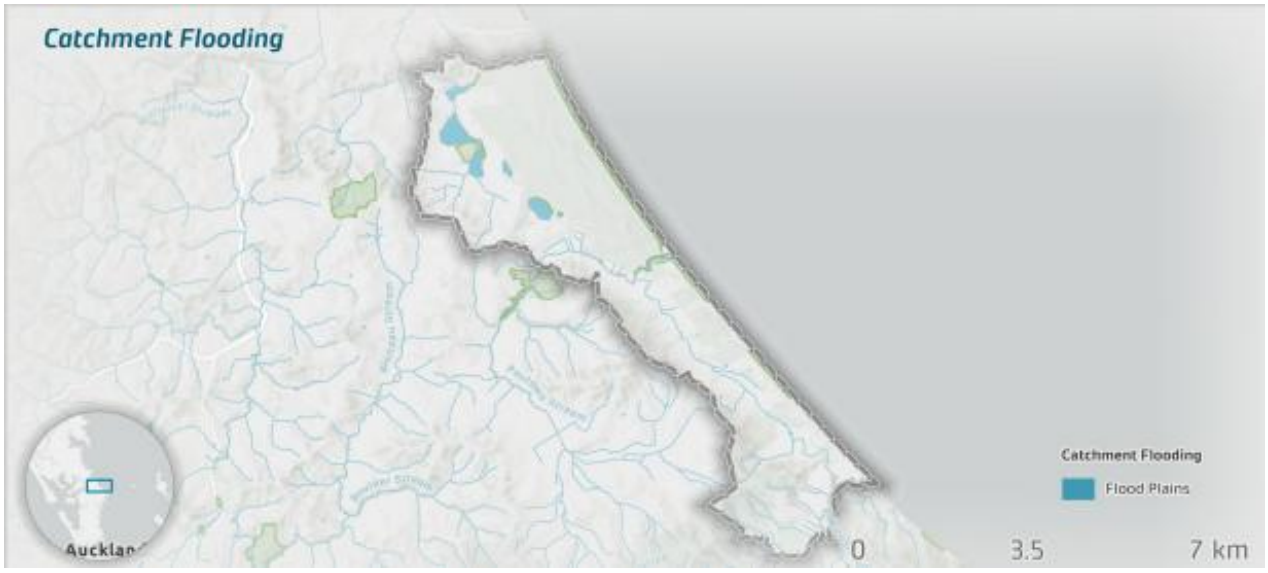


Figure 4: Coastal Hazardscape for the Te Arai South Unit, reflecting coastal erosion susceptibility for 2050, 2080 and 2130 considering RCP4.5 and RCP8.5 emission scenarios, coastal inundation for 1%AEP storm surge for present day and with 0.5 m, 1 m and 2 m sea-level rise and the identification of flood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

At a unit level, there is very low risk from coastal erosion susceptibility to any of the asset groupings in the short term, with risk to Auckland Council-owned land increasing to low in the long term. There is high risk from coastal inundation to transport infrastructure (e.g. bridges, Pākiri Block Road and Rahuikiri Road) across all timeframes with very low risk identified for the remaining asset groupings.

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 (13.8 ha) Buildings, wharves (3 No.)			Park amenity structures, carparks, accessways, buildings (0 ha)			AT roads (17.1 km) Bridges (55.9 m^2)			Water pipes (0.02 km)		
Short	Medium	Long	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Coastal erosion and instability susceptibility											
Very Low	Very Low	Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Coastal inundation											
Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	High	High	High	Very Low	Very Low	Very Low
Key											
Very Low		Low		Moderate		High			Very High		

What matters most

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

- Te Ārai Regional Park is Auckland Council-owned land and extends across the coast of the northern stretches of this unit.
- Located within Te Ārai Regional Park are a pump shed, workshop, and ranger office. There are few Auckland Council assets in proximity of the coast; a carpark and toilet at Forestry Beach in the north, and Rahuikiri Road in the south of the unit.
- Te Ārai Regional Park pump shed is located within this unit.
- **Harbour access:** Tomarata Lake 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.

- 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.
- No sites and places of significance to mana whenua, nor Cultural Heritage Inventory records have been identified within this unit. However, the coastal area is within the area of interest of Te Kawerau ā Maki, Ngāti Manuhiri, and Ngāi Tai ki Tāmaki. Ngāti Manuhiri are also partners in Te Arai Links Golf Club, located in this unit, and hold SAA for the Ngāroto Lakes, Pākiri River, and Poutawa Stream.
- Within this unit are 3 ‘Category B’ cultural heritage features identified in the AUP:OP: Pā site R09_1 (Stretch 2.3), Pā site R08_24 – Pā site with terraces and pits (Stretch 2.3), Undefended settlement site R08_25 – settlement site with terraces and pits (Stretch 2.3).
- The management plan for Te Ārai Regional Park notes that the park’s cultural heritage is vulnerable to the adverse effects of coastal hazards, and that further work is required to prioritise sites for protection or recover archaeological information. Strategies will need to be refreshed in consultation with mana whenua, and cultural heritage needs to be considered when planning for coastal protection and managed retreat to ensure sites are not adversely affected by revegetation or unplanned site disturbance.

- Key social amenities in this unit are found primarily in the north, with access to Forestry Beach, Te Ārai Links Golf Course, and the Slipper, Spectacle, and Tomarata Lakes.
- Te Araroa Trail continues along the beach for the entirety of this unit.
- Key attractions include Pākiri Beach, specifically the northernmost section which is referred to as Forestry Beach. The main carpark used for people accessing this beach is located here. This carpark is located within Te Ārai Regional Park.
- The Regional Parks Management Plan notes community groups are involved in native bird breeding programmes, predator control and planting programmes which assist in managing coastal erosion.
- The recreation reserve next to Tomarata Lake has a parking area with a toilet and boat ramp, and the lake is used for swimming, kayaking, fishing, waterskiing, wakeboarding and jet skiing.
- There is limited access to Slipper Lake and Spectacle Lake. Community groups are involved in restoring and protecting the lakes area. The Local Park Management Plan notes that during storm events, areas of the park may be subject to inundation from stormwater runoff and that management intentions for the reserve include supporting a restoration programme for the lakes and working with mana whenua to manage the area.
- Also within this unit are two coastal golf courses – Te Ārai Links and Te Ārai Links North Course. These courses are 'sister' courses to Tara Iti in Unit 1; they have the same developers and owner. Te Ārai Links courses are open to the public, while Tara Iti is private. They include on-site accommodation.
- Much of the remainder of the land area of this unit is used for rural living. Low density residential development is present behind the frontal dunes, generally set back 150 m from the seaward toe of these dunes. For most residents of this unit the nearest urban area large enough to have a supermarket would be either Mangawhai (in Northland) or Wellsford (outside this SAP area).

Major threatened and/or vulnerable ecosystems within this unit include the three regionally important dune lakes (Tomarata Lake, Slipper Lake and Spectacle Lake) from the Te Ārai Regional Park BFA (as per Unit 1), and the Pākiri Beach and River. They are described below:

- The lakes are surrounded by the only two sites of mānuka, greater wire rush, restiad reedland and some of the best remaining examples of herbfield in the Auckland region.
- Several rare plant species are found in the margins of the lakes, including wire rush.
- Australasian bittern, fern bird, fairy tern and grey duck have all been recorded utilising the dune lakes.
- Black mudfish is found in one of the lakes – one of the few remaining populations in the region.
- Pākiri Beach is a made up of extensive sand dunes and lakes, and Pākiri River is a tidal stream with a small estuary and bordering saltmarsh that grades into the adjacent dunes.
- The dunelands contain threatened vegetation such as pīngao, and regionally significant populations of the sand coprosma.
- A large wetland area, called Pākiri Valley Swamp Forest, further inland from the river mouth that is dominated by flaxland.
- Several wading, coastal, and cryptic fringe birds use these areas for breeding and foraging. This includes the largest flock of New Zealand dotterels in the Auckland region. It is also one of only four known nesting sites in New Zealand for the fairy tern. Other birds in the area include blue reef heron, banded rail, and variable oystercatcher.
- A range of native freshwater fish have also been recorded in the Pākiri River and its tributaries, including longfin eel and inanga.

Community feedback

- Respondents noted that they visit the area for recreation. Key uses and activities included walking and running along the coastal area and water-based activities such as swimming.
- Coastal erosion and inundation were frequently identified as hazards of concern by most respondents, with community aspirations for maintaining access.
- Concerns regarding public access to, and cleanliness of, the coastal area were raised by most respondents.
- No responses were received regarding the draft adaptation strategies.

