



Shoreline Adaptation Plan:

Kahawairahi ki Whakatāwai - Pilot
Beachlands and East

2023



Front Cover: Picture of Maraetai Beach, 2021.

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Mātauranga Protection Statement (Disclaimer)

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Shoreline Adaptation Plan Pilot Document (note)

This document has been produced as a Pilot document. Minor updates to the structure, format and appearance of this document may be required, to achieve a constant format, following review of the Pilot Plan process.

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Glossary

Significant Ecological Areas Overlay (SEA)	Significant ecological areas have been identified in the Auckland Unitary Plan for terrestrial areas, and parts of the coastal marine area.
Significant Ecological Areas: Terrestrial	Identified areas of significant indigenous vegetation or significant habitats of indigenous fauna located either on land or in freshwater environments. To maintain indigenous biodiversity these areas are protected from the adverse effects of subdivision, use and development.
Significant Ecological Areas: Marine	Identified areas of significant indigenous vegetation or significant habitats of indigenous fauna located in the coastal marine area.
Coastal Marine Area	The coastal marine area is defined as the area of sea from the line of Mean High Water Springs (MHWS) to 12 nautical miles off the coast.

1.0 Te Ao Māori

Te tiro ā Māori ki tōna ake ao, a Māori worldview, acknowledges the tangible and intangible, the inter-relationship of all living and non-living things and speaks to the vital connection between tāngata whenua (indigenous people) and te taiao (the natural environment) in which they live. Within te ao Māori, people, birds, fish, trees, oceans, rivers and streams, and weather patterns - are all interconnected and these relationships stretch back into the past, sit within the present and look to the future.

The inter-relationship and interconnectedness are in part captured within the fundamental concept of *‘mai te rangi ki te whenua, mai te whenua ki te rangi’* (from Ranginui to Papatūānuku, from Papatūānuku to Ranginui) and which underpins the holistic world view for many iwi / hapū of Tāmaki Makaurau, and how the traditional concept of kaitiakitanga is approached.

The wellbeing of tāngata whenua (indigenous people) and the ecosystems that support them is interlinked with the concept of *‘mai te rangi ki the whenua, mai te whenua ki te rangi’*, as it provides for the spiritual / intrinsic connection to te taiao.

Understanding inter-relationships and interconnectedness is a fundamental part of addressing climate change and sea-level rise, the impacts and the response.

As an adaptation workstream within [Te Tāruke-ā-Tāwhiri: Auckland’s Climate Plan](#), Shoreline Adaptation Plans (SAPs) respect te ao Māori by giving effect to the Kia Ora Tāmaki Makaurau and Te Ora ō Tāmaki Makaurau frameworks and recognising and providing for te ao Māori concepts.

1.1 Te Ora ō Tāmaki Makaurau Wellbeing Framework

[Te Ora ō Tāmaki Makaurau](#) is the wellbeing framework developed by the Mana Whenua Kaitiaki Forum in response to Te Tāruke-ā-Tāwhiri. It is a regional innovation that is built on generations of knowledge and reflects the world view of the various mana whenua, iwi, rangatahi Māori and Māori communities of Tāmaki Makaurau. Te Ora aligns with Kia Ora Tāmaki Makaurau and supports Te Tātai. The Te Ora framework incorporates kaupapa Māori and mātauraunga-ā-iwi and is underpinned by the principles of te Tiriti o Waitangi, particularly the principles of partnership and active protection. Within Te Ora, there are three dimensions of wellbeing that form a holistic approach: Taiao (environment), Whenua (land, earth), Tāngata (people).

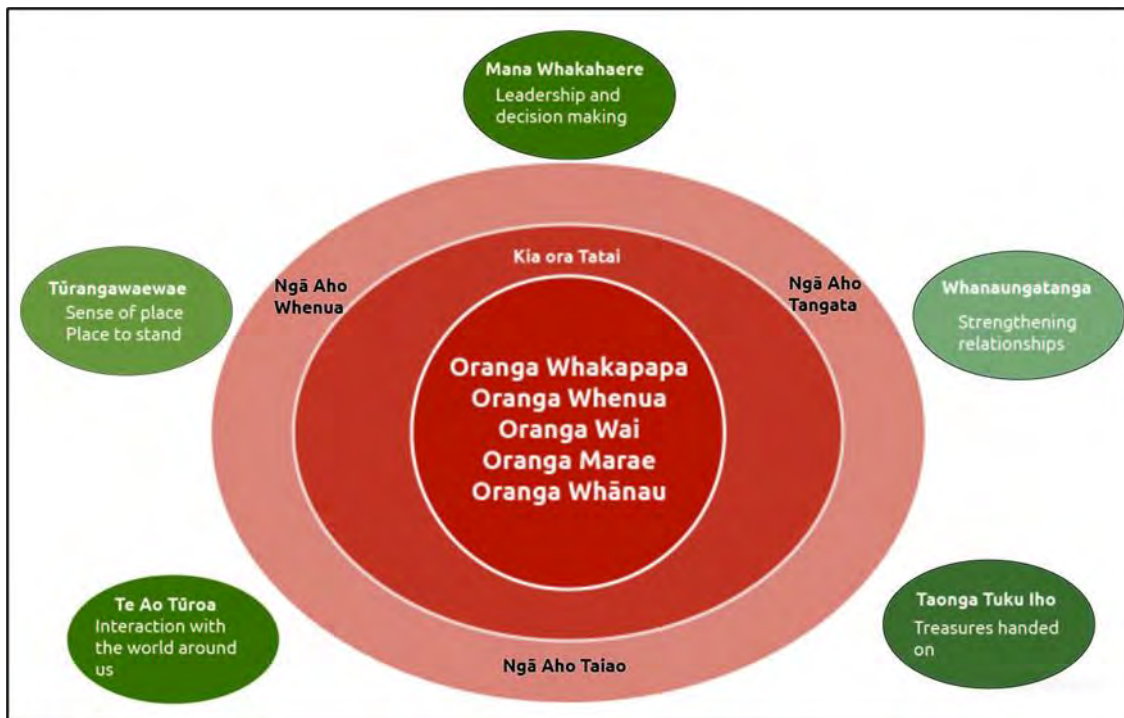


Figure 1: Graphic of Te Ora ō Tāmaki Makaurau Wellbeing Framework

When considered together, these dimensions can frame our adaptation to climate change by taking a whole living systems approach. Our response to climate change is also guided by the following values and principles:

- Manaakitanga
- Kaitiakitanga
- Whanaungatanga
- Rangatiratanga
- Mātauranga
- Oritetanga
- Tōnuitanga

1.2 Treaty relationships and governance

The hapū and iwi of Tāmaki Makaurau, hold important values as kaitiaki (guardians, protectors, stewards). These include their environmental and spiritual ties to ancestral lands, water, sites, wāhi tapu (sacred areas) and other taonga (treasures), and the wellbeing of the entire iwi.

Auckland Council, as set out in The Auckland Plan 2050, looks to recognise and provide for Te Tiriti o Waitangi outcomes. Treaty principles provide guidance for decision-making, partnership, and collaboration between the 19 iwi of Tāmaki Makaurau and government. This can include co-governance and co-management approaches, including for natural resources where holistic, integrated and sustainable outcomes are sought.

1.3 Operational guiding principles for Shoreline Adaptation Plans

In the spirit of partnership, the Auckland Council Infrastructure and Environmental Services Mana Whenua Kaitiaki Forum developed the following guidance principles for all SAPs:

- Responsive to iwi management plans
- Accept reversal of infrastructure to rectify hazard issues
- Naturalise, let nature take its course
- Look at emissions as well (if any)
- Whenua concepts are written up and understood by all in plans
- Protect koiora (biodiversity) and traditional mahinga kai (fish stocks, kaimoana)
- Protect heritage where possible.

These principles align with both the Kia Ora Tāmaki Makaurau and Te Ora ō Tāmaki Makaurau frameworks and help guide the SAP’s work programme and its implementation.

1.4 Protection of Mātauranga Māori and Cultural Values

As indicated in the disclaimer above, all cultural information within this document is the intellectual property of iwi who have contributed to the development and co-authoring of the Kahawairahi ki Whakatīwai / Beachlands and East Shoreline Adaptation Plan– Pilot. To ensure the protection of Mātauranga Māori, cultural information must not be recirculated to other workstreams without direct consultation with and approval by local iwi, to whom this information belongs.

To ensure that cultural values and associations are recognised and provided for in any works programme, it is fundamental that this partnership and co-management approach is applied to each specific coastal stretch when implementing the direction set out in this SAP. Failure to do so has the potential to result in significant adverse cultural impacts.

Early and meaningful engagement with the relevant iwi groups on projects under this SAP is necessary. This will ensure that Auckland Council and Council owned organisations meet their obligations to Ngā Mana Whenua o Tāmaki Makaurau and Te Tiriti o Waitangi. Iwi must be given the opportunity to act in their role as Kaitiaki when implementing projects under this SAP (see section 3.3.4 below).

2.0 Regional context

Auckland is a coastal city, bounded to the east and west by the South Pacific Ocean and the Tasman Sea. The region has roughly 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 is 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. To support a resilient future for Auckland's coast, Auckland Council needs to build integrated coastal management and climate adaptation into its long-term strategic planning processes.

2.1 What are Shoreline Adaptation Plans?

SAPs are non-statutory, strategic documents that support the sustainable management of Auckland Council-owned coastal land and assets (including but not limited to, reserves, coastal defence structures and public facilities) over the next 100 years. These plans consider the potential impacts of coastal erosion, coastal inundation, rainfall flooding, and climate-change impacts (including sea level rise) and seek to provide an adaptive planning approach that is focused on the needs and values of local iwi and local communities. SAPs also promote the preservation, enhancement, and ecological restoration of the coastal environment for future generations through a selection of site-specific adaptation strategies. As there are also a high number of non-council assets in shoreline areas, these plans have been developed with input from stakeholder partners such as Auckland Transport and Watercare.

The need for SAPs was set out in the Coastal Management Framework¹ ('the Framework') adopted by Auckland Council in 2017². The Framework established Council's hierarchy for best practice coastal management, with SAPs supporting the overarching regional philosophy for coastal management. They are recognised as non-statutory documents that will inform comprehensive, long-term planning. In developing the SAPs, the Auckland region was broken into a series of coastal cells of varying size. Each coastal cell identified within the Framework will have its own SAP influenced by local iwi, infrastructure providers, and local community engagement. The SAPs will be implemented through integration of all recommended adaptive strategies into relevant Council Asset Management Plans. Once all SAPs have been completed, they will also influence regional prioritisation and future asset management funding.

The SAPs reflect the New Zealand Coastal Policy Statement, which directs councils to identify areas that may be affected by coastal hazards over a timeframe of at least 100 years. Their approach aligns with guidance from the Ministry for the Environment (MfE)³, in particular through the establishment

¹ Carpenter, N., Sinclair, S., Klinac, P., Walker, J (2017) Coastal management framework for the Auckland region.

² Within the Coastal Management Framework, Shoreline Adaptation Plans were previously referred to as Coastal Compartment Management Plans

³ Ministry for the Environment (2017). Coastal Hazards and Climate Change – Guidance for Local Government

of tāngata whenua and community values and objectives and the development of a coastal hazards' vulnerability and risk assessment. It culminates in the development of Dynamic Adaptive Policy Pathways, providing a 'roadmap' for evolving coastal management strategies over time.

At this stage, Auckland's SAPs are focused on Auckland Council-owned coastal land and assets to enable a best practice method for developing the Dynamic Adaptive Policy Pathways recommended by the Ministry for the Environment, while also recognising the reforms to the Resource Management Act that are currently underway. It is anticipated that an iterative approach to the SAPs will be adopted, aligning with international approaches to coastal management such as the UK's Shoreline Management Plans.

The Kahawairahi ki Whakatīwai/Beachlands and East Pilot Report is the second SAP to be completed for the Auckland region. It has been developed as a second pilot study, following on from the original Whangaparāoa SAP Pilot. The development of this and each successive SAP draws on the learnings from preceding processes and builds on a body of knowledge that is gained through the co-management / partnership approach with the iwi of Tāmaki Makaurau.

3.0 Kahawairahi ki Whakatīwai/Beachlands and East context

The Kahawairahi ki Whakatīwai/Beachlands and East SAP area extends along approximately 50 km of the Auckland region’s south-eastern coastline from Kahawairahi/Pine Harbour Marina, Kauriwhakiwhaki/Beachlands to Matingarahi. It also includes the southern regional parks (Waharau, Whakatīwai) on the Firth of Thames (Figure 2: Shoreline area covered in Kahawairahi ki Whakatīwai /Beachlands and East. Coastal areas included in the plan are delineated by the black unit cell boundaries. The hatched area indicates the wider stormwater catchment (i.e. area that drains towards the coast)

).

Communities along this shoreline include Kauriwhakiwhaki/Beachlands, Maraetai, Kawakawa Bay and Ōrere Point. The proximity of Kauriwhakiwhaki/Beachlands and Maraetai to central Auckland (including the transport node with Pine Harbour ferry terminal) makes the area a popular place to live and visit, with recent developments encouraging population growth. Popular parks along the western section of this coastline include Sunkist Bay, Ōmana, Maraetai and Umupuia along the Pohutukawa Coast Road, and includes Ōmana and Whakakaiwhara/Duder Regional Parks. Further east to Whakatīwai, the more remote parks popular with visitors include Waitawa, Tawhitokino, Ōrere Point and Tāpapakanga Regional Parks. The only all-tide public boat launching facility along this coastline is located at Kawakawa Bay.



Figure 2: Shoreline area covered in Kahawairahi ki Whakatīwai /Beachlands and East. Coastal areas included in the plan are delineated by the black unit cell boundaries. The hatched area indicates the wider stormwater catchment (i.e. area that drains towards the coast)

3.1 Cultural context

The development of this SAP has been guided by Ngāi Tai ki Tāmaki (herein referred to as ‘Ngāi Tai’) and Ngaati Whanaunga. Throughout the development of this document, mana whenua engagement has taken place with Ngāi Tai, Ngaati Whanaunga, Te Ākitai Waiohua and the Ngāti Pāoa Trust Board.

Auckland Council and the Project Team (consultants from Tonkin + Taylor and Mitchell Daysh) acknowledge the importance of the autonomy of each of iwi and respect their individual and collective involvement in the development of this SAP. It is also recognised that Te Ākitai Waiohua has undertaken a role of ‘observer’ in this process to assist in the development of future SAPs which relate to the rohe of Te Ākitai Waiohua.

Each of these iwi have specific and wider cultural values, interests and associations with the coastal environment/units and the adjoining whenua captured within this SAP. Each iwi are the kaitiaki (guardians) of their respective mātauranga associated with these areas.

Acknowledging these cultural associations, and being respectful of the mātauranga of each of iwi, any description of the specific cultural values and/or association with the 31 coastal stretches captured within this SAP and how these should be acknowledged, recognised, and provided for through any management approach, have not been directly shared here out of respect for each iwi’s mātauranga.

In recognition of the partnership and co-management approach of the coastal environments and adjoining whenua, each iwi has communicated that they will direct how their respective mātauranga should be shared through the ‘site focused’ concept/detailed design and development processes. This will take place through subsequent consenting processes for each coastal stretch.

It is important to note that the coastal units and stretches have been developed to capture Auckland Council asset units and do not reflect the historical cultural boundaries which often extend over multiple units or coastal stretches. While all attempts have been made to align with the identified coastal units, the cultural commentary provided throughout this SAP often extends across multiple areas. Where possible, the names of these stretches and units have also been updated to reflect the traditional names.

3.2 Mātauranga ā iwi

The realms of Papatūānuku and Tangaroa, are connected by te ara o Hinekirikiri (inter-tidal zone) and cannot be separated. It is on this basis that this SAP must be considered and implemented.

Traditionally the coastal edge, caves, riverbanks and foreshore were used as burial sites and hold great cultural significance to iwi. While many of these sites are recorded as wāhi tapu/kōiwi sites, to date not all are known by iwi. The specific location of those that are known may be protected by iwi and not shared. In addition, some of these sites, due to their proximity to the coast, may sit within private ownership which has resulted in iwi being excluded from these areas, with iwi unable to protect them and exercise the appropriate tikanga. Where Council has an interest/assets within these areas, it is vitally important for direct engagement to be undertaken with iwi to ensure they are protected.

In addition, iwi may share additional mātauranga, through the implementation process, for each coastal stretch. Each iwi has chosen to share some high-level mātauranga ā iwi values that are fundamental to ensuring that coastal management is respectful of the cultural associations and supports the cultural values that they have with their rohe.

Mātauranga shared by Ngāi Tai includes:

- Ngāi Tai Tānga – Take Taiaomaurikura
- Tino Rangatiratanga – Self-Determination
- Rangatiratanga – Leadership
- Te reo taketake e ōna tikanga
- Haumanu te taiao - Restoration
- Tiakitanga - Stewardship
- Manaakitanga – Support
- Mahitahi - Participation / working together / individual and shared priorities

Mātauranga shared by Ngaati Whanaunga includes:

- Te reo ake o Ngaati Whanaunga me ona tikanga
- Tino Rangatiratanga – Self-Determination
- Rangatiratanga – Leadership
- Haumanu te taiao - Restoration
- Tiakitanga - Stewardship
- Manaakitanga – Support
- Mahitahi - Participation / working together / individual and shared priorities

3.3 Guiding cultural themes

The values identified by each of the iwi have been categorised into three major themes which reflect the Kia Ora Te Tātai outcome being:

- Whakapapa – Ancestry;
- Taiao - Environment; and
- Tāngata Hononga - Connecting People.

These are further expanded below. Additionally, iwi involved in the development of this SAP have contributed some high-level objectives and outcomes that will assist in giving effect to these values across the coast from Kahawairahi to Whakatīwai.

3.3.1 Whakapapa (Ancestry)

Wāhi tapu are protected, celebrated, and enhanced through an integrated approach, by natural means, and in partnership with iwi mana whenua. The celebration of mana whenua values includes the acknowledgement, respect, and recognition of cultural and spiritual values of tāngata whenua. Wāhi Tapu and Taonga must be respected, treasured, and valued. This may include archaeological sites, cultural landscapes, and artefacts as well as sites of spiritual and historic significance to the trust. For example, wāhi tapu may include pā sites, battlefields, burial grounds, significant historic iwi sites, and waka landings.

3.3.2 Taiao (Environment)

The environment is protected, enhanced, and celebrated through an integrated approach, by natural means first and foremost and in partnership with tāngata mana whenua. This includes proactive enhancement and/or conservation activities that will aim to naturalise and enhance the natural environment and ultimately contribute towards preserving the coastline. Guardianship and stewardship of the environment is enacted via Kaitiakitanga. Restoration and enhancement of the mauri should be prioritised.

3.3.3 Tāngata Hononga (Connecting people)

Through involving the community, the people are connected and invested in their environment and therefore uplifted. The SAP recognises that people and the environment are holistically intertwined. Resource management should be implemented in a way that sustains and supports the ability of Manaakitanga, ongoing generosity and hospitality, and enables and supports mana whenua's role as kaitiaki.

3.3.4 Cultural objectives and outcomes

The cultural objectives and outcomes sought by iwi are underpinned by the need for the partnership and co-management approach taken in developing these high-level strategic documents, to be recognised and provided for across all facets of the implementation of the strategic documents.

To ensure that cultural values and associations are recognised and provided for in any works programme, it is fundamental that this partnership and co-management approach is applied to each specific coastal stretch when implementing the direction set out in this SAP. Failure to do so has the potential to result in significant adverse cultural impacts through the removal of iwi as kaitiaki of their rohe and removing iwi from the process.

Therefore, the primary cultural objective for any process that flows from this SAP, and any SAP or associated document in the future, is the need for a formalised process to establish and formally recognise and provide for the role of iwi as partners as part of a co-management approach. The formalisation of this process provides for mahitahi - participation / working together / individual and shared priorities, all of which are key cultural outcomes. The need for the partnership/co-management approach applies to the rohe of each iwi and also their lands identified through their Treaty settlements.

This will mean that iwi can have a meaningful and effective role in these projects thus enabling them to exercise their kaitiakitanga and ensuring that the principles of the Te Tiriti o Waitangi are provided for and given effect to. The formalisation of the partnership approach and co-management roles also enables iwi to share specific mātauranga in a way which ensures it is protected, further contributing to positive cultural outcomes for the project.

While not exhaustive, other relevant cultural objectives and outcomes sought for the SAP programme include:

- Ensuring iwi are engaged to speak to and identify:
 - Their cultural values and associations of an area;
 - Any impacts to their cultural values and associations; and
 - Any necessary mitigation and management of any impacts and effects on cultural values and associations.
- Prioritise the protection and recognition of wāhi tapu / sites of cultural significance within or adjoining the coastal area.
- Recognising and providing enduring kaitiaki opportunities for tāngata whenua.
- Support iwi to implement and maintain rāhui.
- Proactively protecting and restoring nature's first line of defence for the coastline (prioritising nature's ability to absorb the effects of climate change).
- Respecting the role nature has in te taiao, allowing Tangaroa to take back the whenua, tāna mokopuna te ika, that was taken from him by Māui.
- A return to native habitats - mangroves and dunes with native planting all around the coastal area, consistent with what was historically present. A planting regime should be commenced in advance of any potential risks.

- Proactively protect and enhance taonga species and habitats.
- Proactively protect coastal cliffs (pari) and coastal dunes.
- Proactively protect and enhance coastal and inland wetlands, and indigenous habitats and biodiversity.
- Prioritise protection of, and contribute to the enhancement of, kaimoana / shellfish habitats with a focus on the regeneration for mahinga mātaītai sites.
- Make room for wai (water), enable natural processes where possible and naturalising aquatic environments where possible (e.g. daylighting of streams).
- Enhance existing, and provide for new, natural connections and access points to the coastal environment.
- Prioritise a ‘te taiao (environment) centred’ approach, over a ‘human-centred’ approach when implementing the shoreline adaptation approaches.
- Ensuring there is a process to revisit the shoreline adaptation strategies into the future as technology and methodologies change.

How these objectives are realised in the implementation of the approaches set out within this SAP for a specific coastal stretch needs to be undertaken alongside tāngata whenua. This must be provided for through the partnership and co-management approach discussed earlier when each site-specific works programme is progressed.