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

2.1: Forestry Access

This stretch commences from the south of the Te Ārai Point area, culminating to the south of the forestry area adjacent to the end of Te Ara Ruruhau Tairua access road.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Maintain** 	**Maintain** 
Explanation		
Maintain is reflective of the management intentions in the Regional Parks Management Plan and the ongoing management of risk through location of assets, management of accessways and support for nature-based defence in the form of the dune system.		
Implementation notes		
• **Management**: The coastal esplanade land strip is held by a body corporate and can be utilised to maintain a certain width of the regional park and the dune field. Engagement with this group may be needed to determine any management measures associated with this. • **Ecology:** Sections of the Tomarata – Te Ārai Dune Lakes Biodiversity Focus Area are located within this stretch. The Ecology Team will advise on any potential impacts of adaptation strategies on ecological values, and how these may need to be managed, noting that these are outside the identified coastal hazard exposure areas. • **Social**: The Regional Parks Management Plan notes community groups are involved in native bird breeding programmes, predator control and planting programmes which assist in managing coastal erosion.		

2.2: Ngāroto Dune Lakes

This stretch commences in the north adjacent to Te Ara Ruruhau Tairua access road end and culminating in the south at the northern side of Pohutawa Stream (south of Tomarata Lake).

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Maintain** 	**Maintain** 
Explanation		
Maintain is reflective of the management intentions in the Regional Parks Management Plan and Local Parks Management Plan (Tomarata Lake) and the ongoing management of risk through location of assets, management of accessways and support for nature-based defence in the form of the dune system.		
Implementation notes		
• **Ecology:** Sections of the Tomarata – Te Ārai Dune Lakes Biodiversity Focus Area are located within this stretch. • **Social:** Tomarata Lake is located within this stretch. While not itself located within identified coastal hazard areas, the lake and surrounding reserve are popular recreation locations and provide an alternative location for swimmers when coastal conditions are not amenable. Management intentions for this area (as noted in the Local Parks Management Plan) include supporting a restoration programme and working with mana whenua here. • **Social**: The Regional Parks Management Plan notes community groups are involved in native bird breeding programmes, predator control and planting programmes which assist in managing coastal erosion.		

2.3: Pākiri & Rahuikiri marginal strips

This stretch commences at the northern side of Pohutawa Stream mouth and terminates approximately 500 m from the Pākiri River (Te Awa Pākiri) mouth.

Scenarios for change		
Low	**Moderate**	**High**
No Action 	**No Action** 	**No Action** 
Explanation		
No action reflects that is no Auckland Council-owned land located along the coastal edge of this stretch.		
Implementation notes		
• **Ecology:** Several sections of the Pākiri Dunes Biodiversity Focus Area are located within this stretch. Ongoing engagement with the Ecology Team.		

2.4: Pakiri River North

This stretch encompasses the northern side of the Pākiri River (Te Awa Pākiri) mouth.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Adaptation Priority** 	**Adaptation Priority** 
Explanation		
Maintain responds to the current management of the stream mouth. **Adaptation priority** in the moderate to high change scenario signals the need for further management of risk to roading connections. Rahukiri Road, located west of the private land holdings, is identified as being exposed to catchment flood hazards and coastal inundation (through the Pākiri River inlet) in the mid to long term with sea-level rise.		
Implementation notes		
• **Management**: Rahuikiri Road is a key connection. This strategy does not preclude interventions as required to respond to the coastal inundation exposure from the short term. Ongoing collaboration with Auckland Transport, the asset manager, will be required for longer term implementation of adaptation strategies. • **Management:** Healthy Waters will provide advice on the management of the stream mouth and thresholds and how this may affect the road.		

Unit 3
Pākiri to Mathesons Bay / Te Kohuroa

N

Pākiri Beach

Pākiri is of high cultural significance to local iwi noting that Pākiri was home to several pā around the rivers and tributaries on the foothills and on the coast.

Community feedback highlighted a strong opposition to sand mining at Pākiri Beach and the knock-on impacts on the marine environment and coastal processes.

Community values surrounding Pākiri Beach reflect a deep connection to its natural environment, heritage, and local culture. These values contribute to the way the beach is used, protected, and appreciated by both residents and visitors. This beach is also highly valued by surfers for its surf break, as well as swimmers, horse riders and environmental groups.

Pākiri Beach Holiday Park

Significant areas of this unit are in private ownership, including Taumata A and B blocks in Māori ownership.

Pākiri River Rd

Pākiri Regional Park

Pākiri Rd

Pākiri Hall

Rahuikiri Rd

Rodney Rd

Pākiri Regional Park features Pākiri River Road and Mt Tamahunga trails, with some being accessible for mountain biking. It also includes Pākiri Beach, which is approximately 1 km long. Regional Parks Management Plan intentions are reflected in the pop out below.

Unit boundary

3.1 3.2 Stretch

Regional park

0 500m 1km

Unit 3: Pākiri

Unit 3 is approximately 4 km in length and extends from the Pākiri River mouth to the southern boundary of Pākiri Regional Park; the southern extent of this coastline forming part of Pākiri Regional Park. Significant areas of this unit are in private ownership, including Taumata A and B blocks in Māori ownership. To the north of the park boundary there is a private commercial campground, accessed from Pākiri River Road adjoining the park directly onto Pākiri Beach. The adaptation strategies identified are not applicable to apply to privately-owned land although this doesn't preclude support for managing risk to ecological and cultural values within these areas.

The coastline is characterised by the high-energy beach backed by the large dune system, with rocky shore platforms backed by vegetated coastal cliffs at the southern end. The beach is backed by a dune system along its length, although of a narrower width than the dune systems to the north along Pākiri Beach, backed by steeply rising topography where regenerative planting has occurred. The frontal dune system is vegetated with native spinifex and pingao which play a key role in natural sand trapping, dune building, and mitigating wind erosion, providing critical habitat for threatened and endangered species. Pākiri Beach is dynamic in response to coastal processes, going through cycles of erosion and accretion.

In places, small streams discharge onto the beach face. Dune restoration work and planting has historically occurred along this section of Pākiri Beach. There are no existing coastal protection structures, e.g. seawalls, for erosion management along this section of coastline.

Pedestrian access to the beach can be gained via Pākiri Regional Park, from Pākiri River Road, utilising an area of parks and DOC land for access to the coastal area. Access and the management of this to the coastal areas is an identified priority in the Regional Parks Management Plan.

What is happening? Coastal context and hazardscape

This approximately 2.5 km length of Pākiri Beach is characterised by moderate to high wave energies and processes, with rocky shore platforms backed by vegetated coastal cliffs at the southern end. The beach is backed by a dune system along its length, although of a narrower width than the dune systems on the northern stretch of Pākiri Beach. It is backed by steeply rising topography where regenerative planting has occurred. The frontal dune system is vegetated in native spinifex and pingao.

Pākiri Beach is dynamic in response to coastal processes, going through cycles of erosion and accretion. There are small streams discharging onto the beach. There are no existing coastal protection structures, e.g. seawalls, for erosion management along this section of coastline (Auckland Council, 2024b).