4.0 Coastal processes, hazards, and exposure

4.1 Physical setting

The coastline between Beachlands and Raukawa Point (

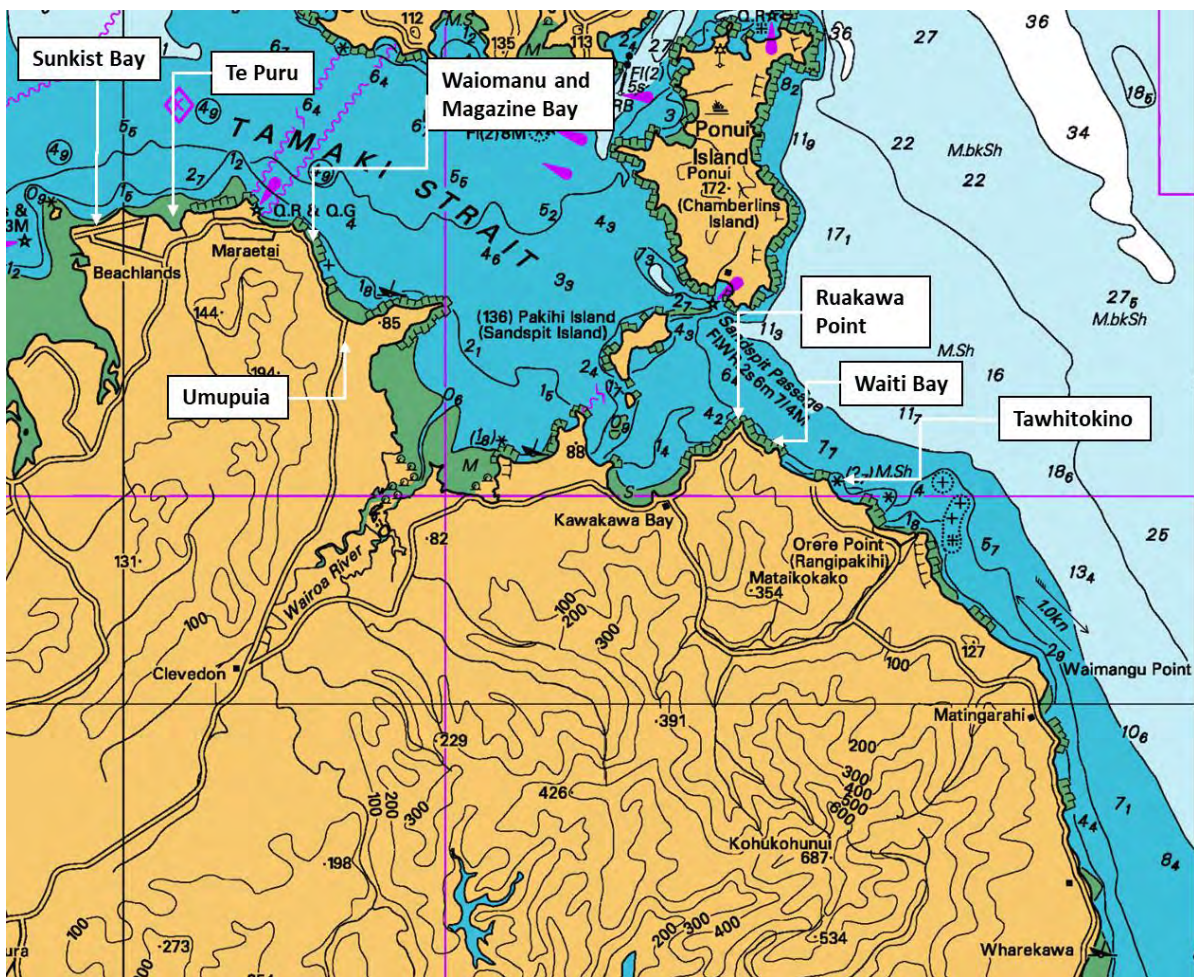


Figure 3) faces north into Tamaki Strait. The coast has several embayed beaches founded on wide wave-cut shore platforms and bound by more resistant rock headlands and reef outcrops, with smaller sandy beaches between headlands (Sunkist Bay, Shelly Bay, Maraetai/Ohinerangi Beach, Te Wai o Maruwhenua/Waiomanu Bay, Kakaramēa/Magazine Bay) backed by steeply rising hillside. There are several larger embayments with wide intertidal areas and narrow perched sandy beaches (Te Puru, Umupuia, Wairoa River embayment and Kawakawa Bay), backed by low lying alluvial terraces.

Figure 3: Topography and bathymetry of Kahawairahi ki Whakatāwai/Beachlands and East area (Source: LINZ NZ53)

The shoreline from Raukawa Point to the Auckland region boundary at Matingarahi, and further south to Waharau and Whakatāwai Regional Parks faces the Firth of Thames to the east. This stretch of coast is characterised by steep cliff headlands with rocky reef outcrops, and sandy embayed beaches (Waiti Bay, Tawhitokino, Ōrere Point Beach). To the south of Ōrere Point, the Firth of Thames coastline has relatively deeper water located offshore and a smaller intertidal area, with narrow sand and cobble beaches backed by steep cliffs.

4.2 Geology and wave climate

Wave exposure and geology has influenced the geomorphology and natural features present along the coast. The geology of the area is predominantly Jurassic aged Waipapa Group (basement) 'greywacke' rock, with Holocene aged alluvial, estuarine and beach deposits.

The lithic volcanic sandstone component is typically strong and consequently, resists erosion. This is evident along the coast at more resistant rock headlands and beach platforms extending into the foreshore. Weathered Waipapa Group is also evident, comprising orange-brown soils and regolith. The alluvial and estuarine deposits consist of clayey and silty soils, while the beach deposits consist of sandy and shelly material. Cliffs at Ōrere Point and the Firth of Thames coastline have experienced frequent slips due to the weak geology (Mangatangi sandstones which are part of the Waipapa Group) of the area and steep slopes.

The north facing Tamaki Strait coastline is protected from the predominant wind from the south-west and is largely sheltered by inner Hauraki Gulf Islands (Rangitoto, Motutapu, Motuihe, Waiheke Island, Ponui, Pahiki and Karamuramu Islands). The majority of the wave exposure is from the north through to east, with the narrow fetch across Tamaki Strait and shallow water depth across the broad intertidal areas limiting wave generation. As a result of the sheltered location and generally low wind speeds, wave heights along this coast are generally low apart from during periods of strong winds from the north to east.

The eastern shoreline from Ōrere Point to Matingarahi, and the southern Regional Parks (Waharau, Whakatāwai) are exposed to higher wave energies from the north and northeast with a fetch over 40km across the Firth of Thames. Long period swell can approach from north to east angles where there is a narrow swell window between the Coromandel Peninsula and eastern Hauraki Gulf Islands.

Sediment transport processes vary depending on each beach site's wave exposure and sediment supply, with generally finer sediment and larger intertidal areas on the north facing Tamaki Strait shoreline in the lee of Waiheke Island. Due to the largely rocky nature of the coastline with headlands and embayments, there is limited large-scale sediment transport, but localised movement of sediment occurs within the embayments influenced by wave action and catchment discharges from streams and gullies. The largest of the sandy beaches along this stretch, Maraetai/Ohinerangi Beaches, Te Wai o Maruwhenua/Waiomanu Beach and Kakaramea/Magazine Bay, have strong headland control and may experience episodic bypassing of sand from north to south. The shoreline from Te Wai o Maruwhenua/Waiomanu Bay to Umupuia is characterised by rock reef, with isolated narrower beaches and less dominant headland controls. Umupuia may be a depositional area augmented by biogenic shell production. The wide intertidal area at Kawakawa Bay and Ōrere Point has extensive cobble fans overlying sand and silt deposits, cobble shoals and sand bars.

Beaches on the east facing more exposed shoreline of the Firth of Thames are comprised of coarser sediment, and predominantly cobbles from alluvial inputs. The dominant alongshore transport direction is from the north to south due to the prevailing wave climate in Firth of Thames and southerly drift of gravel material from northern streams.

Various intertidal habitats, rock reef, wetlands and coastal cliffs exist along the Kahawairahi ki Whakatāwai/Beachlands and East coastline, as well as artificial structures including various seawalls, ramps, and areas protected with cobble beach nourishment. Sections such as a Maraetai and Kawakawa Bay have been modified through reclamation, dredging and construction of larger rock breakwaters to provide sheltered boat launching access. Other low-lying areas of coastline at Maraetai and Kawakawa Bay have been reclaimed for roading.

4.3 Coastal hazards

Natural processes, such as coastal inundation and erosion, become hazards when they have the potential to negatively impact things of value. For shoreline areas with assets and infrastructure, or cultural heritage sites near the coastal edge (including recreational and environmental areas), the impacts of coastal hazards can be significant. Hazard mapping is therefore a key component of long-term, sustainable management of shoreline areas.

Erosion susceptibility and inundation values have been based on existing published data from Auckland Council, and the following sources:

- Stantec (2020) Remapping of coastal inundation data to 2016 Lidar, June 2020
- T+T (2021) Auckland coastal erosion study: regional assessment, February 2021.

Rainfall induced flooding was obtained from modelling carried out by the Healthy Waters Department within Auckland Council.

4.3.1 Coastal inundation

Previous studies by NIWA and DHI derived coastal inundation levels at the shoreline around the Auckland region. They considered present day extreme storm surge conditions, including a 1% Annual Exceedance Probability (AEP) event (equivalent to a storm surge with a 1% chance of occurring in any year, or 1 in 100-year return period) and this event with 0.5 m, 1.0 m and 2.0 m sea level rise added to the present-day storm surge levels⁴.

Stantec (2020) updated the coastal inundation extents from the inundation levels around the coast using the latest LiDAR data for the region, to ensure any changes in landform are represented in the published data. They also provided additional data on the coastal levels around Great Barrier and Little Barrier Islands from additional modelling by NIWA⁵, and updated hydrodynamic model data for mapping around Helensville, at the southern extreme of the Kaipara Harbour by DHI⁶. Results of these studies are consolidated in Auckland Council's Technical Report TR2020/024⁷.

Figure 4 and Figure 5 show the resulting coastal inundation hazard extents for the four scenarios (i.e. 1% AEP storm surge and 1% AEP storm surge with 0.5 m, 1.0 m and 2 m sea level rise).

⁴ Stevens et al., 2016 published as Auckland Council Technical Publication TR2016/017

⁵ Stevens et al., 2019

⁶ Tuckey, 2019

⁷ Carpenter, N., Roberts, R and Klinac, P (2020) Auckland's exposure to coastal inundation by storm-tides and waves. Auckland Council Technical Report, TR2020/024.

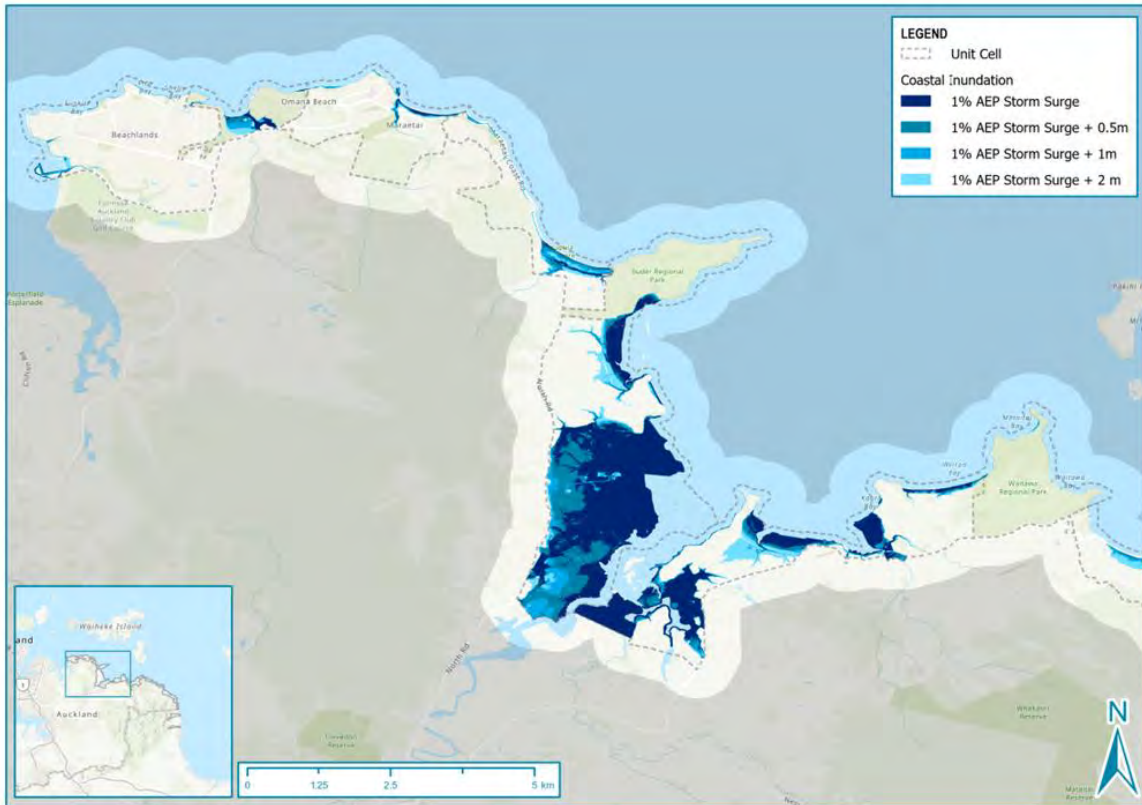


Figure 4: Beachlands to Waitawa Regional Park coastal inundation for 1% AEP storm surge for present day and with 0.5 m, 1 m and 2 m sea level rise (Part 1 of 2)

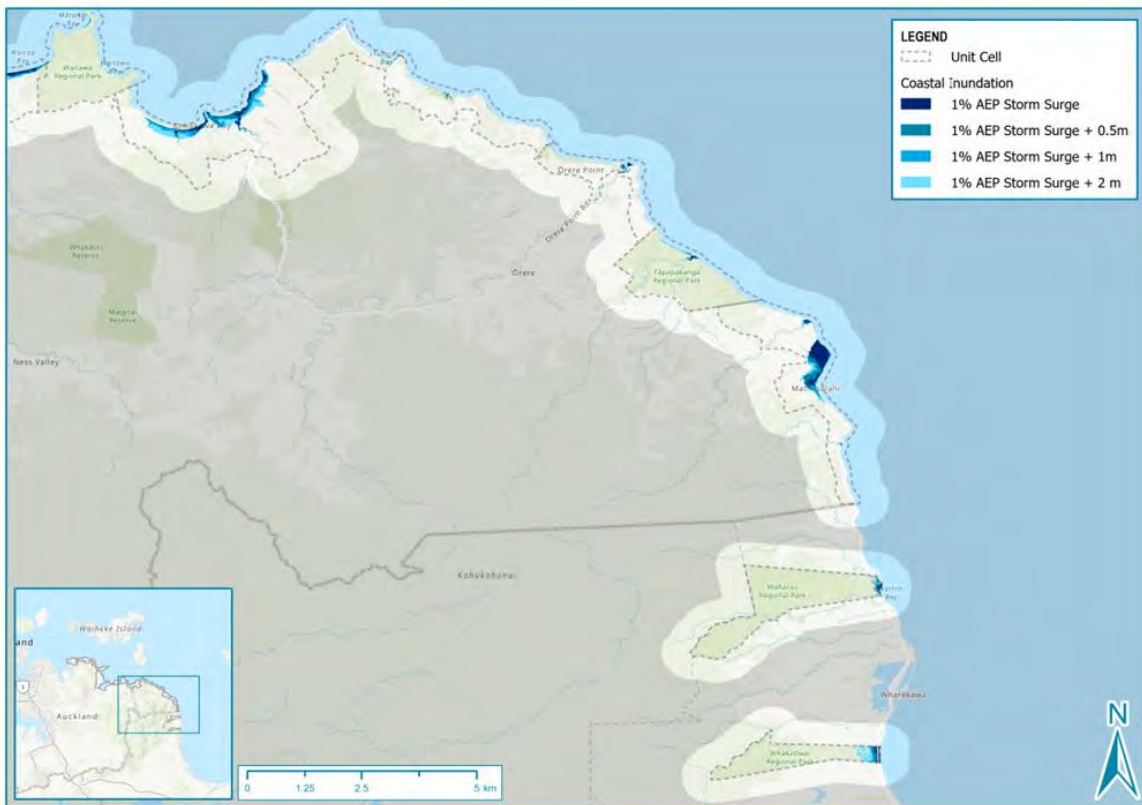


Figure 5: Waitawa Regional Park to Whakatīwai Regional Park coastal inundation for 1% AEP storm surge for present day and with 0.5 m, 1 m and 2 m sea level rise (Part 2 of 2)

4.3.2 Erosion susceptibility

The T+T (2021) study provides a regional-scale assessment of Areas Susceptible to Coastal Instability and/or Erosion (ASCIE) for the Auckland shoreline. It is a “first-pass” assessment, in line with the New Zealand Coastal Policy Statement (NZCPS, 2010) and Ministry for the Environment (MfE, 2017) ‘Coastal Hazards and Climate Change Guidance’, that provides high-level information on possible ASCIE on a regional scale.

The 2021 study updates the earlier Regional Assessment of Areas Susceptible to Coastal Erosion Study⁸. Areas were not mapped at that time as a robust definition of the coastal edge was not available. The 2021 report considers new guidance (e.g. MfE, 2017) and data (e.g. longer beach profile datasets) and latest best-practice approaches that have come available since 2006. It also uses 2016-2018 LiDAR data which covers the entire Auckland region and has enabled mapping of the ASCIE. Resulting ASCIE areas have been mapped for the following scenarios:

- 2050 RCP4.5M
- 2080 RCP8.5M
- 2130 RCP8.5M
- 2130 RCP8.5H+.

These scenarios represent a range of time periods and sea level rise values that are predicted to occur with a high emission representative concentration pathway (RCP). Water level predictions based on the median trajectory and the 83rd percentile were assessed for 2130, described as RCP8.5H+. MfE (2017) recommends the use of this value for regional hazard screening to broadly identify areas potentially exposed to coastal hazards. Figure 6 and Figure 7 show the resulting extents for these four scenarios. The 2130 extent was derived from the RCP8.5H+ scenario.

⁸ Auckland Regional Council (2006) Regional Assessment of Areas Susceptible to Coastal Erosion. TR 2009/009

4.3.3 Rainfall flooding

Rainfall flooding extents have been based on existing published data from Auckland Council. All rainfall flood modelling has been done to comply with Auckland Council's modelling specification⁹ concentrating on high flood-risk areas including primary open channels and streams using the 2016 LiDAR.

Only one scenario was available for this area, being the 1% AEP rainfall flood event for the maximum development scenario. The maximum development scenario was based on full development within the existing zones shown in current planning maps. The modelling outputs are shown in Figure 8 and Figure 9.

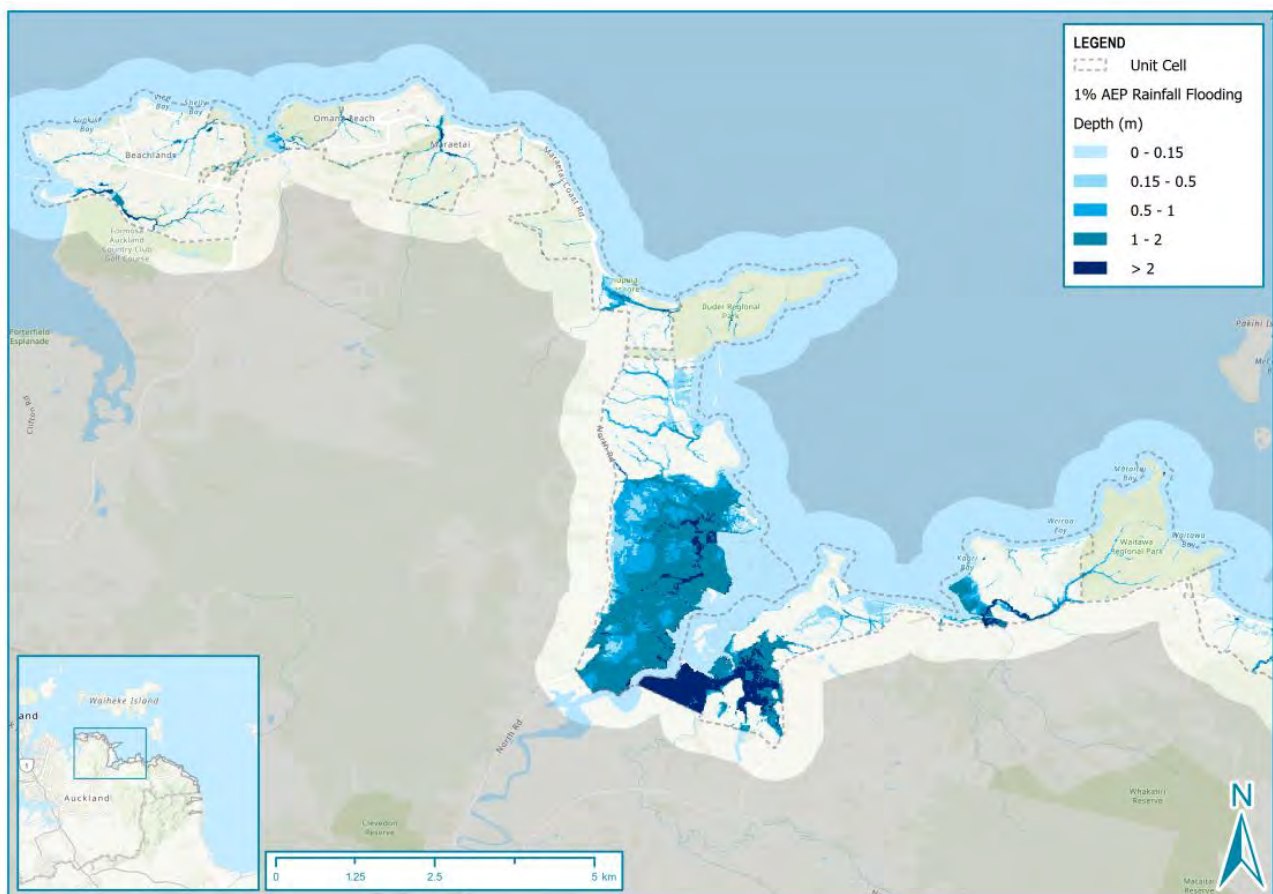


Figure 8: Beachlands to Waitawa Regional Park rainfall flood extents and depths for 1% AEP event and the maximum development scenario (1 of 2)

⁹ Auckland Council, 2011

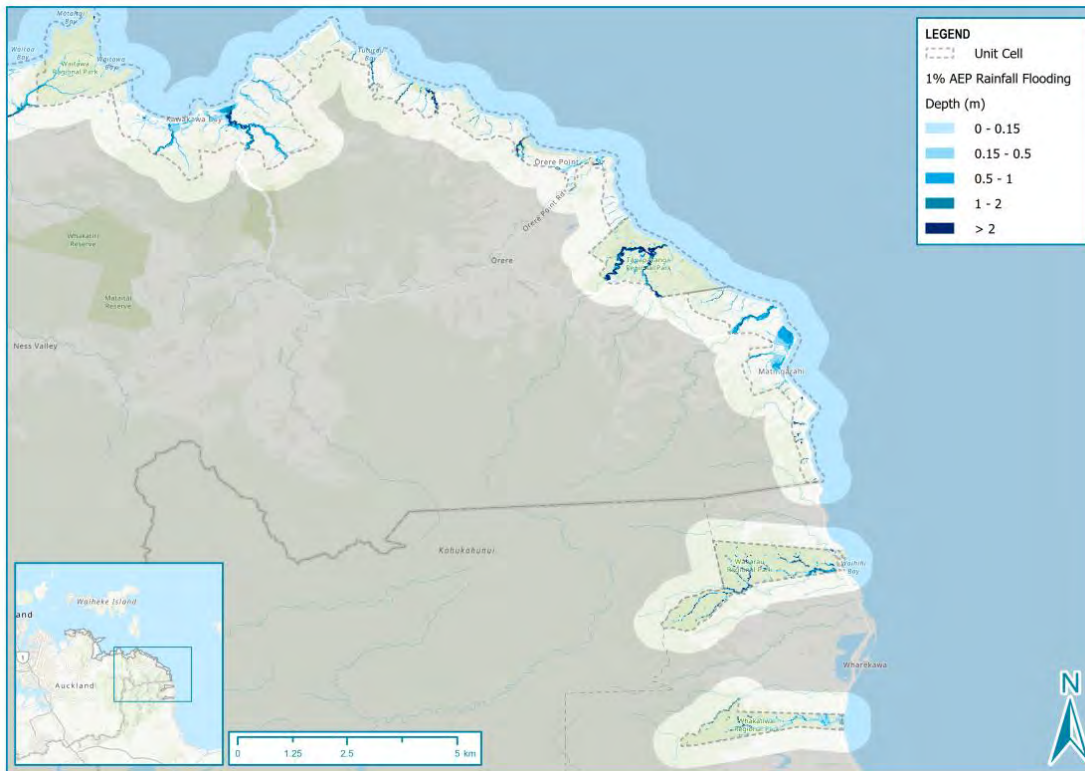


Figure 9: Waitawa Regional Park to Whakatīwai Regional Park Rainfall flood extents and depths for 1% AEP event and the maximum development scenario (2 of 2)

4.4 Risk assessment

To identify the potential impact of coastal hazards on Auckland Council-owned land and assets and to understand the escalating risk due to climate change, a high-level risk assessment¹⁰ was undertaken. The risk assessment identified which elements of interest were located within hazard zones and may subsequently be adversely affected by hazard events, now and in the future.

For Kahawairahi ki Whakatīwai/Beachlands and East, elements of interest included parks and reserve land and assets, Auckland Council-owned infrastructure, ecological and environmental areas, cultural and historic heritage sites. Their exposure and risk were assessed using the wellbeing focus of cultural, social, environmental, and economic indicators, as detailed in the Risk Assessment Technical Report. To understand the varying impacts across Kahawairahi ki Whakatīwai/Beachlands and East, the area was broken into 15 separate units as shown in Figure 10.

¹⁰ Tonkin and Taylor (2022). Shoreline Adaptation Plan – Beachlands and East Risk Assessment.



Figure 10: Outline of the Kahawairahi ki Whakatīwai/ Beachlands and East SAP area showing delineation of the coast

4.4.1 Results of risk assessment

Risk classification provides an understanding of the quantity, or extent, of a particular asset or value. This enables an understanding of which unit has more, or less, risk compared to other units. Table 4-1 to Table 4-3 shows how the risk for each unit changes across the short, medium and long term in relation to coastal hazards. The results are split by the following four well beings:

- Social (park and reserve assets)
- Economic (public infrastructure including roads and Three Waters' pipes)
- Environmental (ecological areas)
- Cultural (cultural and historic heritage sites).

The results of the risk assessment show that there is varying risk across the four well beings to Auckland Council-owned land and assets across the Kahawairahi ki Whakatīwai/Beachlands and East cell to coastal hazards in the next 20 years (i.e. the short-term).

In the short term, cultural has the highest risk to coastal hazards, followed by economic and environmental, with social land having the lowest risks. The short-term risk for cultural and historic heritage assets is currently moderate to high for all coastal hazards in most units and environmental land follows with generally moderate risks in many units. Economic assets have higher risk to coastal erosion and rainfall flooding than coastal inundation. The current level of risk for park and reserve assets is generally low, with the exception of Maraetai and Umupuia for coastal erosion;

Kauriwhakiwhaki/Beachlands, Kawakawa Bay, and Maraetai for coastal inundation; and Maraetai, Ōrere Point, Tapakanga, Waharau and Whakatīwai Regional Parks for rainfall flooding.

Due to the impacts of climate change (including sea-level rise and increased rainfall intensity), hazards extents and flood depths increase in the medium and long term. This increases the hazard likelihood and in turn, risk in the medium and long-term although the risk level does not change in all units, indicating in those areas and for those well beings, that the risk remains at a similar level to the short-term risk. Environmental and social land risk profiles change most significantly from the short to medium term, with slower changes in the medium to long term. Economic and cultural assets have reasonably uniform changes across the timescales, but typically from a higher risk level in the short term.

For park and reserve land assets, Kauriwhakiwhaki/Beachlands and Maraetai units experience an increase in coastal inundation risk to high in the medium and long term. Kawakawa Bay remains a moderate risk for the short, medium and long term, while Umupuia, Waitawa Regional Park and Ōrere Point increase to moderate risk in the medium or long term. The remaining units have coastal inundation risks from negligible to low.

Maraetai, Umupuia and Kawakawa Bay are also moderate to high risk areas for network infrastructure due to coastal inundation. Kauriwhakiwhaki/Beachlands and Whakakaiwhara ki Te Wairoa / Wairoa North increases to moderate in the medium term and Matingarahi Point increases to moderate in the long term. The remaining units have coastal inundation risks from negligible to low.

For park and reserve land, only Maraetai and Umupuia experience moderate coastal erosion risk in the short term, and this remains moderate in the medium and long term. Risks increase to moderate for Duder Regional Park in the medium term and moderate for Kawakawa Bay and Ōrere Point in the long term. The remaining units have coastal erosion risks from negligible to low.

For network infrastructure coastal erosion risks are high for Umupuia, Tutarau Bay and Matingarahi Point and remain high in the medium and long term. Coastal erosion risks increase from moderate to high in Kawakawa Bay in the medium term and for Maraetai in the long term. Risks remain moderate for Kauriwhakiwhaki/Beachlands for all time periods and increase to moderate for Wairoa South in the medium term and for Ōmana Regional Park in the long term.

Ōmana Rainfall flooding sees an increase in risk for networks and cultural assets but less risk in social and environmental land as these land areas are more resilient to freshwater inundation.

Table 4-3 Summary of rainfall flooding risk

Unit	Social - parks and reserves			Economic - Network infrastructure			Environmental - ecological			Cultural		
	Short term	Medium term	Long term	Short term	Medium term	Long term	Short term	Medium term	Long term	Short term	Medium term	Long term
Kauriwhakiwhaki/ Beachlands	Low	Low	Low	Very high	Very high	Very high	Low	Low	Low	None	None	None
Ōmana Regional Park	Low	Low	Low	Low	Moderate	Moderate	Low	Moderate	Moderate	Moderate	Moderate	Moderate
Ōmana ki/ Maraetai	Moderate	High	High	High	High	High	Moderate	Moderate	Moderate	None	None	None
Te Wai o Maruwhenua/ Waiomanu ki Umupuia	Low	Low	Low	Low	Moderate	Moderate	Low	Low	Low	Moderate	Moderate	Moderate
Whakakaiwhara/ Duder Regional Park	Low	Low	Low	None	None	None	Low	Low	Low	Moderate	High	High
Whakakaiwhara ki Te Wairoa/ Wairoa North	None	None	None	Low	Low	Low	Low	Low	Low	Very high	Very high	Very high
Te Wairoa ki Waitawa/ Wairoa South	None	None	None	Moderate	Moderate	Moderate	High	High	High	High	High	High
Waitawa Regional Park	Low	Low	Low	None	None	None	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Kawakawa Bay	Low	Moderate	Moderate	High	Very high	Very high	Low	Low	Low	Moderate	High	High
Tuturau Bay	Low	Low	Low	Low	Low	Low	Moderate	Moderate	Moderate	None	None	None
Rangipakihi/ Ōrere Point	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Low	Moderate	Moderate	Moderate	Moderate	Moderate
Tāpapakanga Regional Park	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	High	High	High	High	High
Matingarahi Point	None	None	None	Low	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Waharau Regional Park	Moderate	Moderate	Moderate	None	None	None	None	None	None	Moderate	High	High
Whakatīwai Regional Park	Moderate	Moderate	Moderate	None	None	None	None	None	None	Low	Low	Low

5.0 Community engagement

Community engagement for the Kahawairahi ki Whakatīwai SAP included a range of on-line and in-person public outreach events (dependant on COVID-19 alert levels). Engagement events included two online webinars. Both webinars were live streamed and recorded to introduce the SAP process and key concepts of climate change, coastal hazards, and adaptation planning. These webinars were followed up and supported by a series of in-person (Clevedon Farmers Market and Sunkist Bay) and on-line public events (on-line events were run via a public zoom drop-in platform). Three presentations focused on introducing the project and providing insight into the proposed community objectives and the final outcomes of the report were hosted at the Wairoa clinic online forum (towards the start and end of the SAP). The Wairoa clinic acts as a forum where the Franklin community who live near the Wairoa River get to meet with local board members and find out more about what is happening in the area.

Coinciding with the in-person and on-line community engagement, digital engagement was undertaken using Social Pinpoint and Engagement HQ. Social Pinpoint operates as an on-line engagement platform which allows users to drop pins, write comments, add images, and complete surveys on an interactive map. Close to 400 users participated in digital engagement via Social Pinpoint. In addition to Social Pinpoint, Engagement HQ provided a second digital engagement platform where the community could complete surveys and ask questions. A total of 26 surveys and 15 questions were submitted via Engagement HQ. The information collated via these digital platforms helped identify key community values across the coastline and highlighted ‘areas of interest’ as summarised in Figure 11.

Once the Kahawairahi ki Whakatīwai/Beachlands and East report reached its final stage of review, the “Close the Loop” section of community engagement was undertaken. This helped ensure that the local community that provided invaluable feedback and insight to the project were kept informed as to the results of their consultation. The “Close the Loop” element of community engagement was comprised of the following:

- Emailing all who submitted comments and surveys via our digital platforms and in-person events to announce that the report was in its final stages of development.
- The “Close the Loop” email thanked the community for their feedback enabling the team to better understand and appreciate the community’s connection to the Kahawairahi ki Whakatīwai/Beachlands and East coastline and increased understanding of the community values in the area. This was a crucial element in guiding adaptation strategies for Council-owned land and assets along the coast.
- Attached to the email was a copy of the collated comments from Social Pinpoint, the community objectives from the report and a condensed version of the community feedback appendix.
- A third and final visit to the Wairoa Clinic online forum to provide the community with insight as to how their feedback was incorporated into the final Kahawairahi ki Whakatīwai SAP report.

Community comments and survey submissions collected as part of the digital engagement process were sorted and grouped into six major categories:

- **Active recreation:** How people utilise the coastal areas and provided amenities
- **Passive recreation:** How people connect to and enjoy the coast and reserve areas
- **Environmental:** Concerns related to the care and protection of the natural environment
- **Transport:** Concerns related to roading networks across the Kahawairahi ki Whakatīwai/Beachlands and East coastline
- **Community:** The importance of the coast to community connections
- **Coastal engineering and assets:** Values and concerns related to coastal engineering and assets (wharfs, seawalls etc.)

Comments related to topics outside the scope of SAPs, including maintenance and management issues, were forwarded to the relevant departments.

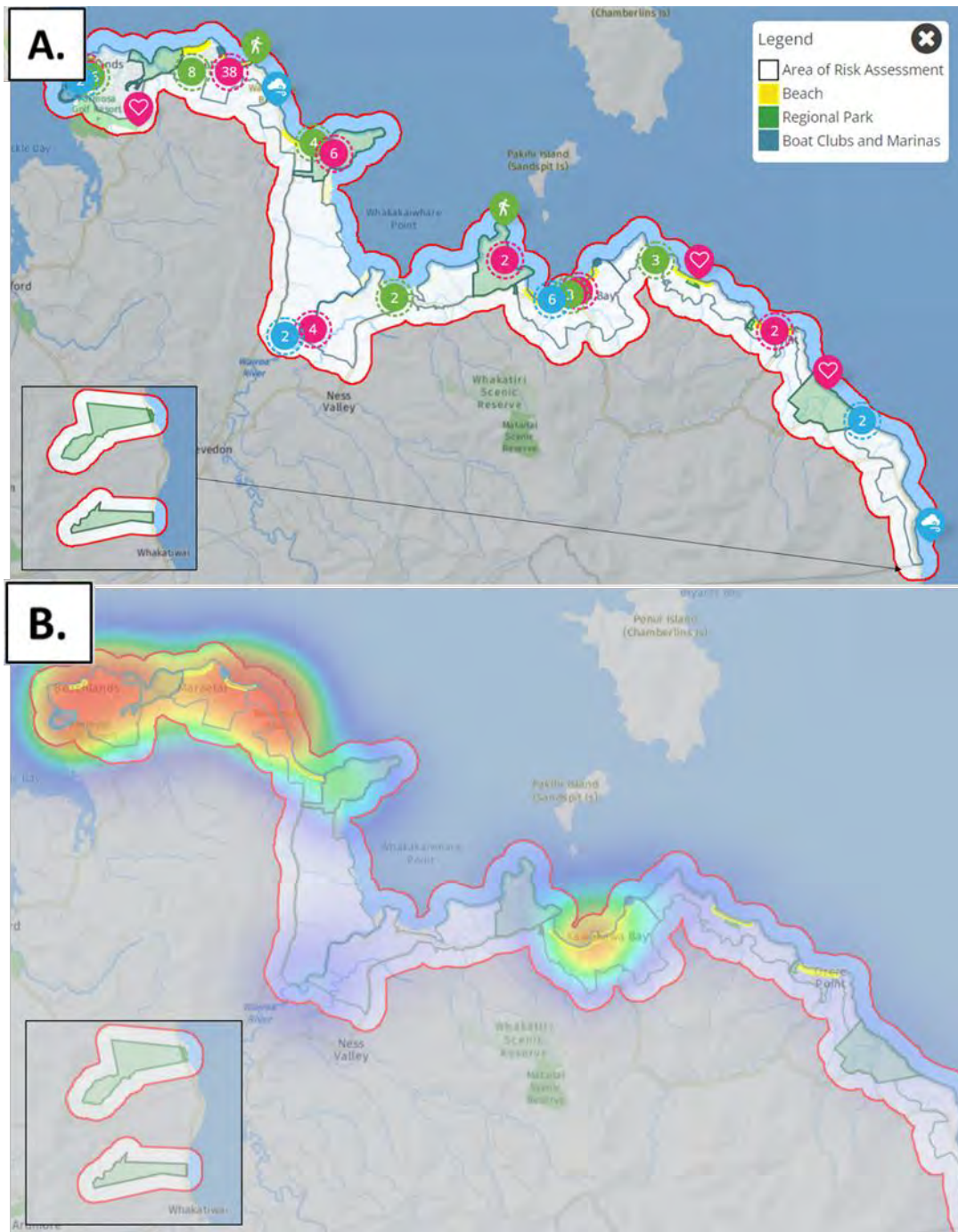


Figure 11: Social Pinpoint maps generated from the digital engagement. Map A displays the location of specific comments, with green circles representing the “I go here because” pins, blue circles representing “I remember this...” and pink circles representing “I value this because” pins. The green and yellow polygons indicate survey locations, which were used to gather further information in targeted areas. Map B is a heatmap highlighting the areas most commented on during the digital engagement, which indicates that the coast between Beachlands and Whakakaiwhara/Duder Regional Park, and Kawakawa Bay are areas of high interest to the local community.

5.1 Community objectives

The information collected via Social Pinpoint, Engagement HQ and on-line and in-person community engagement events was collated and reviewed to develop the following high-level objectives. To ensure that these were reflective of the local communities' values, the team presented the proposed objectives in front of the community at the Wairoa Clinic on-line forum. The proposed community objectives were also provided for public review on the AK Have Your Say Beachlands and East webpage to further allow feedback from the local community.

Community objectives for Kahawairahi ki Whakatīwai/Beachlands and East:

- Resilience of assets in hazard zones is considered a priority in asset management decision-making to support service provision and ensure disruption is limited.
- Provide safe access with parking to the coast for a range of water-based activities at a range of tide levels (e.g. swimming, sailing/boating, kiteboarding and surfing).
- Identify existing locations for motorised boat launching where improvements will provide the greatest benefit to the wider network.
- Enhance opportunities for pedestrian and cycling movements along the coastline, integrated with the existing coastal walking and cycling experience throughout the Beachlands and East setting.
- Have accessible places within coastal reserves where people can enjoy the environment in its natural setting
- In the short term, work with Auckland Emergency Management to develop a community resilience network across Beachlands and East.
- Preserve and enhance the natural environment and ecosystems and support biodiversity.
- Work with Auckland Transport to develop a resilient road network for the area, which supports increased access for a diverse range of transport type and coastal access for recreation.

6.0 Adaptation strategies

Shoreline adaptation strategies need to be targeted and specific, with the chosen strategy and pathway taking into account the unique character and values of the coastal areas in question. The development of adaptation strategies requires consideration of escalating risk, the values and associations of iwi/ tāngata whenua, feedback of infrastructure providers, and the objectives of the local community. Giving effect to tāngata whenua values in the development and implementation of adaptation strategies is essential.

6.1 Adaptation strategy definitions

Four major adaptation strategies to set long term management approaches are considered which are outlined below:

- **No Active Intervention (NAI):** Natural processes are allowed to continue. This includes no investment in the provision or maintenance of any defences. This strategy is automatically selected for areas of the coastline that are not owned by Auckland Council.
- **Limited Intervention (LI):** Limited works are undertaken to extend the existing asset life or to ensure assets remain safe, including localised realignment of individual assets. This approach acknowledges that the coastline's position will not be fixed into the future and may include small-scale, nature-based measures (e.g. dune planting) to support the coastline's resilience.
- **Hold the Line (HTL):** The coastal edge is fixed at a certain location, using nature-based options (e.g. beach nourishment) or hard structures (e.g. sea walls). Nature-based options are the preferred method where possible.
- **Managed Retreat (MR):** Assets and activities are moved away from hazard-prone areas in a controlled way over time. Managed Retreat allows greater space for natural buffers and reduces asset exposure to natural hazards.¹¹

6.1.1 Timelines

Adaptation strategies are recommended across the short (0-20 years), medium (20-60 years), and long (60+ years) timeframes. However, when dealing with climate change impacts, it is important to note that the timing of when a change in strategy is required can be uncertain. While specific signals and triggers are not identified in this plan, we have endeavoured to provide high-level indications of potential impacts that would lead to a change in strategy.

6.1.2 Cultural values

Acknowledging that Auckland Council's intention of the SAP process is to support the sustainable management of Council-owned coastal land and assets over the next 100 years, the cultural values,

¹¹ The term "Managed Retreat", as opposed to "Managed Realignment" has been used throughout the body of this report to be consistent with language used in higher order policy documents (i.e. RMA reform).

association, objectives, and outcomes communicated by each iwi involved in the development of this SAP has helped to inform the adaptation strategies for each of the coastal stretch. While specific cultural values and outcomes for each coastal stretch will be shared and developed through the ongoing involvement of iwi in respective work programmes, guiding objectives and outcomes which have informed the development of adaptation strategies are set out in Section 3.3.4.

6.1.3 Guidance for Auckland Council asset owners

The adaptation strategies developed in the SAP are designed to be integrated across relevant Auckland Council Plans. In support, guidance to Auckland Council staff includes:

- Iwi/ tāngata whenua must have a partnership/co-management role in all activities which affect the coastal space and adjoining whenua.
- All projects must consider the locations of sites of cultural and / or historical significance. Additionally, all projects must give effect to the views of iwi/ tāngata whenua where works will be conducted near to or at wāhi tapu sites.
- Building new assets in the areas susceptible to coastal erosion and instability is not recommended unless required to meet statutory obligations. Where an asset has a functional need to be within the hazard zone (such as a boat ramp or beach access), it should take the dynamic nature of the coastal environment into account and mitigate through resilient design.
- Renewal of existing assets within areas susceptible to coastal erosion and instability should also consider the increasing risk, through selection of an appropriate location and resilient design.
- Building new assets in areas at risk of the present-day coastal inundation or rainfall flooding at 1% AEP or higher is not recommended. Avoidance of risk is a priority where practical. Where an asset needs to be located within a hazard zone, it must be designed to take the long-term risk into account, including the potential impact of sea level rise over the asset life span as identified through the Ministry for the Environment's Coastal Hazards and Climate Change sea-level rise thresholds (2017).
- A strategic network assessment of coastal access points should be undertaken prior to renewal of coastal stairways and beach access paths. This will ensure continued equitable access around the coastline, while appropriately managing structural risk. A further strategic assessment of recreational water access is also required recognising this as a high priority within the Kahawairahi ki Whakatīwai/Beachlands and East community objectives listed in section 5.1 above.
- To support natural drainage and not increase the risk of rainfall flooding, all projects in the shoreline area must take into account the location of overland flow paths and ensure that future works do not block these paths

7.0 High-level adaptation strategies

For Kahawairahi ki Whakatīwai/Beachlands and East, the coastline was broken down into 31 ‘coastal stretches’ (Figure 12), selected based on coastal processes, public land boundaries, and infrastructure considerations. Coastal stretches have been grouped into broader unit areas as defined in the Coastal Hazard Risk Assessment (Section 4.4).

As stated previously, with respect to the coastal units and stretches, these are aligned to capture Council asset units and do not reflect the historical cultural boundaries which often extend over multiple units or coastal stretches. While all attempts have been made to align with the identified coastal units, the cultural commentary provided often extends further than the single coastal unit described in the sections below. This has resulted in duplication of some commentary.

The following section provides detail on the high-level strategies developed for each coastal stretch over the short (0-20 years), medium (20-60 years), and long (60+ years) term, with an indication of how these choices reflect the escalating risk, considerations of infrastructure providers, and the values and objectives of mana whenua and the local community.

The high-level adaptation strategies over time for each coastal stretch are outlined below. Strategies outlined within each coastal stretch apply 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).