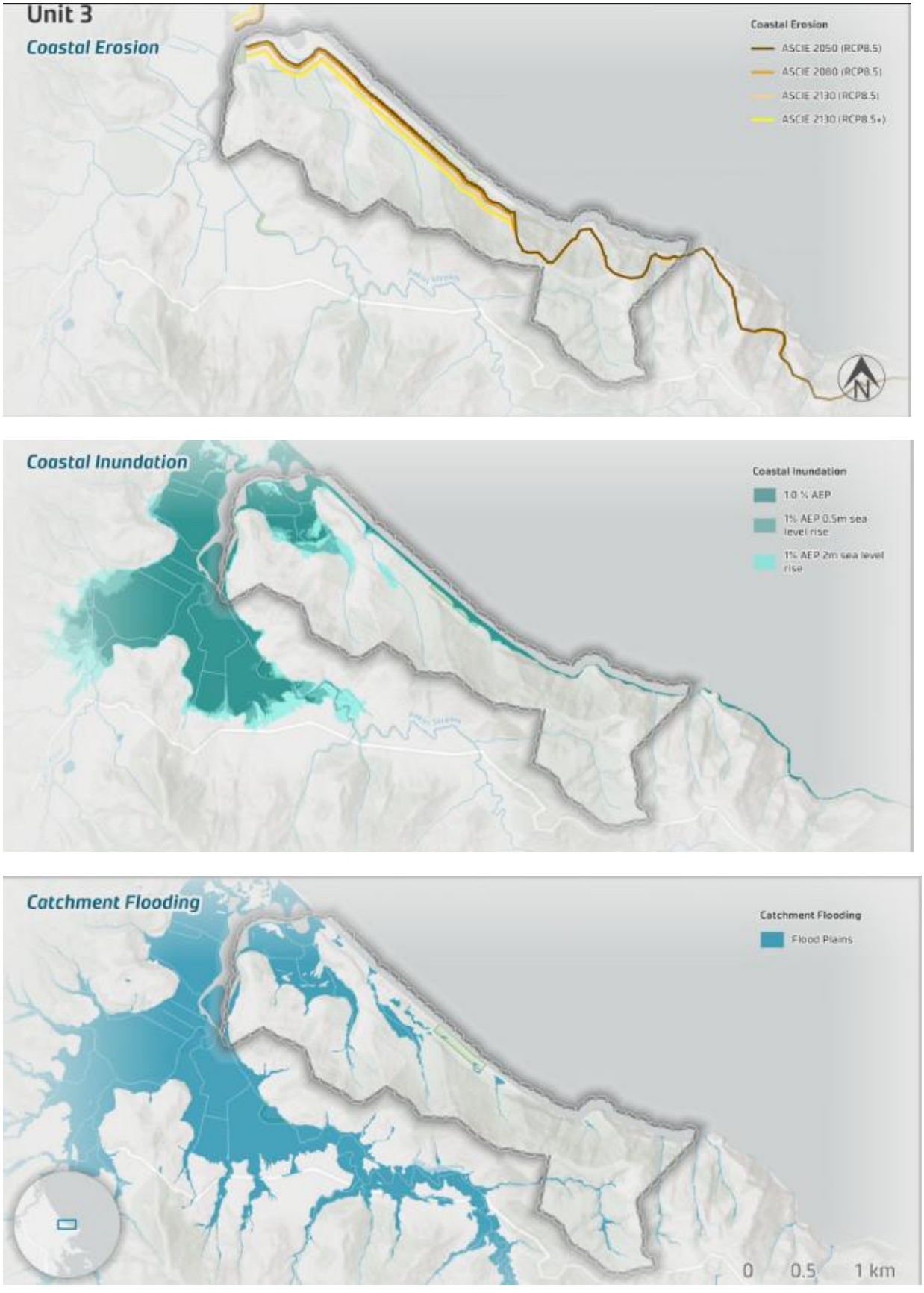


Figure 5: Coastal Hazardscape for the Pakiri Unit, reflecting coastal erosion susceptibility for 2050, 2080 and 2130 considering RCP4.5 and RCP8.5 emission scenarios, coastal inundation for 1%AEP storm surge for present day and with 0.5 m, 1 m and 2 m sea-level rise and the identification of flood plains.

Risk assessment

The 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.

At a unit level, risk from coastal inundation is high to Auckland Council-owned land and transport infrastructure (i.e. Bjorklund Bridge) and moderate to Auckland Council community facilities. Risk to Auckland Council-owned land is high from coastal erosion susceptibility and transport infrastructure is at moderate risk.

Council-owned land			Council community facilities			Transport infrastructure			Water infrastructure		
Park and reserve land (206.4 ha) Buildings, wharves (4 No.)			Park amenity structures, carparks, accessways, buildings (0 ha)			AT roads (3.5 km) Bridges (20.0 m^2)			Water pipes (0.1 km)		
Short	Medium	Long	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Coastal erosion and instability susceptibility											
High	High	High	Low	Low	Low	Moderate	Moderate	Moderate	Low	Low	Low
Coastal inundation											
High	High	High	Moderate	Moderate	Moderate	High	High	High	Low	Low	Low
Key											
Very Low			Low			Moderate			High		Very High

What matters most

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

- Pākiri Regional Park accounts for most of this unit's land area. Auckland Council assets include a carpark and toilet at the end of Pākiri River Road, two pump sheds, and a hay barn.
- Reserve and park amenities such as community buildings, playgrounds and carpark.
- Pākiri Regional Park pump shed
- **Key road or access:** Pākiri River Road provides the sole access to Pākiri Holiday Park and several private properties.

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 coastal area of this unit is within the area of interest of Te Kawerau ā Maki, Ngāti Manuhiri, and Ngāi Tai ki Tāmaki. Ngāti Manuhiri also hold SAA for Pākiri River.
- Within this unit are 2 'Category B' cultural heritage features identified in the AUP:OP: Pā site R09_8 (Stretch 3.1/3.2), Te Kiri's Pā R09_7 (Stretch 3.3)
- The management plan for Pākiri Regional Park notes that the cultural heritage and archaeological features contained in the park near the coast are vulnerable to the adverse effects of coastal hazards, and that further work is required to prioritise sites for protection or recover archaeological information. Strategies will need to be updated in consultation with mana whenua when planning for coastal adaptation and/or managed retreat to mitigate the potential adverse effects of revegetation and site disturbance on cultural heritage.
- Te Kiri-Pātu-Parāroa, an ancient pā and kāinga located in Stretch 3.3 (AUP:OP Schedule 12 ID:102), can be found mostly within Pākiri Regional Park but also extends partially into private property. It is located along a ridgeline, outside of the identified coastal hazard area.

- Uses of the coast by the community within the unit are clustered at the mouth of the Pākiri River. A carpark and toilet provide access to Pākiri Beach and Pākiri Regional Park, while nearby is the Pākiri Holiday Park and playing fields. Several community groups are involved in conservation, restoration, and recreational use of the regional park, including the Pākiri Landcare Group and Pākiri Preservation Society.
- In addition to the previously mentioned cultural heritage features, the following 'Category B' heritage feature is identified in the AUP:OP: Dovedale (Stretch 3.4)

Unit 3 contains the Pākiri Beach and river, which provide important habitat for wetland birds and freshwater fish. As noted in Unit 2:

- Pākiri Beach is made of extensive sand dunes and lakes which contain threatened vegetation such as pingao, and regionally significant populations of the sand coprosma.
- Pākiri River is a tidal stream with a small estuary and bordering saltmarsh that grades into the adjacent dunelands. A large wetland area, called Pākiri Valley Swamp Forest, sits further inland from the river mouth and is dominated by flaxland.
- Several wading, coastal, and cryptic fringe birds use these areas for breeding and foraging. This includes the largest flock of New Zealand dotterels in the Auckland region. It is also one of only four known nesting sites in New Zealand for the fairy tern. Other birds in the area include blue reef heron, banded rail, and variable oystercatcher.
- At risk freshwater fish, such as longfin eel and inanga, have been recorded in the Pākiri River and its tributaries.

Unit 3 also consists of threatened and/or vulnerable terrestrial features, including:

- Small remnants of kauri, podocarp, broadleaved forest, kauri ricker forest, pōhutukawa-dominated cliff vegetation and coastal broadleaved forest, located within Pākiri Regional Park.
- A small area of dunelands south of the river has also been identified as a BFA (i.e. Pākiri Dunes).
- A biogenic green-lipped mussel reef in the marine area at the southern end of this unit.

Community feedback

- Respondents noted that they visit the area for recreation and for fishing and kai moana gathering.
- Key uses and activities included walking, running and cycling along the coastal area and water-based activities such as swimming.
- Concern regarding the depletion of kai moana along the coast was raised by some respondents.
- Coastal erosion and inundation were frequently identified as hazards of concern by most respondents. Some respondents have observed some erosion of sand dunes within this unit, in particular along Pakiri Regional Park.
- Community aspirations for sand dune protection and maintaining access to the coast. Respondents have differing views regarding access to the beach, with some wanting existing access to be maintained while others want access to be expanded.
- No responses were received regarding the draft adaptation strategies.

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

3.1: Pākiri River Road (Pākiri North)

This stretch Includes the northern most area of the unit, commencing at Pākiri River inlet and including the coastline south, culminating adjacent to the end of Pākiri River Road. It includes Pakiri River Road and associated park facilities. Located landward of the road is an area of regional park land.