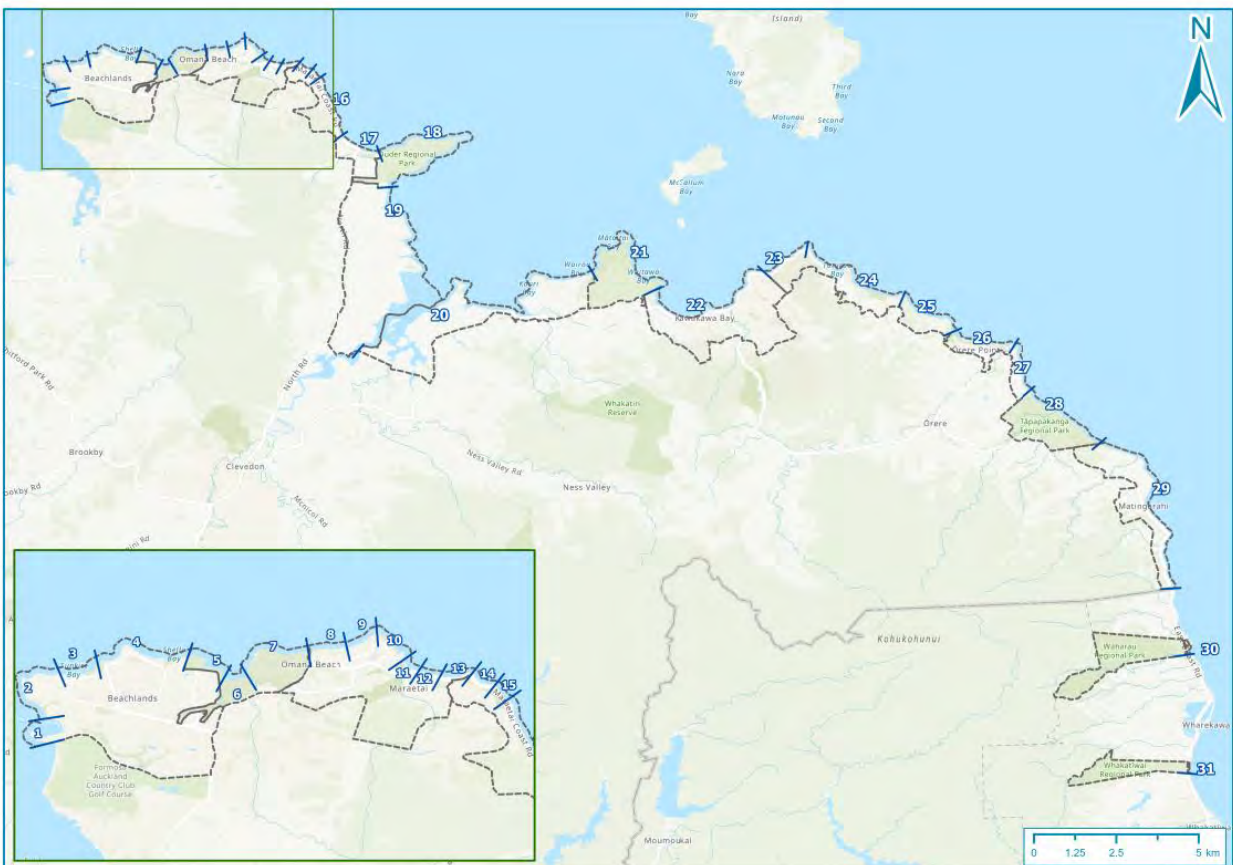


Figure 12: Breakdown of coastal stretches for Kahawairahi ki Whakatīwai/Beachlands and East area

7.1 Kahawairahi ki Kauriwhakiwhaki/Pine Harbour to Beachlands

The Kahawairahi ki Kauriwhakiwhaki/Beachlands unit area contains coastal stretches 1 through 4, beginning at Kahawairahi/Pine Harbour Marina and extending to Shelly Bay Reserve, including Sunkist Bay. This area is mainly a cliff coast, and so is more subject to erosion rather than inundation, apart from at the Marina.

For over 1,000 years, Ngāi Tai have been the tāngata whenua, the original inhabitants of this coastal area. The name Kauriwhakiwhaki was given to the area by Ngāi Tai ancestors which speaks of the time when the kauri forests were felled.

Predominant themes and values extrapolated from community feedback (via digital platforms and in-person events) for this unit area are related to maintaining coastal accessways. Many within the local community visit this area to walk, swim, undertake recreational water-based activities (i.e. kitesurfing and surfing) or utilise the area's picturesque picnic spots. This feedback was captured in the community objectives, in particular the following:

- Provide safe access with parking to the coast for a range of water-based activities at a range of tide levels (e.g. swimming, sailing/boating, kiteboarding and surfing).

While specific cultural values and outcomes for each coastal stretch will be shared and developed through iwi's ongoing involvement in respective work programmes, guiding objectives and outcomes which have informed the development of adaptation strategies are set out in Section 3.3.4.

The Kauriwhakiwhaki/Beachlands unit adaptation strategies were developed by considering Ngāi Tai and community feedback, and their values and objectives across the short, medium, and long term. This is reflected in the decision to 'hold the line' for both Kahawairahi/Pine Harbour Marina and Sunkist Bay, two popular spots for coastal access and water-based activities.

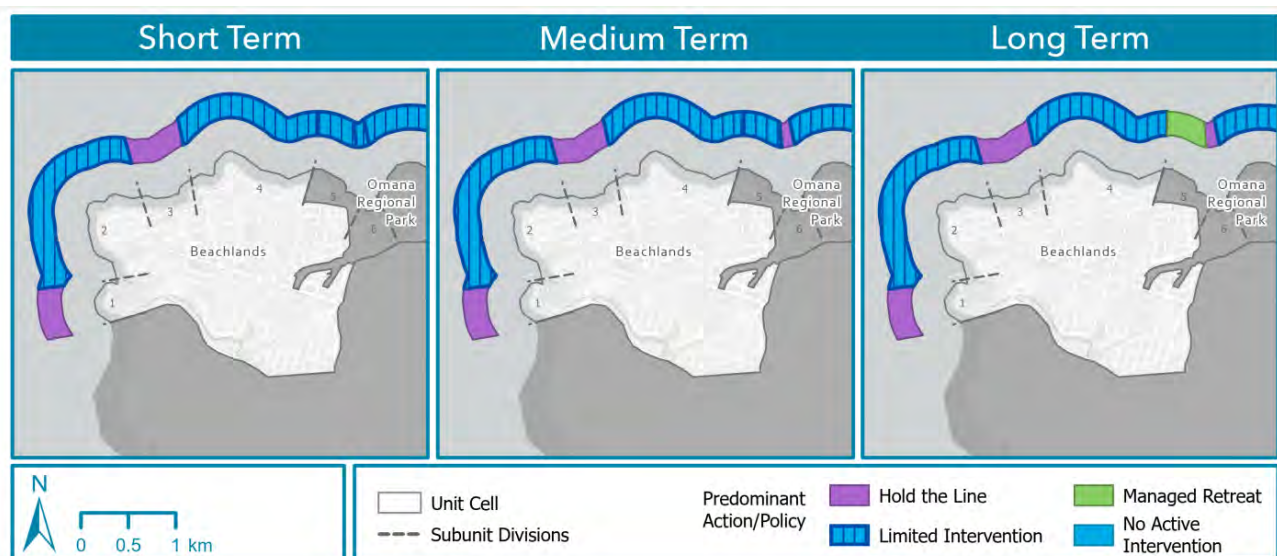


Figure 13: Adaptation strategies for coastal stretches within the Kauriwhakiwhaki/Beachlands unit area

Coastal Stretch	Short-term	Medium-term	Long-term
1	Hold The Line	Hold The Line	Hold The Line
2	Limited Intervention	Limited Intervention	Limited Intervention
3	Hold The Line	Hold The Line	Hold The Line
4	Limited Intervention	Limited Intervention	Limited Intervention

7.1.1 Coastal Stretch 1: Kahawairahi/Pine Harbour

This stretch of coast covers Kahawairahi/Pine Harbour Marina (Figure 14).

For over 1,000 years, Ngāi Tai have been the tāngata whenua, the original inhabitants of this coastal area. The name Kahawairahi was given to the coastal area to reflect the abundance of kahawai that used to be present in the moana. The coastal waters were once green with kahawai, highlighting the abundance of the taonga species.

This coastal stretch is designated a Significant Ecological Area due to its complex mix of intertidal mud, sand, and shell flats which support biodiversity. The area is highly exposed to both coastal inundation and rainfall flooding risks and will experience increasing flooding events in the medium to long term due to climate change.

As the Pine Harbour ferry links the Beachlands area with Auckland Central, the marina is considered a critical transport hub, with moderate to high risks due to coastal inundation. While the marina is privately owned with occupancy rights until 2038, it is surrounded on its southern and western flanks by reclamation that is Jack Lachlan Drive Esplanade Reserve. The reserve supports several amenities including a carpark, pathways, and a boat ramp, and is protected from erosion by a series of rock revetments (Figure 14B).

The carpark is highly valued by the local community as it provides access to Kahawairahi/Pine Harbour Beach. Near the carpark, the reserve also contains a walled stormwater channel and pedestrian bridge (Figure 14C) which provides access to Kahawairahi/Pine Harbour Beach, one of Auckland's premier kitesurfing locations. The importance of maintaining ongoing access to this kitesurfing spot was raised throughout the engagement process by the local community.



Figure 14 A) Aerial view of Kahawairahi/Pine Harbour marina, B) western revetment (photo facing south), C) pedestrian bridge linking the carpark to Kahawairahi/Pine Harbour Beach

Due to infrastructure and transport considerations, including the need to maintain access, we recommend continuing to ‘hold the line’ in this area over the short, medium and long term. This may require raising the rock-armoured reserve area in the medium or long term to manage the increasing risk of inundation.

All future coastal engineering options will need to consider drainage of rainfall flooding from the inland catchment. Regular maintenance checks on the walled stormwater channel are recommended as displacement of rocks has been noted to cause a safety risk to kite-surfers. The boat ramp has limited functionality for boat launching and has high maintenance requirements due to sedimentation. There are no pedestrian access points onto the foreshore.

The recommended coastal management strategy is:

Short Term	Medium Term	Long Term
Hold The Line	Hold The Line	Hold The Line

7.1.2 Coastal Stretch 2: Kahawairahi to Sunkist Bay

This coastal stretch includes the area between Kahawairahi/Pine Harbour Marina and Sunkist Bay. It includes a Significant Ecological Area (Marine 1 and 2) and is a recognised area of High Natural Character and historical significance. Te Motukaraka, connected to the whenua at low tide and located approximately 500 m offshore, is a cultural redress site and a site of cultural significance to Ngāi Tai. Ongoing protection of Te Motukaraka is required as a result.



Figure 15: Aerial photograph of coastal stretch 2 – showing Kauriwhakiwhaki / Beachlands in the foreground through to Te Paritu and Te Kawau in the background

Numerous private sea walls and private accessways exist along this frontage, however they are outside the current scope of this plan. There is limited public land along this coastal cliff area with the exception of Kahawairahi/Pine Harbour Park and Green Bay Reserve, of which are managed by Auckland Council. While the reserves are generally elevated, the lower parts of both reserves at stream crossings are at risk of coastal inundation and rainfall flooding. The amenity value of both reserves relates to the accessibility of their walkways. We recommend a strategy of ‘limited intervention’ in the short, medium, and long term with continued focus on maintaining safe pedestrian access and walking amenity along the coast. In the medium and long term, hazards in this area must be monitored with a specific requirement to clear the stormwater channels of both reserves and close access if flooding is expected.

The existing cliff top platform at Green Bay Reserve is unsustainable, noting its current design and proximity to the clifftop. North of Green Bay Reserve, the cliff area between Kahawairahi/Pine Harbour and Sunkist Bay contains only one public access point down to the coast at Cherrie Road. Due to the risk of coastal erosion in this area, it is recommended that any future access from Council land be a strengthened coastal stairway that is more resilient to ongoing coastal erosion and slope instability.

Healthy Waters has installed outfall protection works in the cliff area to avoid erosion and land slip caused by stormwater outfalls.

The recommended coastal management strategy is:

Short Term	Medium Term	Long Term
Limited Intervention	Limited Intervention	Limited Intervention

7.1.3 Coastal Stretch 3: Sunkist Bay

This coastal stretch covers Sunkist Bay, a high-amenity reserve that is supported by public assets including a jetty, public toilets, a boat ramp, carpark, playground area and multiple coastal walkway access routes. The vegetated cliffs of Sunkist Bay Reserve are recognised as a Significant Ecological Area (Terrestrial) due to the presence of indigenous vegetation and habitats of indigenous fauna in the area. The lower part of the reserve was reclaimed in the 1960s.

Sunkist Bay suffers from coastal squeeze due to sea-level rise with present day high tides nearing the top of the revetment (Figure 16A). The reserve area is expected to be under increasing pressure from inundation in the medium and long term. The bay is at risk of coastal inundation and coastal erosion, and provides a drainage point for several overland flow paths.

The Beachlands Boating Club (Figure 16B), an important connection point for the local community, is located on reclaimed reserve along with the carpark, playground and toilet facilities. The western side of the reserve is currently protected by a seawall topped by a walking path (Figure 16C). While this structure provides amenity value for the community, it is susceptible to wave overtopping and the cliff behind the wall has suffered from on-going landslip issues.

On the eastern side of the reserve, the reclaimed area is currently protected by an informal tipped rock revetment. Renewal of this structure with an engineered revetment is currently in the design and resource consent application preparation stage and is expected to be built by 2024.

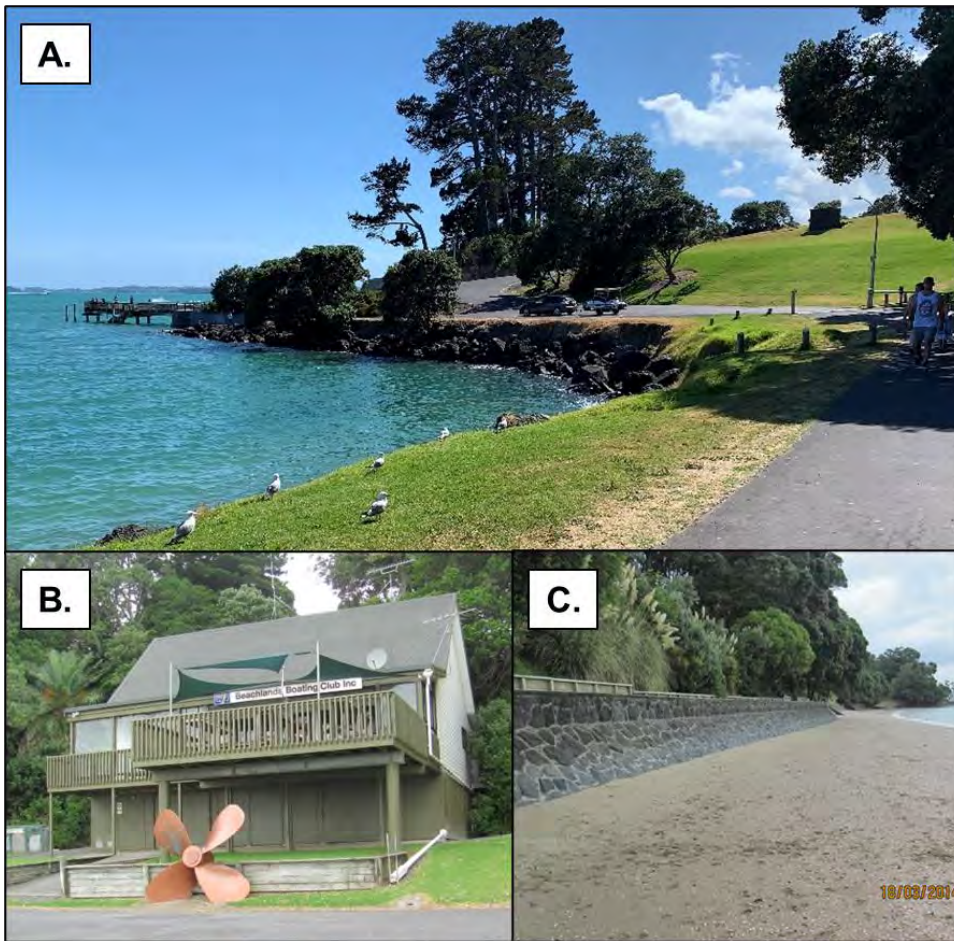


Figure 16: Photos of Sunkist Bay at high tide with top of revetment visible (A), the Beachlands Boating Club located along the foreshore (B), and the western seawall (C)

Due to the amenity of this area and its high use as public space, we recommend ‘holding the line’ to preserve access to and along the coast as a matter of national importance across the short, medium, and long-term.

As part of updating the Reserve Management Plan for Sunkist Bay, work is underway to improve connectivity and beach access for recreational activities in this area. However, due to increasing inundation risk, especially with ongoing sea-level rise in the medium and long-term, we recommend that non-coastal defence related assets (e.g. carpark, playground, public toilets) be realigned out of the reclaimed area as they come up for renewal. Coastal assets outside of the reclaimed area (such as the wharf and boat ramp), provide valuable amenity for the Kauriwhakiwhaki/Beachlands area and should be maintained and renewed, with resilience to climate change factored into the future design.

The recommended coastal management strategy is:

Short Term	Medium Term	Long Term
Hold The Line	Hold The Line	Hold The Line

7.1.4 Coastal Stretch 4: Sunkist Bay Reserve to Shelly Bay Reserve

This coastal stretch includes the area between Sunkist Bay Reserve and Shelly Bay Reserve. Ngāi Tai record the traditional names of this coastal stretch as Te Paritū, Te Kawau and Te Hiore Pā.

Pōhutakawa line the coastal edge and aid in protecting the coastal cliffs which have cultural significance to Ngāi Tai. This coastal cliff area is also the site of culturally significant caves of which, due to time and erosion, only remnants remain.

There is limited public land along this coastal cliff area. There are numerous private accessways and coastal defences along this stretch of coast. In areas not owned by Auckland Council, an adaptation strategy of ‘no active intervention’ is applicable across all timeframes.

At the northern end of Pōhutukawa Road, a coastal stairway at Snapper Rock provides access to the foreshore. This stairway is at high risk of erosion and has a history of damage. We recommend options for strengthening this accessway be considered due to its high value to the local community.

Shelly Bay Reserve is a beach reserve with walkways and public toilets, valued by the local community for both active and passive recreation. There is also an abandoned boat shed occupying the coastal marine area, which was originally constructed in 1938 and rebuilt in 1996 but has fallen into disrepair and is currently not consented. This coastal stretch has also been identified as a Significant Ecological Area (Terrestrial). Due to sea level rise, the reserve is impacted by coastal squeeze with no remaining dry high-tide beach and the lower reserve is increasingly at risk of inundation during storm events. The reserve is also intersected by several overland flow paths and scouring during heavy rainfall occurs below the beach access. We recommend that assets in this area be renewed to support and maintain access and walking amenity, and that a more landward location is considered for future renewal of the toilet block. Hazards in this area need to be monitored across all timeframes.

The recommended coastal management strategy is:

Short Term	Medium Term	Long Term
Limited Intervention	Limited Intervention	Limited Intervention

7.2 Te Hiore ki Ōmana/Leigh Auton Reserve to Ōmana Regional Park

The Te Hiore ki Ōmana Ōmana/Leigh Auton Reserve to Ōmana Regional Park unit contains coastal stretches 5 to 7 and includes Te Puru Park and Ōmana Regional Park.

Ngāi Tai are the tāngata whenua, the original inhabitants of this coastal area for over 1,000 years. The name Ōmana is a shortened reference to the Ngāi Tai ancestor Manawatere, whose historical pā site is located within the regional park. It is the wish of Ngāi Tai that the name of the regional park be changed to Ō Manawatere which translates to ‘of Manawatere’.

While specific cultural values and outcomes for each coastal stretch will be shared and developed through the ongoing involvement of iwi in respective work programmes, guiding objectives and outcomes which have informed the development of adaptation strategies are set out in Section 3.3.4.

This unit was advocated for by the local community as a popular walking, cycling (with reference to the Karuiwhakiwhaki/Beachlands to Maraetai walkway) and hiking spot, with cultural and historical significance, vital community assets, scenic viewpoints and native New Zealand flora and fauna (particularly in the regional park). This feedback was captured via digital and in-person community feedback and used to form community objectives. Feedback was then considered during the decision-making phase for the adaptation strategies in the short, medium and long term.

This can be seen in the decision to ‘hold the line’ in the medium and long term for Te Puru Park and the realignment of the Kauriwhakiwhaki/Beachlands to Maraetai walkway back from the cliff edge due to coastal erosion, of which is already taking place. Because of its value to the community as a popular walking track, ongoing monitoring of this walkway is recommended with future landward realignment likely required in the future.

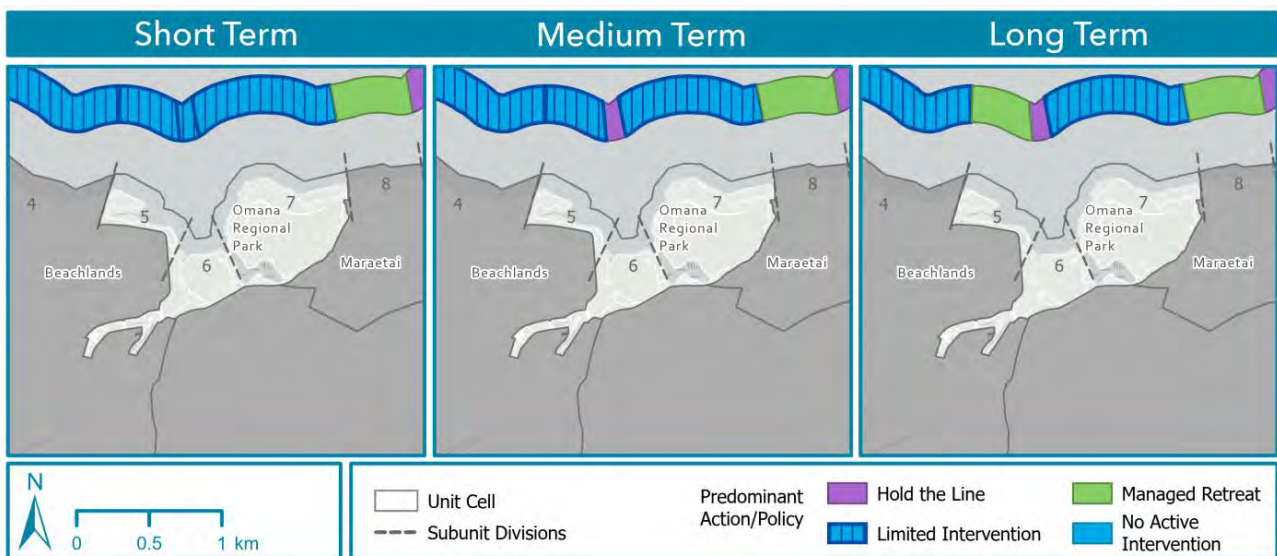


Figure 17: Adaptation strategies for coastal stretches within the Ōmana Regional Park unit area.

Coastal Stretch	Short-term	Medium-term	Long-term
5	Limited Intervention	Limited Intervention	Managed Retreat
6	Limited Intervention	Hold The Line	Hold The Line
7	Limited Intervention	Limited Intervention	Limited Intervention

7.2.1 Coastal Stretch 5: Te Hiore Pā/Leigh Auton Reserve

This coastal stretch covers Te Hiore Pā/Leigh Auton Reserve, a coastal cliff reserve which follows a small estuarine inlet.