Scenarios for change		
Low	Moderate	High
Maintain 	**Adaptation priority** 	**Adaptation priority** 
Explanation		
Maintain in the low change scenario responds to the need to manage risk from catchment and coastal flooding to Pākiri River Road and the associated park facilities located within this stretch. **Adaptation priority** in the moderate to high change scenario is reflective of the risk to roading and park assets, and the need to manage risk to these areas of Council-owned land while responding to the site's identified ecological, cultural and social sites and values. **Note:** Access to the coast and the management of uses and impacts on neighbouring landholdings are identified as a priorities in the Regional Parks Management Plan.		
Implementation notes		
• **Management:** Auckland Transport, the asset manager, will monitor how coastal hazards may impact on operation of these assets and the transition to adaptation priority. Pākiri River Road is the sole access to a holiday park, Māori land blocks, and Pākiri Regional Park. These land uses largely face the same risks as the road. Risk is currently being managed through an operationally. • **Management**: The Regional Parks Management Plan identifies the opportunity to provide an additional park arrival area at the end of M Greenwood Road, which would not be subject to the same coastal hazards as the current arrival area on Pākiri River Road. It also notes the intention to further develop the existing arrival area. • **Cultural and ecology**: Access to the coast and the management of uses and impacts on neighbouring landholdings is identified as a priority in the Regional Parks Management Plan. Significant cultural sites and ecological values (and habitats) are located within this stretch and will be considered. • **Ecology**: The Regional Parks Management Plan identifies that erosion hazards will be managed through dune planting and stabilisation. Engagement with the Ecology Team should occur to identify and manage any potential ecological impacts that could arise from the implementation of adaptation strategies. • **Social**: Several community groups are involved in the ongoing conservation and promotion of this area, including Friends of Pākiri Beach and Pākiri Community Landcare. Ongoing engagement as required is recommended.		

3.2: Taumata A and B Blocks

This stretch commences to the south of the Pākiri River Road access including the coastline south to the Regional Park boundary.

Scenarios for change		
Low	**Moderate**	**High**
No action 	**No action** 	**No action** 
Explanation		
No action is identified due to there being no identified Auckland Council-owned land and assets exposed to coastal hazards located within this stretch.		
Implementation notes		
• **Cultural and heritage**: Māori land blocks extend along the coastal edge of this stretch. A heritage pā site (R09_8) is located within this area and is exposed to coastal hazards. This strategy does not preclude any further engagement with mana whenua and Heritage New Zealand. • **Social**: Several community groups are involved in the ongoing conservation and promotion of this area, including Friends of Pākiri Beach and Pākiri Community Landcare. No action does not preclude the ongoing support for these groups.		

3.3: Pākiri Regional Park (Central)

This stretch commences at the northern boundary of where the Regional Park landholding meets the coast including the park south to the roading connection of M Greenwood Road.

Note: This stretch includes a section of coast (Pākiri Beach marginal strip) in Crown ownership managed by DOC.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Maintain** 	**Maintain** 
Explanation		
Maintain across all times frames is reflective of the exposure of the park areas to coastal inundation and potential susceptibility to coastal erosion over time. The strategy does not relate to the Pākiri Beach marginal strip.		
Implementation notes		
• **Management**: This strategy is reflective of the need to implement the management intentions of the Regional Parks Management Plan, providing for coastal management in the form of dune planting and continuing to manage risk to roading assets which may be impacted (located further landward from the coast) by catchment flooding. • **Cultural**: The Regional Parks Management Plan notes that Pākiri Regional Park contains many sites of cultural significance. Engagement with mana whenua is recommended to further understand the cultural values associated with this site.		

Scenarios for change		
Low	**Moderate**	**High**
• **Ecology**: Several Biodiversity Focus Areas (including the Pākiri Dunes, and Rodney ED Wetlands) are located within this stretch. Ongoing engagement with the Ecology Team for specific adaptation actions may be required. • **Management**: The Regional Parks Management Plan identifies the opportunity to provide an additional park arrival area within this stretch at the end of M Greenwood Road. This location would not be subject to the same coastal hazards as the current arrival area on Pākiri River Road outside of this stretch in Stretch 3.1. • **Social**: Several community groups are involved in the ongoing conservation and promotion of this area, including Friends of Pākiri Beach Inc and Pākiri Community Landcare.		

3.4: Pākiri Private Land

This stretch includes a section of coast located between the two areas of regional park which adjoin the coast.

Scenarios for change		
Low	**Moderate**	**High**
No action	**No action**	**No action**
Explanation		
No action is reflective of there being no identified Auckland Council-owned land and assets exposed to coastal hazards located within this stretch.		
Implementation notes		
N/A		

3.5: Pākiri Regional Park (South)

This stretch includes the southern portion of the park and culminates at the southern extent of the Regional Park. When developing new Infrastructure it needs to be set back from the coast.

Scenarios for change		
Low	**Moderate**	**High**
No action	**No action**	**No action**
Explanation		
No action does not preclude the implementation of the Regional Park's Management Plan, and is in alignment with enabling natural coastal processes on this rocky shoreline to continue.		
Implementation notes		
N/A		

Unit 4
Pākiri to Mathesons Bay / Te Kohuroa

N

"Seaweed, especially kelp has disappeared along most of this coastline – largely as a result of overfishing crayfish – the exception is the Leigh Marine Reserve. The coastal fringe of seaweed plays a key role in ameliorating wave energy striking the coast and causing erosion. Auckland Council needs to be working with Fisheries Managers and communities to encourage the restoration of kelp forests on these coasts" - University of Auckland, Marine Science Department

Community feedback identified Goat Island Marine Reserve as one of the main swimming spots for Leigh swimmers, with locals running yoga/ocean swimming retreats in Leigh. Communities advocated strongly for keeping the ocean heathy via managing runoff following heavy rain.

Te Hāwere-a-Maki/Goat Island

Goat Island Coastal Lookout

Te Rere Bay

Goat Island Walkway is highly valued by locals and visitors alike as a coastal walkway providing panoramic views of the Hauraki Gulf

Goat Island Rd

Key access point into Leigh Reserve & associated facilities

Hauraki Gulf Lookout

Rodney Rd

Pākiri Rd

Te Kiri Marae (Ōmaha Marae)

Harbour View Rd

Ōmaha Cove

Cape Rodney-Okakari Point Reserve (Te Hāwere-a-Maki- Goat Island) and the surrounding environment is renowned for its crystal-clear waters and diverse marine ecosystems, including kelp forests, sponge gardens and rocky reefs. Community Feedback identified a strong advocacy for supporting and protecting this area, with Goat Island Marine Discovery

"The beach at the end of Harbour View locally called Nordics, is a lovely area to swim or snorkel at high tide. I enjoy my dips here and love seeing the sea life in this area. The access track has been damaged from the storm 'Gabriel' . This has not been properly repaired and the bottom part is tricky to navigate."

Te Kohuroa - Mathesons Bay

Leigh Rd

Ti Point Rd

Ti Point

Unit boundary

4.1 4.2 Stretch

Informal recreation park

0 500m 1km

Unit 4: North Leigh & Cape Rodney

This unit includes approximately 7 km of open indented coastline, extending from the southern boundary of Pākiri Regional Park to the small headland at the northern entrance to Ōmaha Cove.

This coastline is characterised by a rocky foreshore with small coarse sand pocket beaches, backed by coastal cliffs. Te Hawere a Maki (Goat Island) is located on the northern side of this unit. This section of coastline is periodically exposed to medium to high wave-energies, with fetch exposures from the north around to southeast angles. The Leigh Recreation Reserve section of this unit (Goat Island Marine Reserve) is exposed to the north to northeast angled fetch, with the southeastern facing section of this unit more exposed to the east to southeast angled fetch.

Due to instability of the cliff at the Leigh Recreation Reserve / Goat Island Marine Reserve access point, planting on the upper cliff face and behind the cliff crest has occurred, along with minor landward realignment of the cliff edge fencing. This is located on DOC landholdings, noting that Auckland Council collaborates with DOC in the management of assets and land in this location.

The majority of this coastline is in private and Māori ownership, however public access to the coast is available from the Leigh Recreation Reserve off Goat Island Road, providing land access to the marine reserve.

What is happening? Coastal context and hazardscape

This coastline is characterised by rocky foreshore with small coarse sand pocket beaches, backed by coastal cliffs. Te Hāwere-a-Maki / Goat Island is located on the northern side of this unit. This section of coastline is periodically exposed to medium to high wave energies, with fetch exposures from the north around to southeast angles. The Leigh Recreation Reserve section (by Cape Rodney-Okakari Point Marine Reserve) is exposed to the north to northeast fetch, with the southeastern facing section of this unit more exposed to the east to southeast fetch. Due to instability of the cliff at the Leigh Recreation Reserve / Cape Rodney-Okakari Point Marine Reserve access point, planting on the upper cliff face and behind the cliff crest has occurred, along with minor landward realignment of the cliff edge fencing (Auckland Council, 2024b).

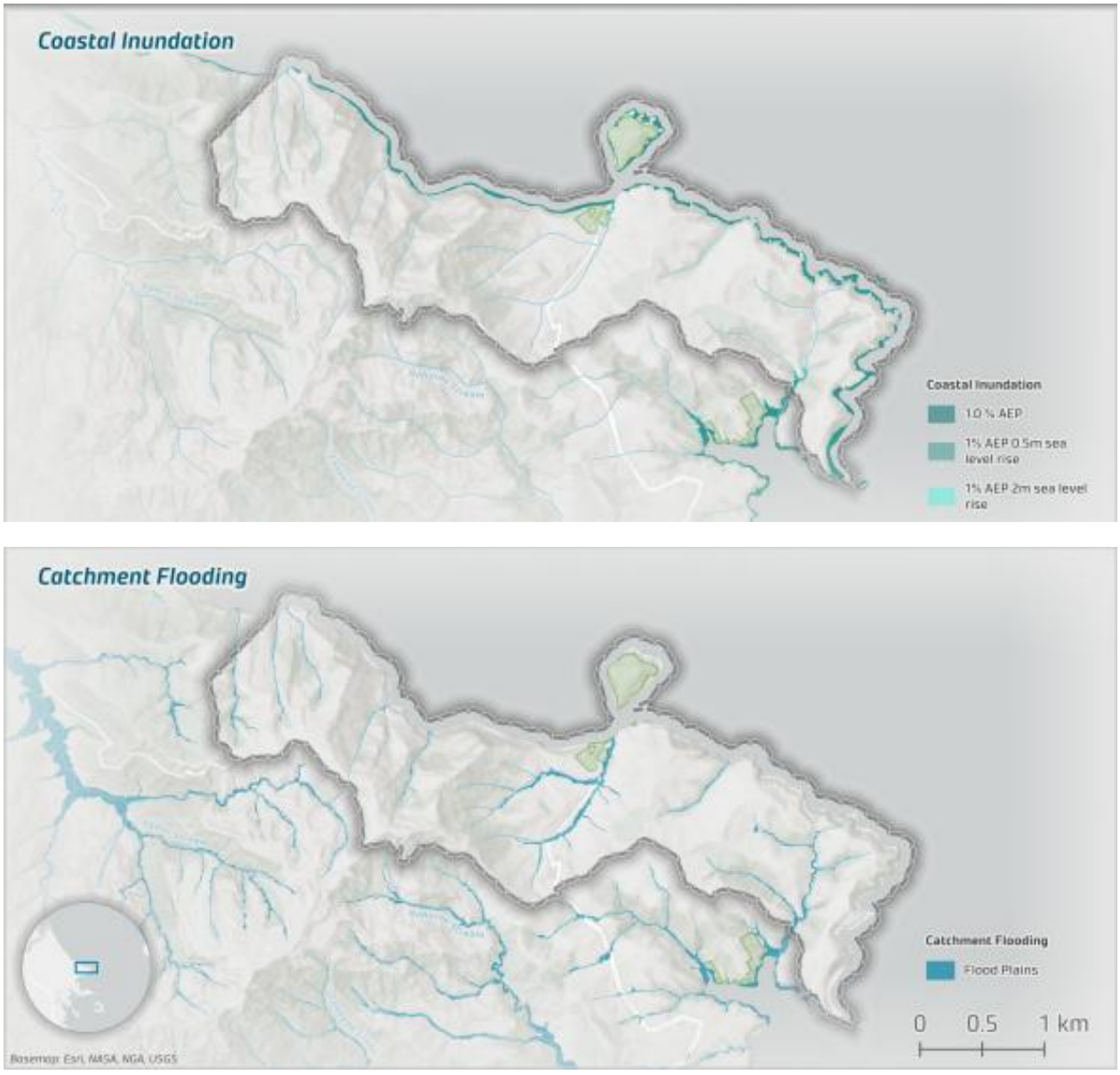


Figure 6: Coastal Hazardscape for the North Leigh and Cape Rodney Unit, reflecting coastal erosion susceptibility for 2050, 2080 and 2130 considering RCP4.5 and RCP8.5 emission scenarios, coastal inundation for 1%AEP storm surge for present day and with 0.5 m, 1 m and 2 m sea-level rise and the identification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

Risk assessment

The 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.

At a unit level, risk to Auckland Council-owned land is at moderate risk from coastal erosion susceptibility and low risk to transport infrastructure (i.e. Goat Island Road). Auckland Council-owned land and transport infrastructure are at low risk from coastal inundation. Auckland Council community facilities and water infrastructure are not rated at being at risk from coastal erosion susceptibility or coastal inundation over all time frames, likely reflective of a low number of assets within each grouping.

Table 2: Unit 4 Council-owned land & assets metrics and associated risk scores (short, medium, long terms).

Council-owned land			Council community facilities			Transport infrastructure			Water infrastructure		
Park and reserve land (2.6 ha) Buildings, wharves (1 No.)			Park amenity structures, carparks, accessways, buildings (0 ha)			AT roads (8.4 km) Bridges (0 m^2)			Water pipes (0.2 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	Low	Low	Low	Very low	Very low	Very low
Coastal inundation											
Low	Low	Low	Very low	Very low	Very low	Low	Low	Low	Very low	Very low	Very low
Key											
Very Low			Low			Moderate			High		Very High

What matters most

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

- Auckland Council-owned land within Unit 4 is limited to two coastal reserves and a public toilet located near Te Hāwere-a-Maki / Goat Island Scientific Reserve (managed by DOC).
- Reserve amenities in Goat Island Reserve.
- Limited stormwater assets located on Goat Island Road.
- Road access to the coast includes Goat Island Road and Ōmaha Block Access 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 coastal area of this unit is within the area of interest of Te Kawerau ā Maki, Ngāti Manuhiri, and Ngāi Tai ki Tāmaki. Ngāti Manuhiri also hold SAA for Motu Hāwere (Te Hāwere-a-Maki / Goat Island).
- Within this unit is one ‘Category B’ cultural heritage feature identified in the AUP:OP (Auckland Council, 2016): Okakari Point Pā R09_4 (Stretch 4.1).
- It is noted that the majority of this coastline in this stretch is in private and Māori ownership, with public access to the coast available from Leigh Recreation Reserve.

- The primary social use of Unit 4 is centred on the DOC-managed Te Hāwere-a-Maki / Goat Island Scientific Reserve. The majority of this coastline is in private ownership; public access to the coast is available from the Leigh Recreation Reserve off Goat Island Road, providing land access to the Goat Island Marine Reserve.
- The beach and marine reserve area is a popular destination, with DOC recently expanding the carparking. Auckland Council manages the toilets/changing rooms in this carpark area.
- Also located in this area is the Leigh Marine Laboratory, a significant University of Auckland research facility located on the coast (University of Auckland, n.d.).

Unit 4 encompasses Te Hāwere-a-Maki / Goat Island (an offshore island) and several reserves on and surrounding this island, which have threatened and / or vulnerable ecosystems and species. This includes:

- The Leigh Recreation Reserve which is dominated by pōhutukawa, with a small area of *Machaerina* sedgeland to the south.
- The Te Hāwere-a-Maki / Goat Island Scenic Reserve, which is located offshore and is surrounded by a regionally significant ecological sequence that grades from marine algae to coastal forest. At Risk coastal birds such as the red-billed gull are known to nest on the island.
- The Cape Rodney – Okakari Point Marine Reserve (Te Hāwere-a-Maki / Goat Island) which has a rich diversity of marine fish, crustaceans, cnidarians, cephalopods, and other species. Little penguin are known to breed along the rocky coastline.

Community feedback

- Key uses and activities included passive and active water-based activities such as swimming and paddle boarding, and for walking and running along the coastal area.
- Coastal erosion and inundation were frequently identified as hazards of concern by most respondents. Some respondents also noted coastal storms events as a hazard of concern.
- Submissions have noted the impact of human activity on biodiversity, specifically the impact on kororā/Little Blue Penguins.
- Community aspirations for maintaining the marine reserve area and access, with some respondents noting the importance of the beach at Goat Island and the Marine Reserve.
- No responses were received regarding the draft adaptation strategies.

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

4.1: Te Rere Bay

This stretch commences south of the Regional Park boundary extending south culminating the western side of the esplanade reserve at Te Rere Bay.