Te Hiore Pā is part of a wider Ngāi Tai settlement which extended between Te Puru and Ōmana. This settlement was traditionally supported by the surrounding taiao including an abundance of kūtai (mussels), pipi, tuangi (cockles), tipa (scallops) and tio (oysters). All these customary kaimoana species have been significantly impacted as a result of historic and recent development and land-based activities, leaving Ngāi Tai without means to traditionally manaaki their manuhiri (visitors/guest). The history of this area remains as important to Ngāi Tai today as it was to their ancestors of the pre-colonial times.

This piece of the coastline is a major part of the Kauriwhakiwhaki/Beachlands-Maraetai coastal walkway, and the reserve has high amenity value, with pathways connected by a pedestrian bridge. We recommend that small-scale interventions such as cliff planting and stormwater monitoring be undertaken in the short to medium term to ensure continued access across this area. Recognising the ongoing coastal erosion and instability risk, pathways closest to the coastal edge need to be realigned landward in the longer term.

The recommended coastal management strategy is:

Short Term	Medium Term	Long Term
Limited Intervention	Limited Intervention	Managed Retreat

7.2.2 Coastal Stretch 6: Te Puru Park

This coastal stretch covers Te Puru Park, a low-lying coastal reserve edged by Te Puru stream in the east and stormwater drainage outlet channel in the west. Te Puru contains a diverse range of assets and values, with multiple cultural heritage sites including the pou located on the north-eastern side of the park area (Figure 18 below).

Further to the commentary on the cultural importance of the area stated in the Te Hiore Pā/Leigh Auton Reserve stretch above, Te Puru contains two important awa, these being Te Puru and Te Ruangaengae. Ngāi Tai considers these awa and their margins to be wāhi tapu (sacred). Historically Te Puru was covered in kauri and other native species of importance and this area provided an abundance of manu (birds) and puihi (uncultivated foods of the forest) to Ngāi Tai. The shoreline of Te Puru supported tauranga waka (waka landing sites).

The development of Te Puru sports park by Auckland Council was opposed by Ngāi Tai due to their cultural knowledge of the area in respect of ancient burials. Some of these burials were unearthed during the development causing great spiritual hurt to Ngāi Tai and their ancestors. Auckland Council's mitigation of this desecration was to provide the landscaped burial mound and pou in the centre of the mound.

Te Puru Park is within the Outstanding Natural Feature area that extends from the small embayment across the regional park to the small stream at the boundary with Ōmana Esplanade. Due to its low-lying topography, the park is at risk of coastal inundation and rainfall flooding. At 1m of sea level rise without intervention, a large portion of Te Puru Park may be regularly inundated. Stormwater systems in the park area have had maintenance issues, including blockages in the past. Beach sand accumulation has directed stream outflows to scour adjacent coastal edge. Inundation events, either from coastal storms or rainfall events, can cause flooding along the Whitford Maraetai Road, reducing access to communities further down the coast.



Figure 18: Eastern end of Te Puru park and stream outlet

This coastal stretch contains a variety of amenity assets including sports fields, walking paths, and a skate park. The park is the only open flat area available for sports fields in the Beachlands area. Because of this, the local community has advocated for the ongoing protection of Te Puru Park.

Key infrastructure includes the Watercare Maraetai to Beachlands rising main which goes across the bridge at Whitford Maraetai Road and needs to be protected to maintain the level of service to Maraetai.

In the short term, we recommend that coastal hazards and climate change impacts be mitigated through 'limited intervention' (e.g. small-scale sand transfer at the stream channel outlet to avoid flow scouring adjacent to the reserve and enhanced planting to support taiao as a buffer around the stream).

Due to cultural considerations and the high amenity value of the park, we recommend ‘holding the line’ against ongoing inundation impacts in this area to maintain the existing value in the medium and long term. This may require consideration of nature-based solutions along the shoreline, hard protection structures or raising land levels. Noting the recorded and potential for further unlisted heritage and archaeological sites in this area, potential options will need to be consulted with iwi/tāngata whenua and as appropriate, for the surrounding Watercare assets.

The recommended coastal management strategies are:

Short Term	Medium Term	Long Term
Limited Intervention	Hold The Line	Hold The Line

7.2.3 Coastal Stretch 7: Ōmana Regional Park

Ōmana Regional Park is located on a gently contoured knoll, which slopes up to the highest point 40 m above sea level. The low cliff coastline is identified as a Significant Ecological Area, including both marine and terrestrial overlays, as well as being part of an Outstanding Natural Feature.

Located on the cliff edge of this stretch, utilised for its natural defences, is ŌManawatere Pā which holds cultural significance to Ngāi Tai and is a scheduled historic heritage place under the AUP¹². Also within this stretch is Te Ruatauiroha Pā and its defensive ditch which are located adjacent to ŌManawatere Pā, on the headland to the east of Te Puru.

Pōhutakawa, which line the coastal edge, protect the coastal cliffs which have cultural significance to Ngāi Tai. This coastal cliff area is also the site of culturally significant caves for which, over time and as a result of erosion and other processes, only remnants remain. The area in front of the coastal cliffs is known to Ngāi Tai as Te Tahua, perhaps best understood today as the atea (courtyard) of Tāngaroa. Te Tahua also speaks to the ‘heap’/abundance of kaimoana which was easily accessible in the moana directly off this area. Given the significance, direct engagement with Ngāi Tai is required ahead of any works or disturbance activities within this stretch.

¹² Schedule 14.1 ID 1291



Figure 19: Ōmana Regional Park - Aerial view looking towards Te Puru Park from Ōmana

The Kauriwhakiwhaki/Beachlands-Maraetai coastal walkway path follows a route between pasture and the campground. It provides the main walking and cycling access through the regional park, connecting the Te Puru stream boardwalk bridge to Ōmana Beach Road. There is a perimeter track around the cliff top between the campground and coastal margin. This walkway was recently realigned back from the cliff edge due to coastal erosion, and ongoing monitoring is recommended with future landward realignment likely required. Campsites are located in the south-eastern part of the park, landward of the perimeter walking track.

To support the natural environment and maintain access and amenity along this section of coast, a strategy of ‘limited intervention’ is recommended across all time horizons.

The recommended coastal management strategy is:

Short Term	Medium Term	Long Term
Limited Intervention	Limited Intervention	Limited Intervention

7.3 Ōmana ki Maraetai

The Ōmana ki Maraetai unit area contains coastal stretches 8 through to 13 and includes Ōmana Esplanade and Maraetai Boat Club, wharf and beach areas

For over 1,000 years, Ngāi Tai has been the tāngata whenua, the original inhabitants of this coastal area. This area is known to Ngāi Tai as Te Marae o Tai which speaks to the association that Ngāi Tai have with the moana and not the typical association that the kupu ‘marae’ would have with whenua.

Te Maraetai means ‘The Marae of Tides’ or ‘The Enclosed Tide’, so named for the moana being sheltered by Te Motu Ārai Roa (The Long Sheltered Island)/Waiheke Island. Maraetai has for many years been incorrectly translated as ‘A Meeting Place by the Sea’, a translation of European origin. The extent of Te Maraetai for Ngāi Tai is the now present-day Tāmaki Strait.

The wider area of Maraetai, both the whenua and the moana, are customary food gathering sites. Many of these sites have been impacted or destroyed by development and land-based activities, however, there are many traditional gathering sites throughout the area still known and used by Ngāi Tai.

The prominent headland that sits between Maraetai Beach and Te Wai o Maruwhenua/Waiomanu, which includes Papawhitu Pā and Te Aute to Kakaramea/Magazine Bay, is provided for under the Waiomanu Co-management Committee. This committee, governed by Ngāi Tai and Auckland Council, has oversight of the management and control of assets and activities within the footprint of this area.

While specific cultural values and outcomes for each coastal stretch will be shared and developed through ongoing involvement of iwi in respective work programmes, guiding objectives and outcomes which have informed the development adaptation strategies are set out in Section 3.3.4.

Community feedback showed that the local community is well aware of the coastal hazard issues currently impacting Maraetai. This unit was primarily advocated for by the local community as providing a variety of well-loved and utilised walking tracks along the coast (the Ōmana Esplanade and the Kauriwhakiwhaki/Beachlands to Maraetai walkway).

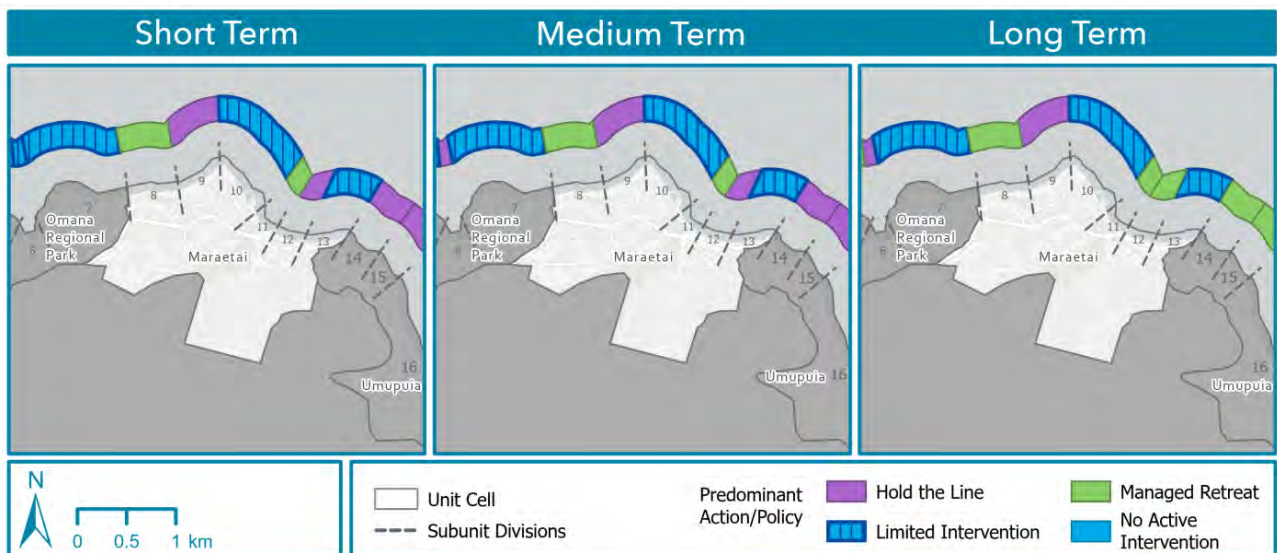


Figure 20: Adaptation strategies for coastal stretches within the Maraetai unit area

Coastal Stretch	Short-term	Medium-term	Long-term
8	Managed Retreat	Managed Retreat	Managed Retreat
9	Hold The Line	Hold The Line	Hold The Line
10	Limited Intervention	Limited Intervention	Limited Intervention
11	Managed Retreat	Managed Retreat	Managed Retreat
12	Hold The Line	Hold The Line	Managed Retreat
13	Limited Intervention	Limited Intervention	Limited Intervention

7.3.1 Coastal Stretch 8: Ōmana Esplanade Reserve from Ōmana Stream to boat ramp

This coastal stretch covers the area between Ōmana Stream at the boundary with Ōmana Regional Park to the timber boat ramp at Ōmana Beach.

The cultural significance of this unit for Ngāi Tai is described within the cultural statements provided for the Ōmana unit above.

It includes a narrow one-way sealed vehicle accessway owned by Parks, Sports, and Recreation, which connects Ōmana Esplanade with Ōmana Beach Road. The Beachlands-Maraetai coastal footpath is located seaward of the accessway adjacent to the coastline and is heavily impacted by erosion, with some parts of the path undermined due to beach sand level fluctuations and several trees have been lost along this section of coastline over recent years (Figure 21A).

In the short term, we recommend that this part of the esplanade reserve be closed to cars and that the sealed accessway be converted into a shared walking and cycling path. The current footpath could be realigned, allowing space for natural beach processes to continue. Closing of this vehicle access will not impact vehicle access to other amenities in the reserve (e.g. carpark, playground, public toilets), as these are connected by road via Ōmana Esplanade on the eastern side.

All assets within the reserve are exposed to coastal inundation, coastal erosion, and rainfall flooding. Due to increasing risk, we recommend that assets be realigned out of the hazard zone as they come up for renewal. This 'Managed Retreat' will provide space for the beach environment and a more natural and wider backshore area to prevent coastal squeeze over time. There are several Watercare assets along this stretch located in proximity to the coast which will need to be considered as part of the implementation of the Managed Retreat strategy.

The local community is highly active in this area and has been involved in repairing damage to the boat ramp after the 2018 storm event, as well as beach clean-up to return storm-deposited sand and shell from the reserve to the beach. Volunteering opportunities should continue to be made available where possible, with the local school previously undertaking backshore planting along the low-lying reserve to the west.



Figure 21: Photographs of western end of Ōmana Esplanade showing on-going erosion (A), eastern end of Ōmana Esplanade along the carpark area (B), and playground facilities in Ōmana Esplanade Reserve (C)

Ōmana stream discharges to the coast at the boundary between Ōmana Regional Park and Ōmana Esplanade and is a known floodplain, with the stream outlet channel location changing in response to beach sand accumulation during periods of low stream flow.

Regular monitoring, and occasional maintenance of Ōmana stream mouth is required to reduce ponding and to direct stream channel flow away from scouring the adjacent reserve. Stormwater outlet pipes are often blocked due to sand build up and require regular monitoring. With the impacts of sea level rise it is likely that this issue will be exacerbated reducing the capacity for water to be drained from the land. The timber boat ramp at the eastern end of this coastal stretch is a well-used recreational boat launching access point that we recommend is retained at this time.

The recommended coastal management strategy is:

Short Term	Medium Term	Long Term
Managed Retreat	Managed Retreat	Managed Retreat

7.3.2 Coastal Stretch 9: Ōmana Esplanade Reserve - East from boat ramp toward Te Pene Point

This coastal stretch includes the area between the boat ramp in the centre of Ōmana Beach and the headland at Te Pene Point.

The cultural significance of this unit is connected to the stretch being recognised as a wāhi tapu/koīwi site for Ngāi Tai. Given the significance, direct engagement with Ngāi Tai is required ahead of any works or disturbance activities within this stretch.

This stretch consists mainly of a beach environment backed by a largely unarmoured low lying (<5 m) cliff area with some mature Pōhutukawa. There is some tipped rock on the upper beach and a series of stormwater outfalls. The Beachlands-Maraetai coastal walkway is located in close proximity to the top of the bank and runs adjacent to Ōmana Esplanade. The Watercare wastewater rising main also runs adjacent to Ōmana Esplanade on the landward side of the road.



Figure 22: Photo of low-lying cliff edge (A) and the revetment protecting Te Pene Point (B)

The small headland at Te Pene Point defines the easternmost end of this coastal stretch. The western side of the headland is protected by a rock revetment built in 2019 following the January 2018 storms (Figure 22B). Due to the high amenity value of this section of the Beachlands-Maraetai walkway and critical infrastructure considerations, we recommend ‘holding the line’ against erosion along this stretch. However, the realignment of assets to a more landward location is recommended, where practicable, to reduce dependency on hard protection structures.

The recommended coastal management strategy for this coastal stretch is:

Short Term	Medium Term	Long Term
Hold The Line	Hold The Line	Hold The Line

7.3.3 Coastal Stretch 10: Te Pene Point down to Maraetai Boat Club

This coastal stretch includes the area between Te Pene Point and Maraetai Beach, including the Maraetai Boat Club. Te Pene beach is a small sandy beach east of the headland. The coastal stretch is identified as a Marine Significant Ecological Area.

The cultural significance of this unit for Ngāi Tai is described within the cultural statements provided for the Maraetai unit above. Given the significance, direct engagement with Ngāi Tai is required ahead of any works or disturbance activities within this stretch.

Critical submarine electric cables which service Waiheke Island come ashore at the beach in this stretch and are regularly exposed following storm events.

The Kauriwhakiwhaki/Beachlands-Maraetai coastal walkway continues via a section known as “Tracy’s Walkway”, a narrow gravel track around the cliff from Te Pene Point to Maraetai Boating Club and includes steps from Sea View Terrace that provide access to the coastal area and the breakwaters which protect the boat club. As this connection is a key part of the Kauriwhakiwhaki/Beachlands-Maraetai coastal walkway, it is recommended that ‘limited intervention’ is undertaken along this stretch of coast to maintain safe pedestrian access and amenity.

Maraetai Boat Club is a privately owned facility with a community lease. In the long-term, sea-level rise may require that the boat club is reconfigured and upgraded to support continued use.



Figure 23: Aerial photograph of Maraetai Boat Club and coastal stretch 10

The recommended coastal management strategies for this coastal stretch are:

Short Term	Medium Term	Long Term
Limited Intervention	Limited Intervention	Limited Intervention

7.3.4 Coastal Stretch 11: Maraetai Beach (West of wharf)

This coastal stretch includes the sandy beach area between the Maraetai Beach Boat Club and the Maraetai Beach wharf and is backed by Maraetai Park which is a wide grass reserve.

The cultural significance of this unit for Ngāi Tai is described within the cultural statements previously provided for the Maraetai section. Given the significance, direct engagement with Ngāi Tai is required ahead of any works or disturbance activities within this stretch.

There is a public boat ramp and helicopter landing pad at the western end of this coastal stretch, with a carpark, toilet block and playgrounds set further landward on Maraetai Park. An inlet located beneath Maraetai Drive requires ongoing monitoring to ensure debris does not block the culvert that discharges to the west of the boat ramp.

The Kauriwhakiwhaki/Beachlands-Maraetai coastal walkway is located close to the existing coastal edge with between 0-4 m grass reserve remaining. The tarseal along the edge of the helicopter pad is lifting and sections of the coastal walkway have been undermined and required additional concrete footing reinforcements. The concrete walkway transitions to a boardwalk immediately landward of the wharf to provide a connection to the pedestrian crossing for access to cafes located on the landward side of Maraetai Drive. This area sits within a flood plain and is highly exposed to coastal inundation (5% AEP). An extensive Watercare stormwater pipe network is located through the reserve, approximately 20-30 m landward of the existing coastal edge.



Figure 24: Western side of Maraetai Beach. Photograph A includes the boat ramp (facing east). Photograph B shows the coastal pathway (facing west)

A high-level strategy of ‘Managed Retreat’ of the coastal walkway is recommended across the short, medium, and long term, noting the wide area of available grass reserve and set-back distance of the existing underground pipe network. This strategy will support taiao (nature) and mitigate potential impacts of coastal squeeze at Maraetai Beach by providing a greater backshore and wider high tide beach area. The helipad at the western end of this stretch is considered critical infrastructure for emergency services. We recommend an analysis be undertaken on other locations for helipads not located in such a high-risk zone.

The recommended coastal management strategy for this coastal stretch is:

Short Term	Medium Term	Long Term
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Managed Retreat	Managed Retreat	Managed Retreat
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7.3.5 Coastal Stretch 12: Maraetai Beach (East of wharf to bus stop)

This coastal stretch is the central part of Maraetai Beach, between Maraetai wharf and the bus stop along Maraetai Drive.

The cultural significance of this unit for Ngāi Tai is described within the cultural statements provided for the Maraetai unit above. Given the significance, direct engagement with Ngāi Tai is required ahead of any works or disturbance activities within this stretch.

The coastal environment consists of a sandy beach with a timber backstop seawall which protects the narrow road berm, carpark and Maraetai Drive. A network of Watercare pipes is located in the central extent of Maraetai Beach and runs along the landward side of Maraetai Drive. The seawall is owned by Auckland Transport and requires monitoring and occasional maintenance of the fronting beach sand buffer. While the seawall provides protection from erosion, it was not designed to protect from inundation and is currently overtopped during 20% AEP (1-in-5 year) storm events that cause frequent damage to the narrow berm between the seawall and carparks. Within this stretch, a stormwater gravity main outlet crosses the coastal marine area. This pipe (and an additional smaller pipe) passes through the sea wall, and both are exposed on the beach when sand levels lower. While these pipes are currently functional at king tide levels, they are not designed to cope with higher water levels. During major storm events, drainage of stormwater in this area is a significant issue.

Built in the 1920s, the Maraetai wharf is a heritage structure and an iconic part of this area. The wharf was damaged in the 2018 storm event. Further repairs or replacement of the wharf is required in the short-term due to progressive damage.



Figure 25: Aerial photograph of eastern side of Maraetai Beach (A). Close up of Maraetai Wharf (B)

Due to the high amenity value of this area, we recommend that the beach area be maintained. In the short term, this can be achieved by continuing to ‘hold the line’ by maintaining the seawall and increasing sand levels. In the medium to long term, however, this area will require ‘Managed Retreat’ to reduce the coastal flooding risk and reduce coastal squeeze to provide space for the beach environment and ongoing coastal access. Additionally, in the longer term the current seawall may require work to increase resilience to wave overtopping and to reduce damage to the berm.

The recommended coastal management strategy for this coastal stretch is:

Short Term	Medium Term	Long Term
Hold The Line	Hold The Line	Managed Retreat

7.3.6 Coastal Stretch 13: Maraetai Beach (bus stop to Te Wai o Maruwhenua/Waiomanu reserve)

This coastal stretch includes the area between the bus stop on Maraetai Drive and Te Wai o Maruwhenua/Waiomanu Reserve.

The cultural significance of this unit for Ngāi Tai is described within the cultural statements provided for the Maraetai unit above. Given the significance, direct engagement with Ngāi Tai is required ahead of any works or disturbance activities within this stretch.

The coastal environment consists of a sandy beach backed by a grassed passive recreation area with a rocky foreshore around the eastern headland. Several pockets of dune planting have been undertaken at the eastern end of the seawall that provide a natural vegetated buffer to the bus stop and adjacent carpark. Maraetai Drive connects with Maraetai Coast Road at this point. Primary assets within this stretch include a toilet block located on the landward side of the road. Although Maraetai Coast Road continues to run parallel to the coast through this stretch, this section of the road is less exposed to hazards due to increasing elevation. The headland is also a pā site which holds cultural significance for iwi/tāngata whenua and is a scheduled historic heritage place under the AUP¹³.

The recommended coastal management strategy for this coastal stretch is:

Short Term	Medium Term	Long Term
Limited Intervention	Limited Intervention	Limited Intervention

7.4 Te Wai o Maruwhenua/Waiomanu ki Umupuia

The Te Wai o Maruwhenua/Waiomanu ki Umupuia coastal unit contains stretches 14 to 17 and includes Waiomanu Bay, Kakaramea/Magazine Bay and Umupuia Beach.

For over 1,000 years, Ngāi Tai have been the tāngata whenua, the original inhabitants of this coastal area. The name Umupuia speaks to a historical hot spring used by Ngāi Tai to cook kai. The spring was damaged by early settlers, circa early 1900s, however, Ngāi Tai have named their marae for the spring.