Scenarios for change		
Low	**Moderate**	**High**
No action 	**No action** 	**No action** 
Explanation		
No action is reflective of the limited land and assets exposed to coastal hazards within this coastal stretch.		
Implementation notes		
• **Heritage**: A heritage pā site (Okakari Point Pā/R09_4) is located within this stretch and is exposed to coastal hazards. This strategy does not preclude engagement with mana whenua and Heritage New Zealand, as required. • **Ecology**: The Cape Rodney-Okakari Point Marine Reserve extends across Stretches 4.1-4.3. Engagement with the Ecology Team on any potential impacts of coastal hazards on ecological values, and how these may need to be managed.		

4.2: Leigh and Te Hawere-a-Maki (Goat Island)

This stretch commences in the west with the area of esplanade reserve in the western side of Te Rere Bay and includes Goat Island Road and coastline west, concluding just past the Leigh Marine Laboratory (University of Auckland facility). J Greenwood Road (unformed) road end is also located within this stretch.

Note: Auckland Council assets are limited in this stretch, noting that DOC manages the Leigh Recreation Reserve by the coast, including the carparking and toilets/changing rooms in collaboration with Auckland Council. Te Hāwere-a-Maki / Goat Island is managed by DOC as a Scientific Reserve.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Adaptation Priority** 	**Adaptation Priority** 
Explanation		
Maintain in the low change scenario is identified to manage Auckland Council owned assets including the maintenance of roading assets. Within this stretch, no coastal protection structures are envisaged; the strategy of maintain refers to the design, location and management of access to manage risks to assets and uses. In the moderate to high change scenario, **adaptation priority** is identified in relation to the potential erosion susceptibility and the inundation risks to the road end, coastal access and carpark areas. Noting also the provision of access to private landholdings to the east.		

Scenarios for change		
Low	**Moderate**	**High**
Implementation notes		
• **Management:** Acknowledging DOC and its management of Leigh Recreation Reserve, ongoing engagement will be required to ensure alignment in coastal management intentions. • **Management**: Auckland Transport, as asset manager for Goat Island Road, to identify any triggers/thresholds relating to the management of this road and the transition to adaptation priority. • **Social**: It is noted that the University of Auckland's Leigh Marine Laboratory is located within this stretch, with a functional need to be on the coast. Whilst not an Auckland Council asset, future adaptation planning will include engagement with the University of Auckland, as appropriate. • **Cultural**: Ngāti Manuhiri also hold SAA for Motu Hāwere (Te Hāwere-a-Maki / Goat Island). Ongoing engagement to further understand the cultural values associated with this site will be undertaken through implementation of the plan. • **Ecology**: The Cape Rodney-Okakari Point Marine Reserve extends across Stretches 4.1-4.3.		

4.3: Cape Rodney

This stretch commences east of the University of Auckland facilities at the end of the unnamed access road and extents east to Pane Tiki Island Point.

Scenarios for change		
Low	**Moderate**	**High**
No action 	**No action** 	**No action** 
Explanation		
No action is reflective of the limited land and assets exposed to coastal hazards within this coastal stretch.		
Implementation notes		
• **Management**: Ōmaha Block Access Road is the sole access to some rural housing. This strategy does not preclude localised interventions as required to respond to the coastal erosion exposure from the short term, which will be led by Auckland Transport, as asset owner. • **Ecology**: The Cape Rodney-Okakari Point Marine Reserve extends into the northern part of this stretch.		

Unit 5

Pākiri to Mathesons Bay / Te Kohuroa

N

Community feedback highlighted that the natural wetland behind the beach at Matheson's Bay has been largely filled in, and all the water run off from the Leigh Road and surrounding area has been channelled into the Matheson's Bay stream and out through the beach. Locals emphasized that this now causes massive flows of sediment laden water during storms which has wiped out shellfish living in the bay, and the high stream flow events wash much of the sediment off the beach – exacerbating the coastal erosion, with rocks in place of where the sand dunes used to be.

The popular Leigh Harbour coastal walkway, including the northern section around Omaha Cove, is currently closed due to severe weather damage and landslips. This coastal track was highly valued by the local community, with community aspirations for providing for coastal connections in its place/ nearby.

Leigh Wharf Reserve

Matheson Bay Reserve

Te Kohuroa/ Mathesons Bay

Matheson Bay Reserve Playground

Leigh coastal path

The marine environment around Leigh is renowned for its rich biodiversity and vibrant ecosystems, home to a variety of different species. Community groups (e.g. Te Kohuroa Rewilding) are highly active in this space, creating conservation action to support the regeneration of the natural environment.

Kendale Dr
Hillside Cres
Grand View Rd
Leigh Rd
Matheson Rd
Kohuroa Stream
Spray Cres
Cotterell Street
Barrier View Road
Leigh Road
Wonderview road
Hillside Cres
Grand View Rd

Unit boundary

5.1 5.2 Stretch

Informal recreation park

0 250m 500m

Unit 5: Leigh and Mathesons Bay | Te Kohuroa

The indented coastline of this unit extends from Ōmaha Cove/Leigh Harbour around to Mathesons Bay and is approximately 5 km long.

Cape Rodney Road provides access to the Cape Rodney area and Ōmaha Marae, traversing a portion of the inlet from the coast. Mount Pleasant Drive, Tenetahi and Pakiri Roads are generally set back from the coastal edge.

Ōmaha Cove is a sheltered, small harbour, with upper arms that connect to fresh-water streams. The cove's shoreline is a mix of rocky intertidal area backed by vegetated coastal cliffs, with sandy to muddy intertidal flats. A large concrete seawall provides protection to Hauraki Road which provides access to the Leigh Wharf and Leigh boat ramp. A rock revetment seawall is present along a section of the coves western shoreline.

This unit includes numerous reserve areas such as the Leigh Scenic Reserve and the Leigh Harbour Cove Walkway which has been impacted by the 2023 storm events.

The coastline from Ōmaha Cove to Mathesons Bay is characterised by rocky intertidal platforms backed by vegetated coastal cliffs, with the Mathesons Bay Reserve extending part way around the cliff top. Access to the coast for a range of recreational activities is highly valued by the community and visitors to this area. Leigh Wharf and Leigh Cemetery (Crown land) are both located within this area of the unit.

To the southern end of the unit, Mathesons Bay/ Te Kahuroa is a sandy pocket beach. The Bay is a highly valued beach with connections to the wider network of accessways and amenities within the Mathesons Bay area. Mathesons Bay is also accessed from both the east and west via Grand View Road and Mathesons Bay Road, with road ends culminating in proximity to the coast.

What is happening? Coastal context and hazardscape

Ōmaha Cove is a sheltered small harbour, with upper arms that connect to fresh-water streams. The Coves shoreline is a mix of rocky intertidal area backed by vegetated coastal cliffs, with sandy to muddy intertidal flats. A large concrete seawall is present along the southern shoreline of the Cove, retaining the road and connecting to the public wharf and boat ramp. A rock seawall is present along the Ōmaha Cove western shoreline, adjacent to the Leigh Harbour Cove Walkway.

The coastline from Ōmaha Cove to Te Kohuroa / Mathesons Bay is characterised by rocky intertidal platforms backed by vegetated coastal cliffs.

Te Kohuroa / Mathesons Bay is a sandy pocket beach. Rock rip rap armours the eastern end, and gabion basket armouring is sited along the backshore at the western end, extending from the true right bank of the stream that discharges across the beach face. Further rock armouring is present at the Bay's western end along the road embankment and where a smaller stream discharges onto the beach face.

Rock rip-rap armouring at Mathesons Bay.

Te Kohuroa / Mathesons Bay is sheltered by an adjacent subtidal and exposed reef and small island feature. However, during extreme events from the east to southeast, moderate wave energies do propagate into Te Kohuroa / Mathesons Bay, particularly during high tide and elevated water levels.

Previously, dune planting was established along the unarmoured section of the reserve adjacent to Grand View Road carpark. Dune planting and sand can be eroded during storm events. Historically, the beach has recovered from such erosion events and the re-establishment of dune planting may be considered. The stream that discharges across the beach face in the middle of the bay periodically blocks or constricts at the mouth. This results in elevated water levels immediately upstream, which can become contaminated due to bird use. Auckland Council mechanically opens the stream mouth to allow it to discharge to the beach when required.

Following the coastal storm events of 2023, the rock revetment at Te Kohuroa / Mathesons Bay was damaged. An operational storm recovery project was undertaken to complete some initial maintenance of the structure. To improve the longer-term resilience of the structure to coastal hazards and climate change, a new project has been identified under the FY24-25 coastal asset renewals work programme to re-design, consent and construct a new rock revetment structure at this location.

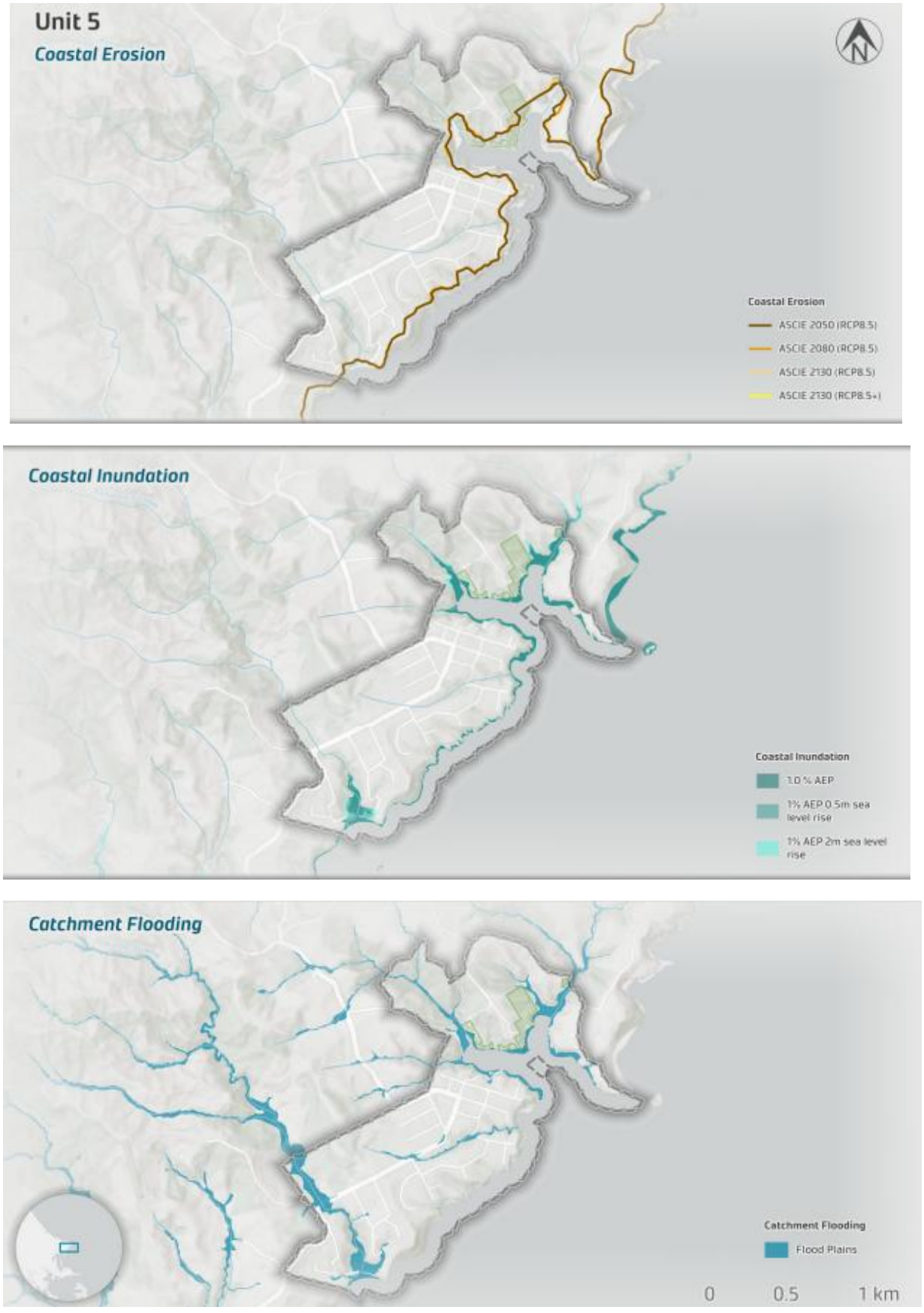


Figure 7: Coastal Hazardscape for the Leigh and Mathesons Bay Unit, reflecting coastal erosion susceptibility for 2050, 2080 and 2130 considering RCP4.5 and RCP8.5 emission scenarios, coastal inundation for 1%AEP storm surge for present day and with 0.5 m, 1 m and 2 m sea-level rise and the identification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

Risk assessment

The 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.

At a unit level, risk from coastal inundation is high for Auckland Council community facilities (e.g. Leigh Wharf, Leigh boat ramp), specifically the unarmoured sections of the reserve edge, and the seawalls that armour Te Kohuroa / Mathesons Bay could be overtopped. Risk from coastal inundation to Auckland Council-owned land is moderate in all time frames, and risk to transport infrastructure increases from low to moderate in the long term.

Risk from coastal erosion susceptibility to Auckland Council community facilities increases from moderate in the short term to high in the medium-term and is high for Auckland Council-owned land across all timeframes. Transport infrastructure is rated at moderate risk from coastal erosion susceptibility and water infrastructure is low risk, increasing to moderate risk in the long term.

Council-owned land			Council community facilities			Transport infrastructure			Water infrastructure		
Park and reserve land (22.1 ha) Buildings, wharves (12 No.)			Park amenity structures, carparks, accessways, buildings (0.4 ha)			AT roads (10.1 km) Bridges (14.4 m^2)			Water pipes (8.2 km)		
Short	Medium	Long	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Coastal erosion and instability susceptibility											
High	High	High	Moderate	High	High	Moderate	Moderate	Moderate	Low	Low	Moderate
Coastal inundation											
Moderate	Moderate	Moderate	High	High	High	Low	Low	Moderate	Low	Low	Low
Key											
Very Low			Low			Moderate			High		Very High

What matters most

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

- Auckland Council-owned land in this unit includes eleven local reserves, some of which are clustered inland, near the school and library, while most of the reserves line the coast. All coastal reserves, which include Leigh Cemetery, are within the coastal hazard risk area.
- Reserve and park amenities such as community buildings, playgrounds and carpark including at Leigh Wharf Reserve and Te Kohuroa / Mathesons Bay.
- Underground and aboveground stormwater assets servicing settlements and facilities in this unit.
- The Leigh Coastal Path walkway runs through some of this reserve land on Leigh's southern coast. The opportunity to further link many of these reserves to create connected walking tracks as part of a greenways project has been identified in the Rodney Local Parks Management Plan.

- **Harbour access:** Hauraki Road Boat Ramp (Leigh Wharf).

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 cultural features identified within this unit: Motururu Urupā Ōmaha in Stretch 5.1, a traditional urupā at Ōmaha Block Access Road,(AUP:OP Schedule 12 ID:103), and Te Kohuroa in Stretch 5.8, a kāinga, wāhi tapu and pakanga site in Matheson Bay (AUP:OP Schedule ID:101 and Heritage ID:19524).
- The Pākiri to Mathesons Bay / Te Kohuroa SAP area's only marae, Te Kiri Marae (Ōmaha Marae) is also located in this unit, near the Motururu Urupā.

- This unit contains the settlement of Leigh, the primary population centre and the only urbanised part of this SAP area. Leigh contains low-density housing and several key supporting social and commercial services (Stuff NZ, 2023).
- Located around Ōmaha Cove are Te Kiri Marae, the (closed) Leigh Harbour Cove Walkway, Leigh Wharf Reserve and boat ramp and Leigh Cemetery. The wharf and boat ramp are well used for fishing and for providing access to the bustling Ōmaha Cove. The wharf includes a refuelling pump and is the primary location for launching and docking boats in Leigh and the surrounding area; the next nearest wharf is in Sandspit, over 13 km away.
- South of the cove, linear reserves run along much of the clifftop area of this unit. Several small walkways and stairs provide limited access down to the rocky coast from these reserves.
- This unit contains much of this SAP area's key social infrastructure (which also provide for residents in nearby locations outside of this SAP area). These assets are largely clustered inland around Leigh School forming a central area for community activity which includes Leigh Bowling Club, tennis courts, fire station, motel, community hall, and Church.
- At the southern end of the unit is Te Kohuroa / Mathesons Bay, a popular family-friendly swimming and recreation spot. This reserve area includes toilets/changing rooms, a playground, and other standard park infrastructure.
- Within this unit there is 1 'Category A' heritage feature listed in the AUP:OP (Auckland Council, 2016): Henry Williams landing and shipyard site (Stretch 5.3)
- There are also 3 'Category B' heritage features identified: St Michael and All Angels Church (inland), Workers' cottage (former)/ Leigh Library (inland), Matheson House (Stretches 5.7-5.8)

Unit 5 encompasses several reserves that are classified as indigenous coastal forest ecosystems. These are as follows:

- Leigh Scenic Reserve which is classified as coastal broadleaved forest.
- Ferndale Avenue Recreation Reserve which comprises both coastal broadleaved forest and kauri, podocarp, broadleaved forest.
- Leigh Wharf Reserve which is classified as coastal broadleaved forest and forms a contiguous vegetation corridor with the Harbour View Road Coastal Reserve, Wonderview Road Esplanade and Matheson Bay Reserve. Forest gecko have been recorded within this corridor.