The wider area of Umupuia, both the whenua and the moana, are customary food gathering sites. Many of these sites have been impacted or destroyed by development and land-based activities and stormwater discharges, however there are many traditional gathering sites throughout the area still known and used by Ngāi Tai.

Ngāi Tai, with Ministry of Primary Industries, placed a rāhui on Umupuia Beach restricting the collection of tuangi (cockle). These tuangi (cockle) beds have been significantly impacted by land-based sediments, pollution and discharges from the waterways, as well as over gathering. The rāhui was established to enable recovery and regeneration of the tuangi (cockle) beds. This rāhui has been

¹³ Schedule 14.1 ID 1292

in place for at least 10 years with no foreseeable end, given there has been no noticeable recovery of the beds or increase in size of the shellfish.

The prominent headland that sits between Maraetai and Te Wai o Maruwhenua/Waiomanu, which includes Papawhitu Pā and Te Aute to Kakaramea/Magazine Bay, is provided for under the Waiomanu Co-management Committee. This committee, governed by Ngāi Tai and Auckland Council, has oversight of the management and control of assets and the footprint of this area.

While specific cultural values and outcomes for each coastal stretch will be shared and developed through the ongoing involvement of iwi in respective work programmes, guiding objectives and outcomes which have informed the development adaptation strategies are set out in Section 3.3.4.

A reoccurring theme in community feedback was concern for the Maraetai Coast Road in this unit area, recognising it as a valued secondary access road to Kauriwhakiwhaki/Beachlands and Maraetai. However, Ngāi Tai advocate for the road to be transformed into a shared path for pedestrians and cyclists only (or at least close the road to heavy vehicles) from the eastern end of Te Wai o Maruwhenua/Waiomanu. This suggestion was acknowledged and passed on to Auckland Transport.

The following community objective was developed to capture community feedback related to roading and transport concerns:

- Work with Auckland Transport to develop a resilient road network for the area, which supports increased access for a diverse range of transport types and coastal access for recreation.

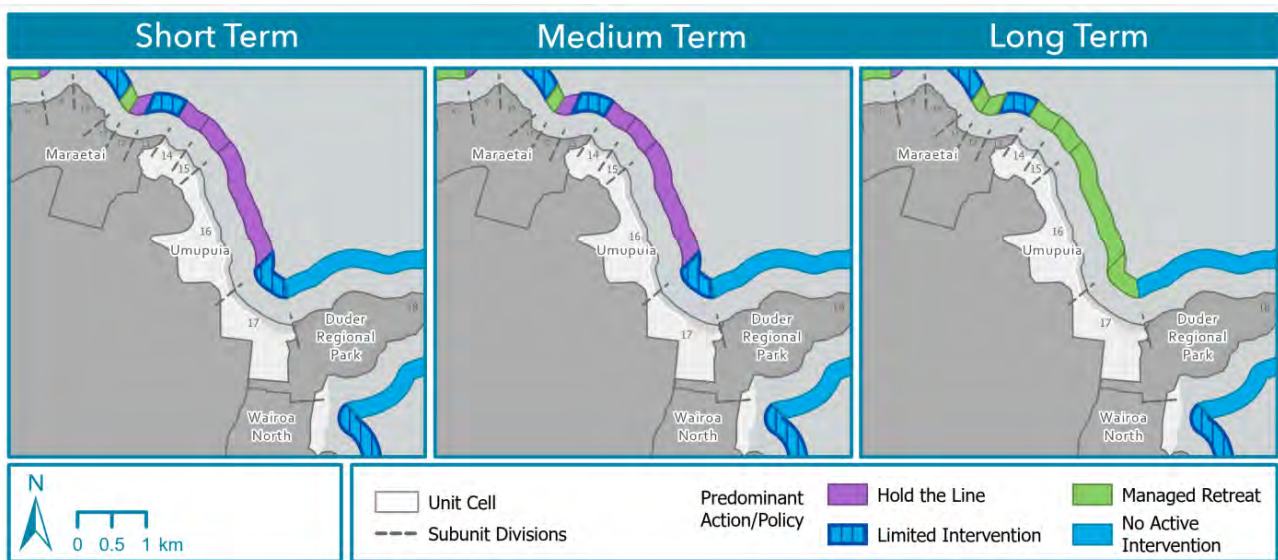


Figure 26: Adaptation strategies for coastal stretches within the Umupuia unit area

Coastal Stretch	Short-term	Medium-term	Long-term
14	Hold The Line	Hold The Line	Managed Retreat
15	Hold The Line	Hold the Line	Managed Retreat
16	Hold The Line	Hold The Line	Managed Retreat
17	Limited Intervention	Limited Intervention	Managed Retreat

7.4.1 Coastal Stretch 14: Te Wai o Maruwhenua/Waiomanu Bay

This coastal stretch includes the area along Te Wai o Maruwhenua/Waiomanu Bay, which is an important heritage area that includes a shipwreck and old military camps.

The cultural significance of this unit for Ngāi Tai is described within the cultural statements provided for the Te Wai o Maruwhenua/Waiomanu ki Umupuia unit above. Given the significance, direct engagement with Ngāi Tai is required ahead of any works or disturbance activities within this stretch.

The coastal environment consists of rocky foreshore headlands at both ends of the coastal stretch with a sandy beach backed by a narrow strip of reserve which is co-managed by Ngāi Tai and Auckland Council. The Maraetai Coast Road runs along this stretch through the reserve. The majority of this coastal stretch is protected by a sloping grouted sea wall with reinforced concrete footing, which is consented until 2023. We recommend ‘holding the line’ along this stretch until the full renewal of the seawall is required in the medium term, and at that time there may be opportunity for realignment to provide a wider beach system. In the longer term, this area will require ‘Managed Retreat’ due to increasing inundation.



Figure 27: Photos of Te Wai o Maruwhenua/Waiomanu Bay from the west (A) looking toward Te Aute and east (B) looking towards Papawhiti Pā

The recommended coastal management strategy for this coastal stretch is:

Short Term	Medium Term	Long Term
Hold The Line	Hold The Line	Managed Retreat

7.4.2 Coastal Stretch 15: Kakaramea/Magazine Bay

The coastal environment of Kakaramea/Magazine Bay consists of a sandy beach situated between rocky foreshore headlands. Te Wai o Maruwhenua/Waiomanu Reserve continues along this stretch.

The cultural significance of this unit for Ngāi Tai is described within the cultural statements provided for Te Wai o Maruwhenua/Waiomanu ki Umupuia unit above. This stretch is also wāhi tapu to Ngāi Tai. Given the significance, direct engagement with Ngāi Tai is required ahead of any works or disturbance activities within this stretch.

The reserve area and road corridor are protected by a concrete revetment, owned by Auckland Transport, which has experienced maintenance issues (e.g. cracking) and may require upgrading or renewal in the short term.

Kakaramea/Magazine Bay has a wharf, two car parks and a toilet block located on the landward side of Maraetai Coast Road. The wharf is regularly used for passive recreation by the community for fishing and water access. The Navy also uses the wharf as a launching facility. The bay is an identified heritage area.



Figure 28: Aerial photograph of Kakaramea/Magazine Bay (A) and photo looking landward (B)

Both the carpark and toilet block are susceptible to rainfall flooding. The stormwater outlet for the car park has issues with blockage and requires regular cleaning.

The recommended coastal management strategy for this coastal stretch is:

Short Term	Medium Term	Long Term
Hold The Line	Hold the Line	Managed Retreat

7.4.3 Coastal Stretch 16: Headland south of Kakaramea/Magazine Bay to Umupuia

This coastal stretch includes the area between the headland at the south of Kakaramea/Magazine Bay and the beginning of Umupuia beach. The moana between Kakaramea/Magazine Bay and Umupuia is known to Ngāi Tai as Wainui.

The cultural significance of this unit for Ngāi Tai is described within the cultural statements provided for Te Wai o Maruwhenua/Waiomanu ki Umupuia unit above. Given the significance, direct engagement with Ngāi Tai is required ahead of any works or disturbance activities within this stretch.

The coastal environment consists of a combination of sandy beaches, small coastal cliffs and rocky foreshore backed by a narrow strip of grassy areas and trees running alongside Maraetai Coast Road, of which is located in close proximity to the coastal edge. Auckland Transport currently uses tipped rock to help reduce the impacts of erosion along this section of the coastal road. This has on occasion, resulted in damage to some trees. The road is highly exposed to inundation and erosion, particularly landslides due to cliff instability. This stretch of road connects the Umupuia area to Beachlands and is the only alternative to the inland route via Clevedon. Auckland Council manages the Umupuia Foreshore Reserve that is a narrow strip between the coastal edge and the road.

The recommended coastal management strategy for this coastal stretch is:

Short Term	Medium Term	Long Term
Hold The Line	Hold The Line	Managed Retreat

7.4.4 Coastal Stretch 17: Umupuia to Whakakaiwhara Peninsula

This coastal stretch includes Umupuia from the northern rocky foreshore area to the coastal edge of Whakakaiwhara/Duder Regional Park.

In addition to the cultural significance of this unit for Ngāi Tai described within the cultural statements provided for Te Wai o Maruwhenua/Waiomanu ki Umupuia section previously, this stretch is the site of the Umupuia Marae and urupā.

The Te Kuiti Cottage (Old Duder Home), which also provides accommodation for visitors, is also a heritage location. The name Te Kuiti, gifted by Ngāi Tai, comes from a stream of the same name.

The coastal environment includes a sandy beach backed by narrow reserve and two stream outlets. One stream outlet enters the coastal area through a culvert underneath Maraetai Coast Road at the western end. The other stream outlet joins the coast at the eastern end of the coastal stretch. Auckland Council assets within this stretch include carparks, walkways, a playground, and a toilet block. Several regional park baches provide holiday accommodation for visitors.



Figure 29: Umupuia Marae

Maraetai Coast Road continues along this stretch. This road here is highly exposed to inundation and rainfall flooding and is currently flooded during lower than 20% AEP (1-in-5 year) coastal storm events. Informal tipped rock along the coastal edge between planted Pōhutukawa provides a small amount of protection to the road, however it can still experience regular damage during storm events. Stormwater systems in this area require regular monitoring and maintenance.

In the short term, we recommend that this area be supported by ‘limited intervention’ to manage erosion. However, in the medium to long term increasing flood risk will require ‘Managed Retreat’ of assets and infrastructure to higher ground. The septic tank systems of the regional park baches and toilet block pose a contamination risk if the area is flooded. It is important that these systems at risk to coastal inundation now and in the future comply with relevant standards.

The recommended coastal management strategy for this coastal stretch is:

Short Term	Medium Term	Long Term
Limited Intervention	Limited Intervention	Managed Retreat

7.5 Whakakaiwhara/Duder Regional Park

Whakakaiwhara/Duder Regional Park is represented by one coastal stretch (18).

The park is identified as a site of significance to Ngāi Tai¹⁴ and contains numerous cultural sites. Te Whakakaiwhara Pā¹⁵ historically encompassed the headland coastal cliffs and surrounding whenua.

While specific cultural values and outcomes for each coastal stretch will be shared and developed through the ongoing involvement of iwi in respective work programmes, guiding objectives and outcomes which have informed the development of adaptation strategies are set out in Section 3.3.4.

Walking, running, and cycling tracks, as well as fishing spots and scenic viewpoints, were flagged of great value to the local community that utilise this diverse space on a daily, weekly and monthly basis. Those who provided feedback specific to this coastal stretch referenced their love of the working farms in the regional park, along with the variety and diversity of experiences that they could have in this area.

Adaptation strategies for this section of coastline were developed with the following community objective in mind:

- Have accessible places within coastal reserves where people can enjoy the environment in its natural setting

7.5.1 Coastal Stretch 18: Whakakaiwhara (Duder Regional Park)

This coastal stretch includes the coastal edge of Whakakaiwhara/Duder Regional Park, which consists of sandy beaches, rocky foreshore and coastal cliff areas backed by a forested and grassy regional park land (Figure 30).



¹⁴ AUP Schedule 12 ID 044

¹⁵ AUP Schedule 14.1 ID 1300

Figure 30: Aerial photograph of Whakakaiwhara/Duder Regional Park

There is a coastal track which extends along the peninsula through an active farm. At the western and southern sides of the regional park, major access points are situated within the coastal inundation zone and the area is susceptible to coastal erosion and instability. With this in mind access points to the park may need to be reconfigured in the long term.

To protect the natural character of the coastal environment of the peninsula, the recommended coastal management strategy for this coastal stretch is:

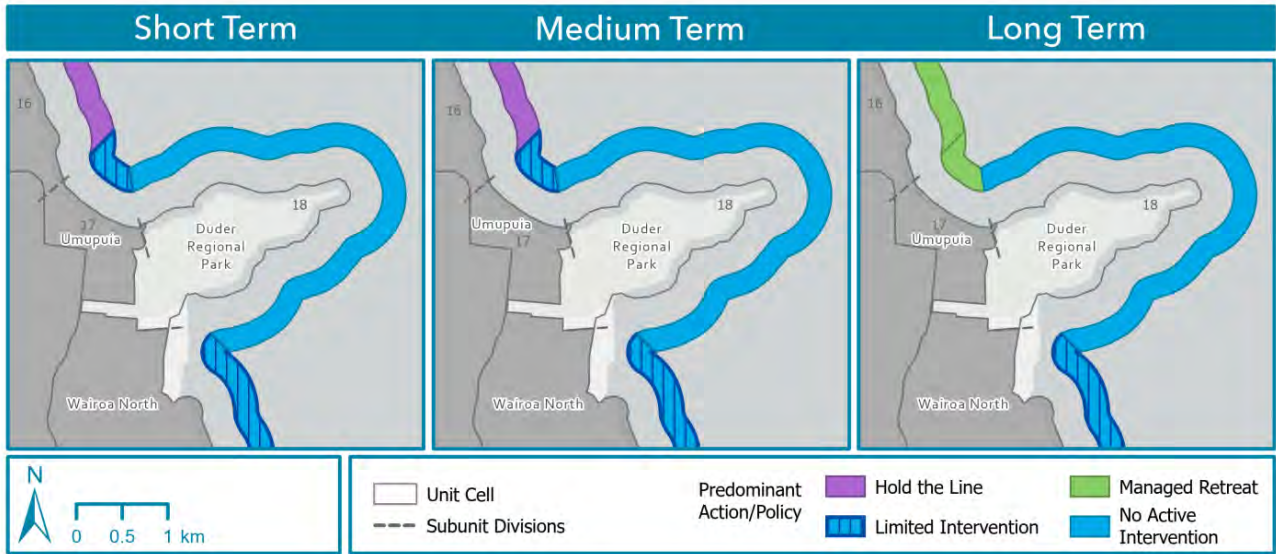


Figure 31: Adaptation strategies for coastal stretches within the Whakakaiwhara/Duder unit area

Coastal Stretch	Short-term	Medium-term	Long-term
18	No Active Intervention	No Active Intervention	No Active Intervention

7.6 Whakakaiwhara ki Te Wairoa/Duder Regional Park to the Wairoa River

This unit includes one coastal stretch (19) from Whakakaiwhara/Duder Regional Park to the western side of Te Wairoa.

While specific cultural values and outcomes for each coastal stretch will be shared and developed through the ongoing involvement of iwi in the works programmes, guiding objectives and outcomes which have informed the development of adaptation strategies are set out in Section 3.3.4.

The significance and value of the Wairoa River to the local community stood out in feedback. Comments left on Social Pinpoint highlighted the Wairoa River as an important area for pleasure craft that are either moored or launched here. The preservation of the Wairoa River, its stop banks and the downstream coastal marine area will continue to allow for public enjoyment of this area. It was noted from community feedback that this area has a AUP designated Coastal Mooring Zone that stretches further upstream. Walking tracks and viewpoints running alongside the river have also been referenced by the local community as adding value to the area.

7.6.1 Coastal Stretch 19: Western side of Te Wairoa

This coastal stretch includes the area south of Whakakaiwhara/Duder Regional Park to the Coastal Marine Area boundary along the west side of Te Wairoa. The open coastal environment consists of sandy beaches and mudflats, while the river edge is estuarine.

This coastal stretch includes remains of extensive villages and pā, including Oue Pā¹⁶ and Pehowai Pā¹⁷. These are protected sites of significance in the AUP. The coastal terraces, intertidal area and river margins are also significant wāhi tapu areas.



Figure 32: Photograph of Te Wairoa heading out to the coast

The area has a mix of private land and Auckland Council land, but largely consists of low-lying private farmland. The area is exposed to inundation at 20% AEP (1-in-5 year) events. Both the North and West Roads in this stretch were heavily flooded during the 2018 storm event. To mitigate flood risks, infrastructure at the southern end of North Road will likely require upgrading in the short term (10 to 20 years). North Road is also impacted by instability, and this will need to be addressed to maintain service provision in this area. We recommend that this area be supported by ‘limited intervention’ across all timeframes, noting that maintenance of flood mitigation infrastructure is of key importance.

¹⁶ AUP Schedule 14.1 ID 1299 and Schedule 12 ID 45

¹⁷ AUP Schedule 14.1 ID 1298

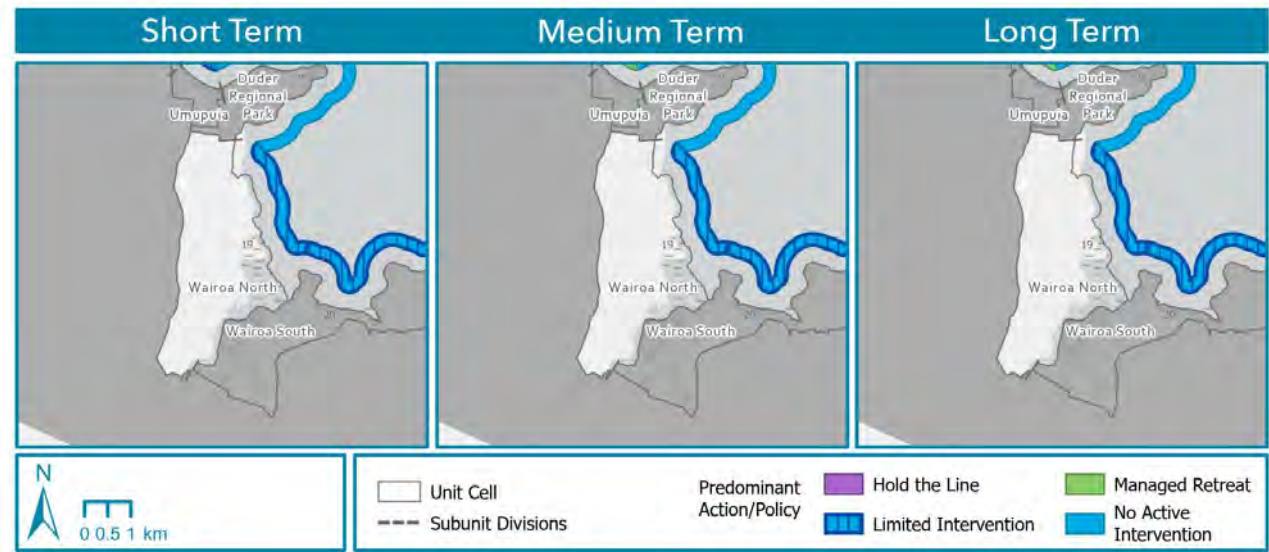


Figure 33: Adaptation strategies for coastal stretches within the Wairoa North unit area

Coastal Stretch	Short-term	Medium-term	Long-term
19	Limited Intervention	Limited Intervention	Limited Intervention

7.7 Te Wairoa ki Waitawa

The Te Wairoa ki Waitawa unit includes one coastal stretch (20) for the Eastern side of Te Wairoa to Waitawa Regional Park. The southern unit of the Wairoa catchment again has been pointed out as an area of value for the community due to its scenic viewpoints and walking tracks. This stretch is also an area of significant value for tāngata whenua.

While specific cultural values and outcomes for each coastal stretch will be shared and developed through the ongoing involvement of iwi in work programmes, guiding objectives and outcomes which have informed the development of adaptation strategies are set out in Section 3.3.4.

The following community objective captures the community feedback received and advocates to:

- Have accessible places within coastal reserves where people can enjoy the environment in its natural setting.

7.7.1 Coastal Stretch 20: Eastern side of Wairoa River

This coastal stretch includes the western side of the Wairoa River from the coastal marine area boundary to the edge of Waitawa Regional Park. The coastal environment consists of the Wairoa River mouth, sandy beaches, estuarine area and rocky foreshore. Similar to the western side, the eastern side of the Wairoa River has extensive cultural and historic heritage values, with a number of heritage locations scheduled in the AUP. The coastal stretch also includes a number of marine and terrestrial significant ecological areas, in particular recognising the valuable habitat for wading birds.

The land is predominantly private farmland, large areas of which are low-lying. The entire area, including the Clevedon-Kawakawa Road is prone to coastal flooding. Inundation events are expected to increase as sea levels rise. The section of road located closer to the coast at the Clevedon Coast Oyster Farm already floods regularly. Generally, all the culverts within the area are under capacity and the bridges are also at risk to the impacts of flooding. As with stretch 19, we recommend that this area be supported by ‘limited intervention’ across all timeframes, noting that maintenance of flood mitigation infrastructure is of key importance.

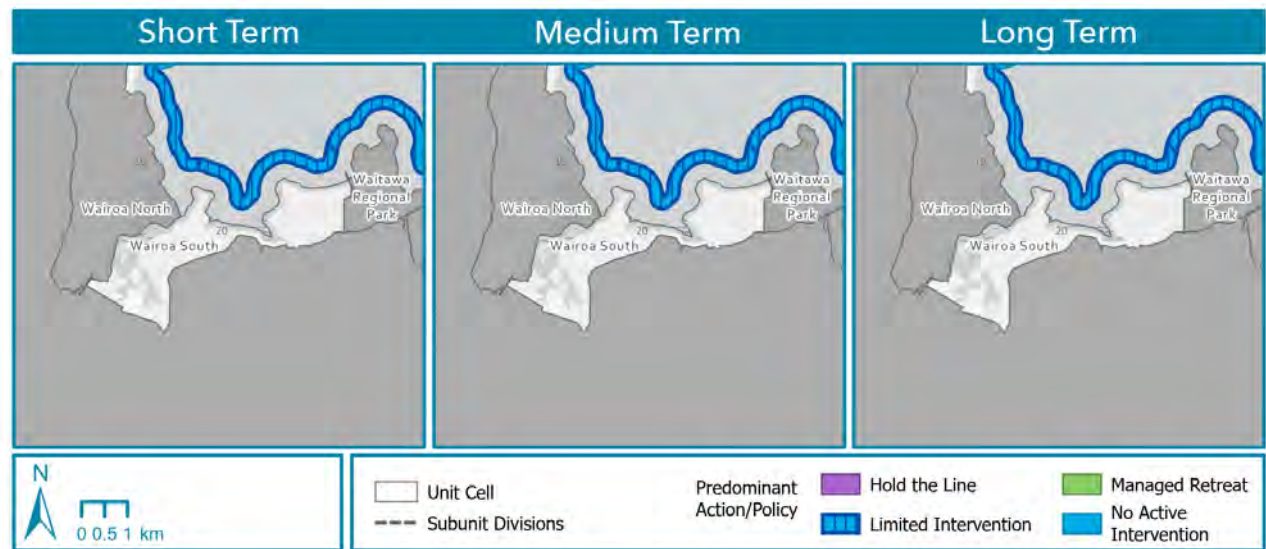


Figure 34: Adaptation strategies for coastal stretches within the Wairoa South unit area

Coastal Stretch	Short-term	Medium-term	Long-term
20	Limited Intervention	Limited Intervention	Limited Intervention

7.8 Waitawa Regional Park

This unit consists of one coastal cell (21) representing Waitawa Regional Park. Waitawa Regional Park was flagged by the local community as a popular scenic spot for walking, fishing, swimming and mountain biking.