Community feedback

- Key uses and activities include passive and active water-based activities such as swimming and paddle boarding, walking and running along the coastal area and passive recreation.
- Coastal erosion and storm events were frequently identified as hazards of concern by most respondents. Some respondents have observed the impact of coastal storms during the 2023 storm event.
- Respondents visited the area for recreation and for the scenic views along the coastal walkway.
- Community aspirations for maintaining access to coastal walkways, restoring coastal walkways lost during cyclone Gabrielle and mitigating the loss of grassed areas due to coastal erosion.
- No responses were received regarding the draft adaptation strategies.

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

5.1: Ōmaha Cove

This stretch commences at the northern extent of this unit (adjacent to Panetiki Island) culminating to the north of the scenic reserve landholdings and walkway.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Adaptation priority** 	**Adaptation priority** 
Explanation		
Maintain in the short term reflects the need to manage risks to road access to the marae and private landholdings at Cape Rodney. In the moderate to high change scenario, **adaptation priority** signals the longer-term need for coordinated adaptation planning.		
Implementation notes		
• **Cultural**: Te Kiri Marae (Ōmaha Marae) and Motururu Urupā Ōmaha are exposed to coastal erosion hazards. Engagement with mana whenua, including as part of the Marae Resilience Workstream, will be necessary to support longer term adaptation planning.		

5.2: Leigh Scenic Reserves

This stretch commences at the northern boundary of the scenic reserves and concludes at the carpark at the end of Hauraki Road, including the Ferndale Avenue Reserve (and foot bridge at the and the southern side of the inlet including the shoreline east to the Leigh boat ramp).

Leigh Harbour Cove Walkway Reserve runs along the length of the stretch coastline. The reserve's walkway was closed by DOC in 2022 following storm damage, with no current plans underway to reopen it (Localmatters, 2024).

The Local Parks Management Plan (Rodney Local Board, 2023b) identifies the potential for this walkway to form part of a future greenway linking Leigh township and Leigh Recreation Reserve (location of Te Hāwere-a-Maki / Goat Island). It also notes that ownership of the reserve containing the walkway is split between Auckland Council and the Crown and that parts of the site may be affected by contamination.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Adaptation priority** 	**Adaptation priority** 
Explanation		
Maintain relates to the management of risk to Auckland Council assets (pathways, foot bridge and associated coastal structures) located within the DOC-owned reserve areas. No coastal protection is envisaged, management of risk through design and location of accessways is preferred.		

Scenarios for change		
Low	**Moderate**	**High**
Implementation notes		
• **Heritage**: The Henry Williams landing and shipyard site, a Category A historic site, is exposed to coastal inundation and erosion from the short term. Engagement with Heritage New Zealand may be needed to determine management strategies for this feature. **Management:** Management agreements may require formalisation and areas of informal access on private and third-party land may exist in places within this coastal stretch. • **Management:** Engagement with Community Facilities is needed to understand the legal status of the old sea wall and its management at Ferndale Avenue Recreational Reserve (Leigh Harbour Cove Walkway south).		

5.3: Leigh Wharf

This stretch commences from the carpark at the end of Hauraki Road and extends east to encompass Leigh Wharf and associated protection structures.

Scenarios for change		
Low	**Moderate**	**High**
Protect 	**Protect** 	**Protect** 
Explanation		
Protect is reflective of the importance of the wharf and associated facilities, including the supporting protection and amenity structures. While the location of the coastal edge is anticipated to be held, ongoing inundation risk over time may require future design considerations to provide an ongoing level of service to facilities with sea-level rise.		
Implementation notes		
• **Management:** Continued maintenance and renewal of existing coast protection structures at Leigh Wharf.		

5.4: Harbour View Point

This stretch commences to the east of the Leigh wharf area culminating adjacent to Harbour View Road on the seaward side.

Scenarios for change		
Low	**Moderate**	**High**
No action 	**No action** 	**No action** 
Explanation		
No action in the short term is reflective of the identified coastal hazard susceptibility and limited assets within this stretch.		
Implementation notes		
N/A		

5.5: Leigh to Mathesons Bay (Eastern Coastline)

This stretch commences at the end of Harbour View Road at Leigh Cemetery and extends along the open coastline in a southerly direction to the headland north of Mathesons Bay.

Scenarios for change		
Low	**Moderate**	**High**
Maintain 	**Maintain** 	**Adaptation priority** 
Explanation		
Maintain provides for the management of risk to assets located within this coastal stetch through design and location of structures and accessways in order to provide for safe access to the coast and coastal vantage points. Key access points are identified at Harbourview and Wonder View Road. **Adaptation priority** in the high change scenario reflects the need to manage risks to the cemetery and reserves in collaboration with landowners should coastal erosion triggers and thresholds be realised.		
Implementation notes		
• **Heritage**: Matheson House, a heritage site, is located (partially) within this stretch and may be exposed to coastal erosion/instability hazards. Engagement with Heritage New Zealand may be needed to determine management strategies for this feature. • **Note**: Leigh Cemetery is located within this coastal stretch, which contains an ANZAC memorial. The Local Parks Management Plan (Rodney Local Board, 2023) notes that the cemetery is managed by a trust, and that part of the cemetery is esplanade reserve (managed by Auckland Council), while the remainder is Crown-owned.		

5.6: Mathesons Bay Te Kohurua

This stretch commences at the point northeast of the embayment culminating at the southern end of the reserve landholding, covering Mathesons Bay Reserve and the residential properties immediately adjacent to either side.

The reserve itself follows a low-lying stream which discharges to the sea at this beach. The area is exposed to sea-level rise and coastal inundation follows this stream several hundred metres into the reserve. This area is understood to be complex from a natural environment dynamics perspective; the stream discharge through the middle of the bay is known to impound, creating a lagoon which is managed by the rock revetments and stream protection walls.

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

Explanation

Protect under a low climate change scenario provides for the continued management of risk to piped infrastructure, park assets and road ends. This may be achieved through hard engineering and the use of nature-based approaches such as dune planting. Management of the stream mouth and upper catchment flood risk is also identified as an ongoing risk management action.

Adaptation priority in the moderate climate change scenario identifies that existing management actions may be necessary with increasing sea-level rise, while further consideration of the location and design of some assets may be required to respond to inundation risk. In the high change scenario, inundation risks and the multiple assets and values associated with the bay identify the need to consider further **adaptation** of uses to maintain values, with assets (i.e. toilet blocks, carparking, and playground) increasingly exposed to inundation, along with catchment flooding from the stream mouth, reflecting the risk of increased sedimentation, impacts on Mathesons Bay and the need to proactively manage highly valued community spaces. This adaptation pathway acknowledges highly valued coastal assets and environments in this stretch, along with the dynamic coastal hazardscape, reflecting community values/ feedback and coastal hazard risks.

Implementation notes

- **Cultural**: Te Kohuroa is a site of cultural significance. Ongoing engagement with local iwi will be required in implementation of coastal strategies to further understand the cultural values associated with this site.
- **Social**: This beach area is well used by numerous local groups (including Leigh Swimmers), with inundation of key facilities (toilets/changing rooms, carpark, and kayak/dingy storage) over the medium to long term likely to significantly affect their continued usage of the area. Engagement with these groups to understand how impacts could be managed and the impact of implementation of adaptation strategies will be required in implementation.
- **Heritage**: Matheson House, a heritage site, is located (partially) within this stretch and may be exposed to coastal erosion/instability hazards. Engagement with Heritage New Zealand may be needed to determine management strategies for this feature.
- **Management**: The Local Parks Management Plan includes enabling the creation of the Leigh Coastal Route as part of a broader greenways plan as a management intention for Mathesons Bay Reserve. It also notes the area's coastal vulnerabilities and encourages working with mana whenua and the community to protect the natural, cultural, and recreational uses of the reserve. This will be considered as part of adaptation strategies.

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