While specific cultural values and outcomes for each coastal stretch will be shared and developed through the ongoing involvement of iwi in work programmes, guiding objectives and outcomes which have informed the development of adaptation strategies are set out in Section 3.3.4.

7.8.1 Coastal Stretch 21: Waitawa Regional Park

This coastal stretch includes the coastal edge of Waitawa Regional Park. The coastal environment consists of sandy beaches, rocky foreshore and coastal cliffs, with two terrestrial Significant Ecological Areas on the eastern side of the park.

This coastal stretch is home to numerous archaeological sites recorded on the regional park land at Waitawa and the wider area. Significant pā are located within this stretch, including Koherurahi Pā¹⁸ in the foreground of the figure below, and Mātaitai Pa¹⁹, located to the right of Pawhetau Pt (another site of significance).



Figure 35: Aerial image of Waitawa Regional Park, showing heritage wharf below Koherurahi Pā in the foreground, Pawhetau Pt in the background to the left and Mātaitai Pā to the right.

At the northern end of the regional park there is a wharf, a concrete landing ramp on the eastern side of Koherurahi Point, and a car park and park amenities on the western side of the park (Figure 35). The wharf is a heritage feature and popular fishing spot. The bay at the northern tip of the park is a popular camping site and contains a toilet block and two carparks. A section of shoreline at the north-eastern end of the bay is armoured with an un-engineered concrete and rock structure. Assets within this bay are all susceptible to coastal erosion and instability and will be exposed to regular coastal inundation in the long term.

On the eastern side of the peninsula in Waitawa Bay, there are a number of walking tracks, grassed areas and a section of sealed accessway that is within close proximity to the coast. Given the use of the regional park and its amenity value, we recommend a strategy of ‘limited intervention’ to maintain access to the park and the use of the boat ramp and wharf. However, noting the exposure of

¹⁸ S11/115, Heritage New Zealand Pouhere Taonga List 6203

¹⁹ S11/896

the site to coastal hazards, ongoing monitoring and localised realignment of the carpark out of the hazard zone is recommended.

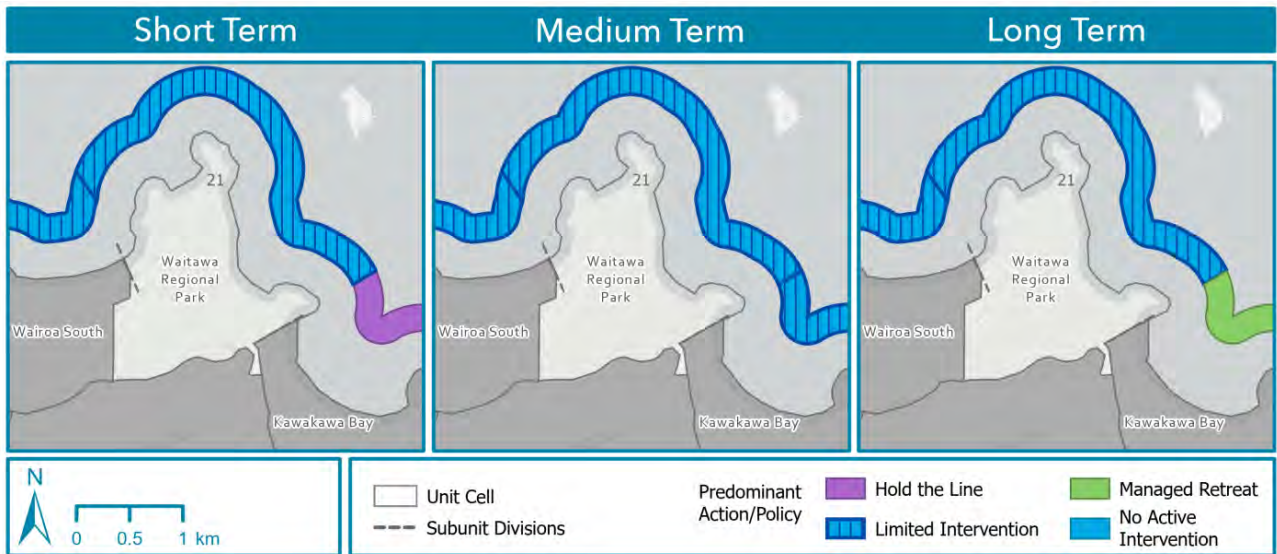


Figure 36: Adaptation strategies for coastal stretches within the Waitawa unit area

Coastal Stretch	Short-term	Medium-term	Long-term
21	Limited Intervention	Limited Intervention	Limited Intervention

7.9 Kawakawa Bay

The Kawakawa Bay unit includes one coastal stretch (22) for all three beaches leading up to the western side of the breakwater at the boat club. The coastline east of the mouth of the Wairoa River to Whakatāwai is of special cultural significance to tāngata whenua. As kaitiaki, tāngata whenua are responsible for protecting the mauri of resources within their rohe and to ensure that the spiritual and cultural aspects of resources are maintained for future generations. While specific cultural values and outcomes for each coastal stretch will be shared and developed through the ongoing involvement of iwi in work programmes, guiding objectives and outcomes which have informed the development of adaptation strategies are set out in Section 3.3.4.

A reoccurring concern raised in community feedback is that this area is frequently exposed to coastal hazards. The value of the boat launching facility at Kawakawa Bay to the local community was also highlighted. As the only all-tide launching facility along this section of coast, it is considered one of the busiest boat ramps in Auckland. Parking around boat ramps and boat launching facilities is recognised as an issue and acknowledgment of this issue has been built into the report’s adaptation strategies.

Adaptation strategies developed for this unit have considered the following community objectives to ensure community feedback has been captured:

- Provide safe access with parking to the coast for a range of water-based activities at a range of tide levels (e.g. swimming, sailing/boating, kiteboarding and surfing)

- Identify existing locations for motorised boat launching where improvements will provide the greatest benefit to the wider network.

7.9.1 Coastal Stretch 22: Kawakawa Bay

This coastal stretch includes the area between the eastern boundary of Waitawa Regional Park and the boat ramp at the eastern end of Kawakawa Bay, encompassing all three bays (Figure 37). The coastal environment consists of wide intertidal flats with narrow sandy beaches, backed by narrow strips of reserve. Sand movement is extensive in this area and no hard coastal defences are present across most of the stretch. The area includes a number of Significant Ecological Areas, in particular SEA M2, recognising the extensive areas of feeding habitat for wading birds along this coastline.

Kawakawa Bay is a significant cultural and archaeological landscape with a range of recorded heritage sites. There are eight scheduled sites of significance to mana whenua²⁰ within this coastal stretch. Further archaeological excavations undertaken for stormwater upgrades along the coast uncovered a number of significant finds. These are likely associated to the 18th to 19th century settlement on the flat area behind the main Kawakawa Bay Coast Road (Taupo Village) and mid to late 19th century burials below Ferndale Drive along the Rautawa Stream which is recognised as a wāhi tapu/kōiwi.

Current coastal erosion management is limited to cobble renourishment on the eastern side of the first bay near Te Iwira Point and along the low-lying reserve in the eastern embayment opposite Karaka Road. Rock armouring is also evident near the boat ramps. The cobble renourishment programme was implemented in 2009 and extended in 2021 (Figure 37B and Figure 37C).

Within the coastal stretch, Whitford Point Reserve is owned by Auckland Council and is an important landscape for mana whenua. This park includes an accessway, skatepark, carpark and playground. There are two boat ramps on the eastern side of this coastal stretch including a public boat ramp, and the Kawakawa Bay Boating Club launching facility at Couldreys Point. The Kawakawa Bay Boat Club ramp is protected by two rock breakwaters and is the only all-tide launching facility along this section of coast. This boat ramp is considered the busiest boat ramp in Auckland. Parking around boat ramps and boat launching facilities is recognised as an issue and a regional strategic assessment is recommended.

²⁰ AUP Schedule 12

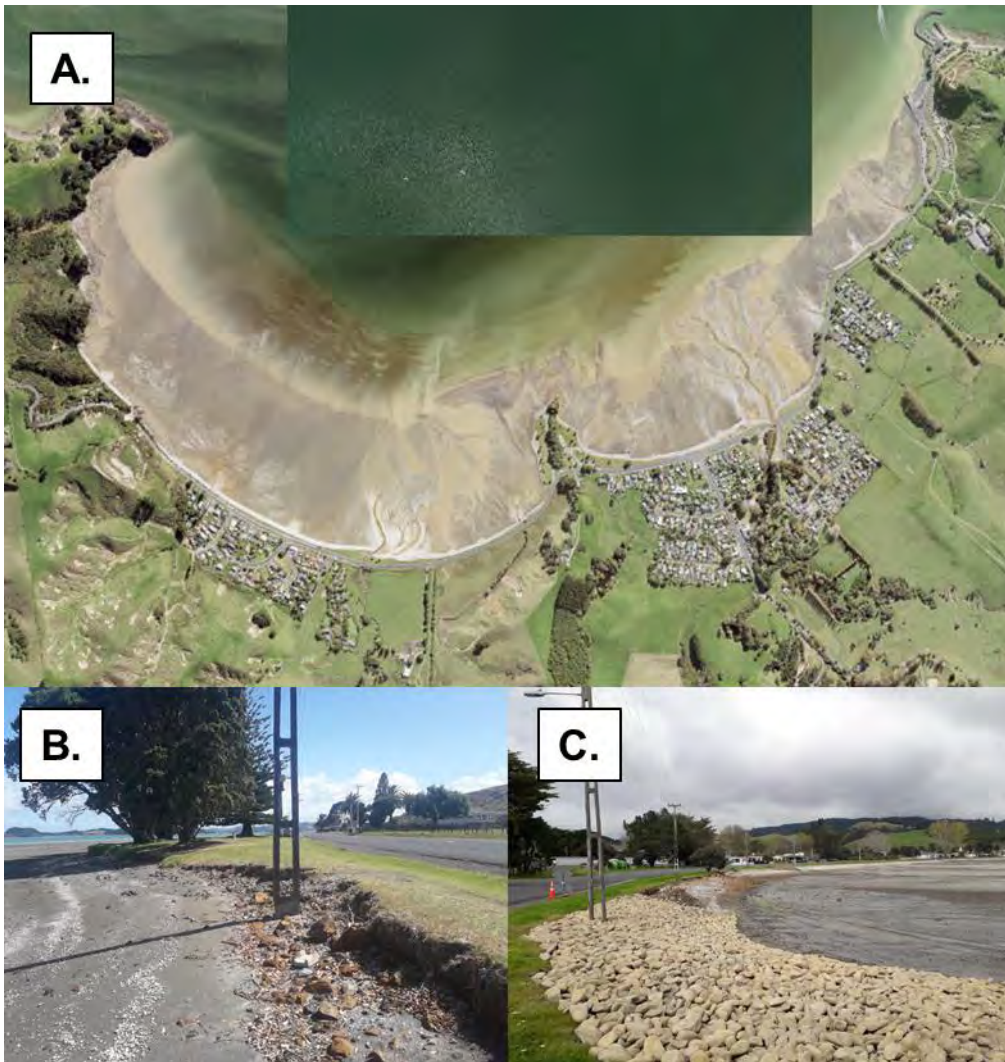


Figure 37: Aerial image of Kawakawa Bay (A), photographs of cobble renourishment project before (B) and after (C)

The Clevedon-Kawakawa Road runs along the coastal edge in this location. The Watercare pipe network within the road corridor currently aligns along the landward side of the road. There is an Auckland Transport seawall armouring the section of coast at the point below where Clevedon Kawakawa Road descends into Kawakawa Bay. The road is located in close proximity to the beachfront and is highly exposed to both inundation and erosion. Stormwater channels cross the three bays at multiple locations. The stream outlet channel at Nimons Bridge in the centre of the western bay is regularly blocked with sand. This has been managed by stream clearance and sand transfer to the adjacent beach area to redirect the channel from scouring the grass reserve area. Regular monitoring of all stormwater channels and outfalls in this area is required.

Due to cultural considerations and the amenity value of this area, we recommend ‘holding the line’ against erosion in the short term, with a preference for nature-based solutions where practicable. In the longer term, however, increasing sea-level rise will elevate the risk of inundation and we recommend ‘Managed Retreat’ of assets out of the risk zone. A detailed options assessment will be required to inform future management options for the Auckland Transport and Watercare network.

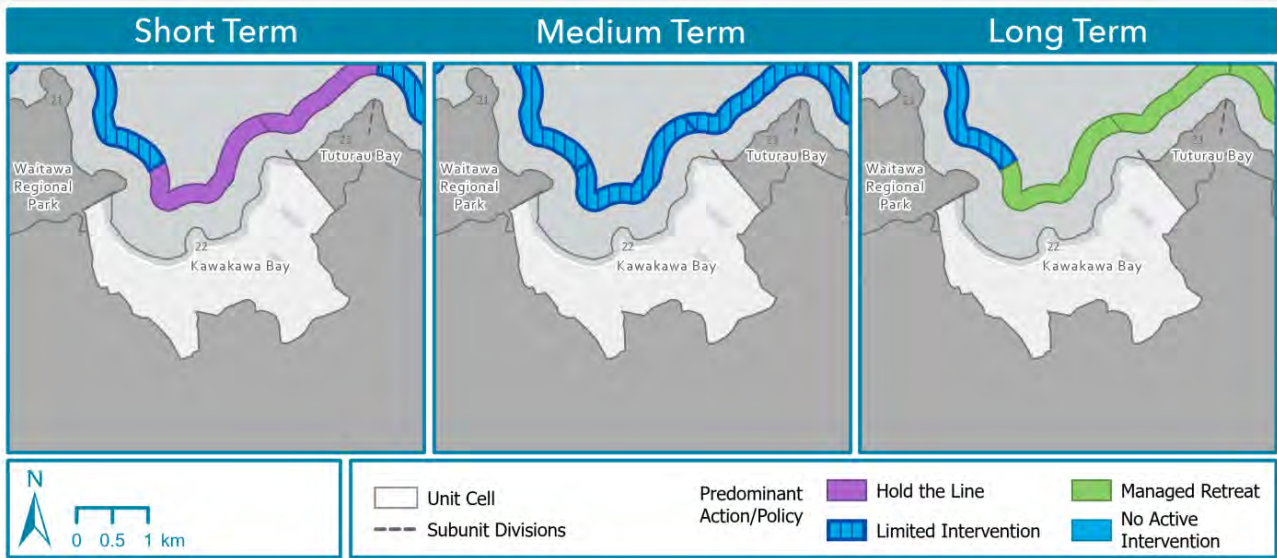


Figure 38: Adaptation strategies for coastal stretches within the Kawakawa Bay unit area

Coastal Stretch	Short-term	Medium-term	Long-term
22	Hold the Line	Limited Intervention	Managed Retreat

7.10 Waiti and Tutura Bay

This unit consists of coastal stretches 23 to 25, including Waiti Bay, Tutura Bay and Tawhitokino Beach. Swimming, walking and recreational water-based activities such as kayaking are popular activities for the local community who frequently visit this stretch of coastline. A theme from community engagement was that this area could be improved by provision of infrastructure to include safe walking and biking spaces along the whole waterfront.

While specific cultural values and outcomes for each coastal stretch will be shared and developed through the ongoing involvement of iwi in work programmes, guiding objectives and outcomes which have informed the development of adaptation strategies are set out in Section 3.3.4.

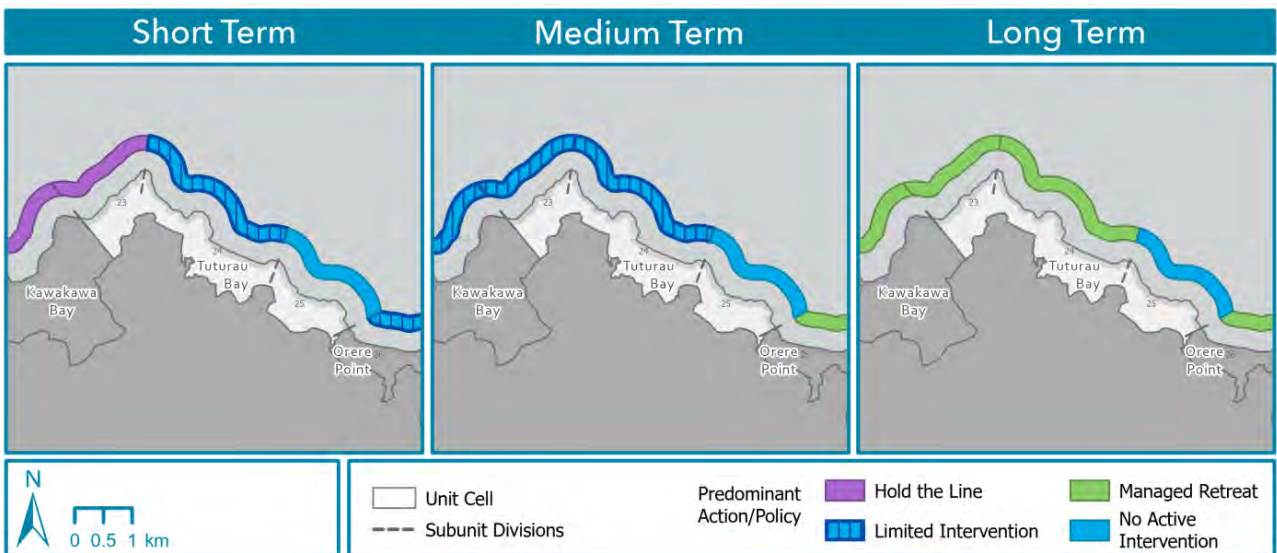


Figure 39: Adaptation strategies for coastal stretches within the Waiti and Tutura Bay unit area

Coastal Stretch	Short-term	Medium-term	Long-term
23	Hold the Line	Limited Intervention	Managed Retreat
24	Limited Intervention	Limited Intervention	Managed Retreat
25	No Active Intervention	No Active Intervention	No Active Intervention

7.10.1 Coastal Stretch 23: Boat club around headland

This coastal stretch includes the area from Kawakawa Bay Boat Club down to the Raukura Point headland. The coastal environment consists of a rocky foreshore. Current coastal defences are limited to the breakwaters that shelter Kawakawa Bay Boat Club (Figure 40). An on-going project to replace the pontoons and the vehicle accessway behind the pontoons is underway, with completion estimated for mid-2022. While the pontoons and breakwater are owned by Auckland Council, the facility and club are owned by the Kawakawa Bay Boating Club which has a ground lease. The area around the headland is of significant cultural value to tāngata whenua.



Figure 40: Aerial view of Kawakawa Bay Boat Club

The recommended coastal management strategy for this coastal stretch is:

Short Term	Medium Term	Long Term
Hold the Line	Limited Intervention	Managed Retreat

7.10.2 Coastal Stretch 24: East of Raukura Point

This coastal stretch includes the area east of Raukura Point to Tawhitokino Beach Regional Park and includes Waiti Bay and Tukurau Bay. The coastal environment consists of rocky foreshore and sandy beaches, framed by bush and passive grass areas. The road running along this coastal stretch (Kawakawa Bay Coast Road) sits very close to the cliff top and is prone to significant erosion due to cliff instability. Auckland Transport has subsequently built a large gabion seawall along a section of this coastal stretch to protect the road, which services up to 70 properties before it ends. Watercare assets follow the road corridor until Te Papa Road.

Council-owned assets along this stretch include Waiti Bay Reserve, Kawakawa Coast Road Esplanade Reserve and Tawhitokino Regional Park. An Auckland Council seawall is present along the foreshore of Waiti Bay Reserve and carpark.

Raukura Point is a significant cultural heritage landscape for tāngata whenua and there are numerous archaeological sites within this coastal stretch. Tawhitokino Regional Park is a significant ecological area and is a known nesting ground for little blue penguins (classified within the AUP). The regional park also contains significant historic heritage sites.



Figure 41: Aerial photograph showing Tawhitokino and shoreline (facing west)

Waiti Bay Reserve has been developed with a carpark, small launching ramp, accessway and steps providing access to the carpark from Kawakawa Bay Road. At low tide, walking access is available via the beach around the eastern headland to a timber stairway and track that provides pedestrian access to Tawhitokino Beach and regional park. This walkway serves as a key access point to Tawhitokino Regional Park. As vehicle access is not viable, the walkway is essential in maintaining access and supporting connectivity along the coastline. The timber steps providing access to Tawhitokino are exposed to coastal erosion. As with other locations, stormwater outfalls in this area require regular monitoring and maintenance.

The recommended coastal management strategy for this coastal stretch is:

Short Term	Medium Term	Long Term
Limited Intervention	Limited Intervention	Managed Retreat

7.10.3 Coastal Stretch 25: East of Tawhitokino to start of Ōrere Point Regional Park

This coastal stretch includes the area just to the east of Tawhitokino and southward to the start of Ōrere Point Regional Park. The coastal environment here is made up of cliffs, rocky foreshore and sandy beach. As previously noted, the section of coast from Raukura Point to Ōrere Point is one of the richest areas in the region for rocky shore and sandy beach flora and fauna. In some places, the marine ecosystem grades into areas of natural coastal vegetation, some of which is considered to be amongst the best in the Hunua ecological district (Significant Ecological Area Overlay).

No coastal defences (hard or soft) are currently present within this area. There is a private boat ramp for Ōrere Boat Club members and a small wall adjacent to the northern edge of Ōrere Point Regional Park. Ōrere Boat Club members access the boat ramp via private road on land adjoining the northern park boundary.

The recommended coastal management strategy for this coastal stretch is:

Short Term	Medium Term	Long Term
No Active Intervention	No Active Intervention	No Active Intervention

7.11 Ōrere Point (Rangipakihi)

The Ōrere Point/Rangipakihi unit includes two coastal cells (26 and 27) spanning Ōrere Point Regional Park to the western end of Tapapakanga Regional Park. Ōrere Point is an area valued by the local community for its scenic viewpoints, beaches, and access to the water for recreational water-based activities including surfing.

While specific cultural values and outcomes for each coastal stretch will be shared and developed through the ongoing involvement of iwi in work programmes, guiding objectives and outcomes which have informed the development of adaptation strategies are set out in Section 3.3.4.

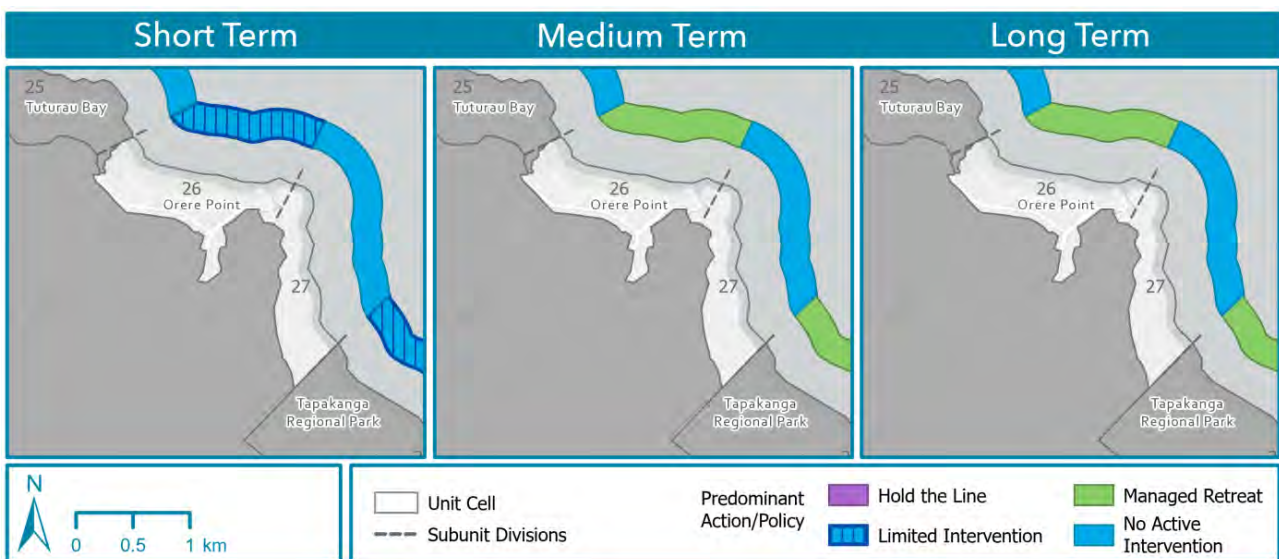


Figure 42: Adaptation strategies for coastal stretches within the Ōrere Point unit area

Coastal Stretch	Short-term	Medium-term	Long-term
26	Limited Intervention	Managed Retreat	Managed Retreat
27	No Active Intervention	No Active Intervention	No Active Intervention

7.11.1 Coastal Stretch 26: Ōrere Point (including Regional Park) to headland at eastern end

This coastal stretch includes the area from Ōrere Point Regional Park to the eastern end of Ōrere Point Beach Reserve. Ōrere Point Regional Park is an important landscape for mana whenua and is now a populated residential area. Most of the area consists of high coastal cliffs, with an elevation of around 30-40 m. Extensive erosion and landslides in the area have reduced public access points down to the foreshore along this coastal stretch.

While no hard coastal defences are present along this coastal stretch, limited works have been undertaken in various places to mitigate landslides. Several amenities are present at the southern end of the reserve, near the stream outlet. These include a playground, basketball court, toilet

facility, carpark, and multiple accessways down to the beach. Two cliff accessways within the reserve also provide access down to the beach.

Ōrere River flows to the coast at the south-eastern end of this stretch. The lower meander of the river has been modified and a gravel carpark area is retained by a steel sheet pile retaining wall and gabion baskets. Ōrere Point is recognised as a regionally significant surf break within the AUP. Gravel accumulation at the river mouth periodically blocks the channel, creating ponding and beach access issues that requires maintenance every 3-5 years on average. The existing consent for river mouth clearance is due to expire in 2028. A management plan is required for regular monitoring and to support future resource consent applications.



Figure 43: Aerial photograph of southern of Ōrere Point Beach Reserve, showing tidal inlet and Auckland Council assets

The recommended coastal management strategy for this coastal stretch is to continue ‘limited intervention’ management in the short term. However, the need for partial relocation of assets outside of the hazard zone as they come up for renewal is noted. This includes the sheet pile training wall along the river mouth and subsequent reconfiguration of the carpark.

Short Term	Medium Term	Long Term
Limited Intervention	Managed Retreat	Managed Retreat

7.11.2 Coastal Stretch 27: Rangapakihi to Tāpapakanga Regional Park

This coastal stretch includes the area from the Rangapakihi headland just south of Ōrere River to Tāpapakanga Regional Park. The coastal environment here is made up cliffs and rocky foreshore, backed by farmland. No coastal defences are currently present within this area. A thin strip of pōhutukawa forest occurs along the cliff top between Tāpapakanga and Ōrere. This thin strip has been said to contain one of the best areas of pōhutukawa forest on coastal sediments (AUP-Significant Ecological Area Overlay).

The recommended coastal management strategy for this coastal stretch is:

Short Term	Medium Term	Long Term
No Active Intervention	No Active Intervention	No Active Intervention

7.12 Tāpapakanga Regional Park

Tāpapakanga coastal unit consists of one coastal stretch (28) covering the extent of the regional park. This regional park is valued by the local community for its beach-side camping, event spaces, and biodiversity (shore geckoes).

While specific cultural values and outcomes for each coastal stretch will be shared and developed through the ongoing involvement of iwi in work programmes, guiding objectives and outcomes which have informed the development of adaptation strategies are set out in Section 3.3.4.

7.12.1 Coastal Stretch 28: Tāpapakanga Regional Park

Tāpapakanga Regional Park is an important cultural landscape for mana whenua and a historic heritage landscape. Parts of this significant landscape are further recognised in AUP Schedule 14.1 - Schedule of historic heritage, including Tāpapakanga Pā²¹, agricultural stone structures²², Ashby Homestead²³ and Graveyard²⁴. Historic heritage sites within this coastal stretch are regularly impacted by erosion during storm events. This stretch may require a historic/ cultural heritage plan to manage and mitigate such risks now and in the future, however this is owing and subject to iwi approval.

²¹ S11/119, ID 1301

²² S11/245, ID 1925

²³ ID 1339

²⁴ ID 1340



Figure 44: Tāpapakanga Regional Park (photograph facing north)

Access to Tāpapakanga Regional Park is provided via a park road running off Deerys Road. There are no coastal defences present within Tāpapakanga Regional Park and the foreshore access road is highly exposed to erosion. Other assets include multiple accessways, a carpark, Tāpapakanga campground, and Ashby homestead and graveyard. A multitude of floodplains run through this coastal stretch, and we recommend that assets be realigned out of the hazard zones, where possible.

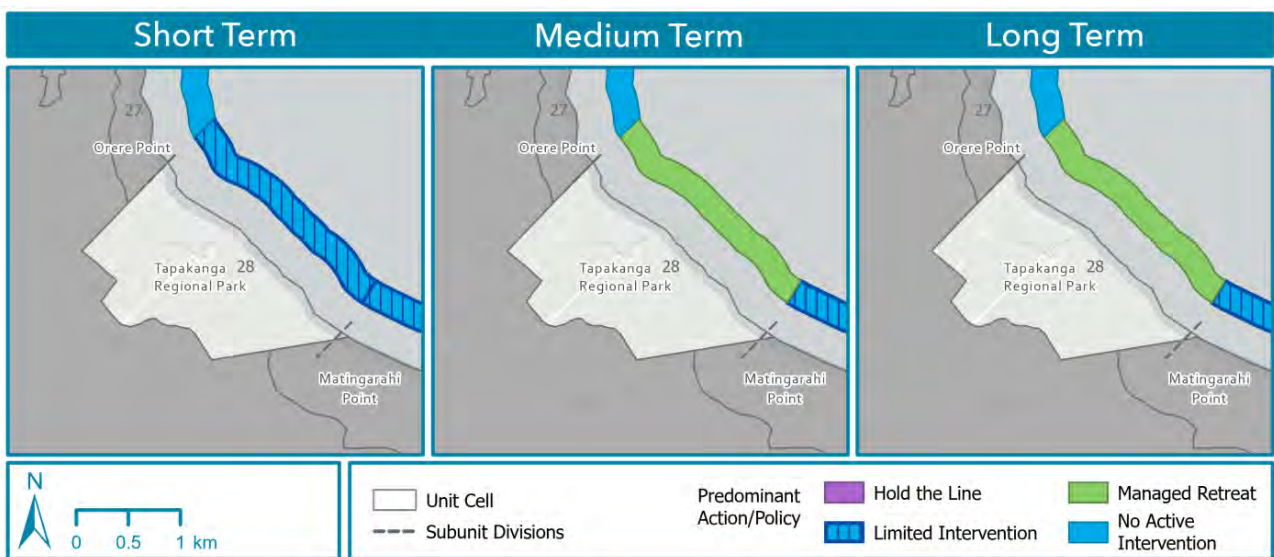


Figure 45: Adaptation strategies for coastal stretches within the Tāpapakanga unit area

Coastal Stretch	Short-term	Medium-term	Long-term

28	Limited Intervention	Managed Retreat	Managed Retreat
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7.13 Matingarahi Point

The Matingarahi Unit consists of one coastal stretch (29). A common theme from community feedback was that this area has suffered from storm events, land slips and erosion along East Coast Road.

While specific cultural values and outcomes for each coastal stretch will be shared and developed through the ongoing involvement of iwi in work programmes, guiding objectives and outcomes which have informed the development of adaptation strategies are set out in Section 3.3.4.

7.13.1 Coastal Stretch 29: East of regional park down to Auckland Council boundary

This coastal stretch includes the area south of Tāpapakanga Regional Park to Matingarahi Point. This highly natural coastline is recognised as both an Outstanding Natural Landscape and High Natural Character, with numerous Marine and Terrestrial Significant Ecological Areas listed under the AUP. In addition, this coastal stretch has numerous recorded Māori and European heritage sites recorded including areas of significance to mana whenua²⁵.

East Coast Road runs along the foreshore in this stretch and is highly exposed to both inundation and erosion. The road has sections of consented mass block seawall armouring. This road serves as an important secondary link to Thames and is predominantly used by tourists as a scenic route and by forestry trucks (serving 2-3,000 vehicles per day). There is a beach launching ramp at the southern end of Matingarahi Foreshore Reserve.

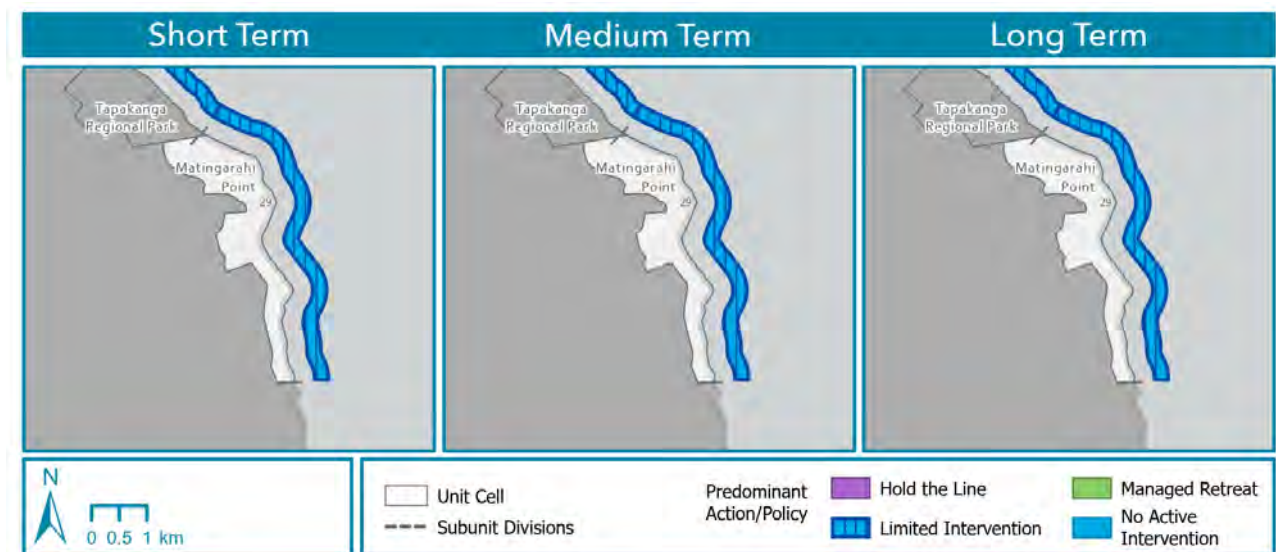


Figure 46: Adaptation strategies for coastal stretches within the Matingarahi unit area

Coastal Stretch	Short-term	Medium-term	Long-term
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²⁵ AUP Schedule 12 ID 043

29	Limited Intervention	Limited Intervention	Limited Intervention
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7.14 Waharau Regional Park

The Waharau coastal unit is located south of the Auckland region border and comprises of one coastal cell for the Waharau Auckland Regional Park (30).

While specific cultural values and outcomes for each coastal stretch will be shared and developed through the ongoing involvement of iwi in work programmes, guiding objectives and outcomes which have informed the development of adaptation strategies are set out in Section 3.3.4.

7.14.1 Coastal Stretch 30: Waharau Regional Park

This coastal stretch includes the coastal edge of Waharau Regional Park, situated just to the south of the Auckland boundary. The Tainui canoe landed on the beach at the southern edge of the park in the 14th century bestowing the name Waihihi, a name that has its origins in Hawaiki. The Māori name given to the park, Waharau, means ‘the ever-changing stream mouth’ and refers to the stream that winds its way down from the eastern Hūnua Ranges and flows out into Tīkapa Moana on the north side of the park.

Ngāti Whanaunga occupied the land from the 17th century and still maintains the Ōpuku and Ōkauia urupā / burial grounds; one located on the foreshore adjoining the park’s northern boundary has been gazetted as a Māori reservation, while the other is located along the park’s southern boundary. Waharau was one of the larger Māori settlements along the coast in the late 1800s and was a summer residence for the Māori King from the 1890s. This stretch of the coast is an area of significance to several iwi groups.

There are no coastal defences in this stretch. The smaller foreshore section of Waharau Regional Park is separated from the main park by East Coast Road, which provides access to the park itself. There are no park assets within hazard zones at this location.

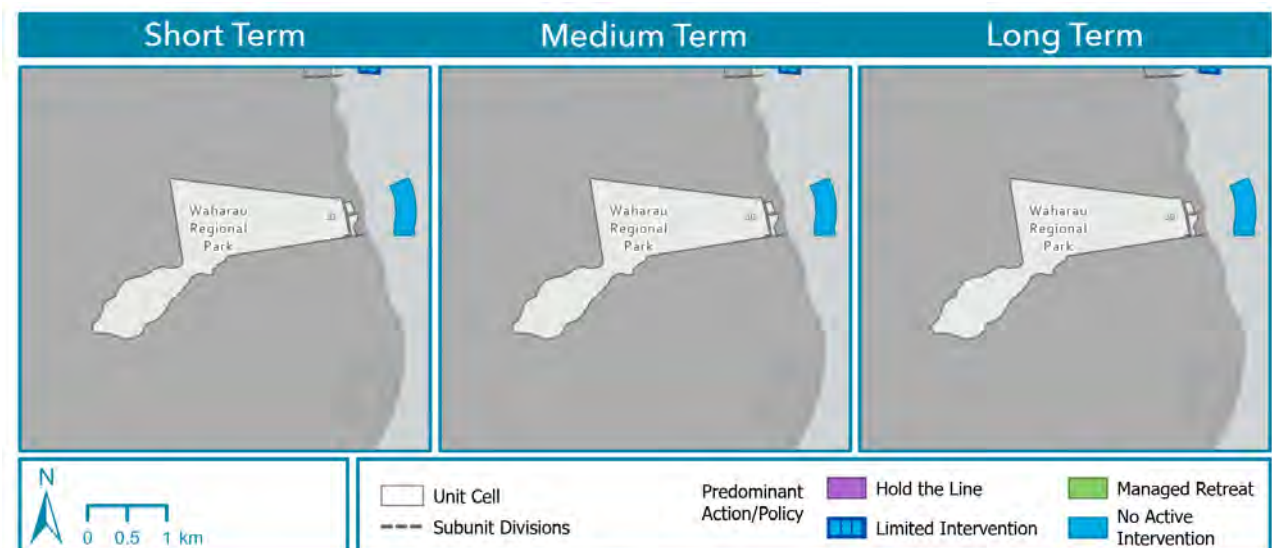


Figure 47: Adaptation strategies for coastal stretches within the Waharau unit area

Coastal Stretch	Short-term	Medium-term	Long-term
30	No Active Intervention	No Active Intervention	No Active Intervention

7.15 Whakatīwai Regional Park

The final coastal unit of the Kahawairahi ki Whakatīwai SAP is Whakatīwai and includes one coastal stretch representing this regional park (31).

While specific cultural values and outcomes for each coastal stretch will be shared and developed through the ongoing involvement of iwi in work programmes, guiding objectives and outcomes which have informed the development of adaptation strategies are set out in Section 3.3.4.

7.15.1 Coastal Stretch 31: Whakatīwai Regional Park

This coastal stretch includes the coastal edge of Whakatīwai Regional Park, situated to the south of Waharau Regional Park. There are no coastal defences in this stretch. A small foreshore section of Whakatīwai Regional Park is separated from the rest of the park by East Coast Road, which provides access to the park itself. This park is characterised by small patches of kōwhai forest on gravel ridges, which have been used by geologists as a record of past sea-level fluctuations. The unusual combination of the Whakatīwai gravel ridges with chenier plains down the coast at Miranda is recognised as regionally and even internationally, significant coastal features. Two moderately sized tidal inlets (lined by saltmarshes) are found on either side of Whakatīwai Regional Park.



Figure 48 The unique stone field ecosystem at the entrance to Whakatīwai Regional Park

Iwi settled predominantly around the mid and lower reaches of the stream valleys because these areas were warm, sheltered from the prevailing westerly winds, and offered the rich natural resources of both the land and the sea. Three significant pā are located within the reserve (Peahoka Pā S12/77, Karamu Pā S12/304 and Maramarua Pā S11/305), and a number of other recorded archaeological sites can be found within this stretch.

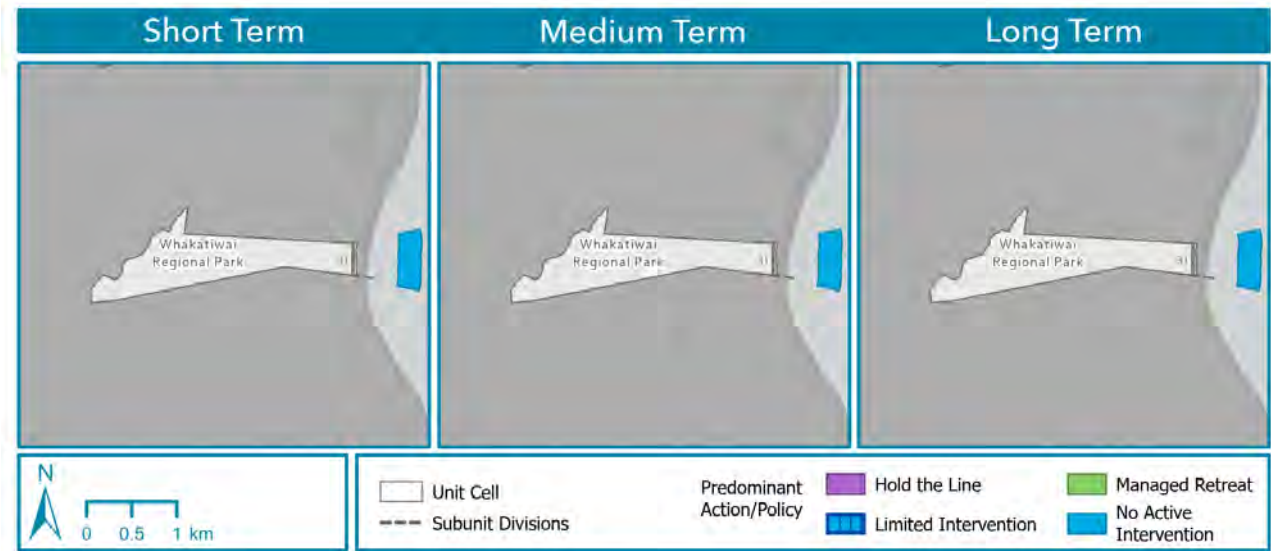


Figure 49: Adaptation strategies for coastal stretches within the Whakatiwai unit area

Coastal Stretch	Short-term	Medium-term	Long-term
31	No Active Intervention	No Active Intervention	No Active Intervention

8.0 Conclusions

The Kahawairahi ki Whakatīwai SAP has set the long-term strategic direction for management of the shoreline between Kahawairahi/Pine Harbour, Kauriwhakiwhaki/Beachlands and Matingarahi (including Waharau and Whakatīwai Regional Parks). It outlines decisions on how Auckland Council-owned coastal land and assets will be sustainably managed against the impacts of coastal hazards and climate change across the short (0-20 years), medium (20-60 years), and long (60+ years) term. These decisions were informed by tāngata whenua, acknowledging the cultural values and associations of iwi/tāngata whenua, which centred on supporting Taiao (Environment), acknowledging Whakapapa (Ancestry) to the respective stretches of the coastline, and preserving Tāngata Hononga (Community) and the iwi objectives and outcomes set out in Section 3.3.4. The objectives of the local community, which focus strongly on preservation of the shoreline for future generations and the desire for access and amenity in coastal areas have also been built into decision making and in turn are reflective of adaptation strategies along this coastline.

As shown in Figure 50, most of the Kahawairahi ki Whakatīwai SAP frontage can be managed in the short to medium term with little to 'no active intervention'. In the longer term, some areas will require 'Managed Retreat' of assets outside of the coastal hazards area to provide more space for the beach environment (to mitigate impacts of coastal squeeze) and provide for more sustainable coastal assets and infrastructure.

Coastal stretches identified as 'hold the line' in the short to medium term have a strong link to critical infrastructure or high amenity value. In the long term, the high-level strategy of 'Managed Retreat' for sections of the coast is required to avoid ongoing erosion and more frequent inundation. This change in high-level management strategy reflects not only the increasing risk over time but provides for a phased and adaptive management approach for coastal assets and infrastructure.

Areas of importance, either due to their cultural, landscape or heritage value, have also been considered. Considering the wealth of cultural and historic heritage sites along the Kahawairahi ki Whakatīwai/Beachlands and East coastline, a separate adaptation plan for specifically managing cultural heritage sites may also be required for inclusion within a wider cultural and historic heritage plan.

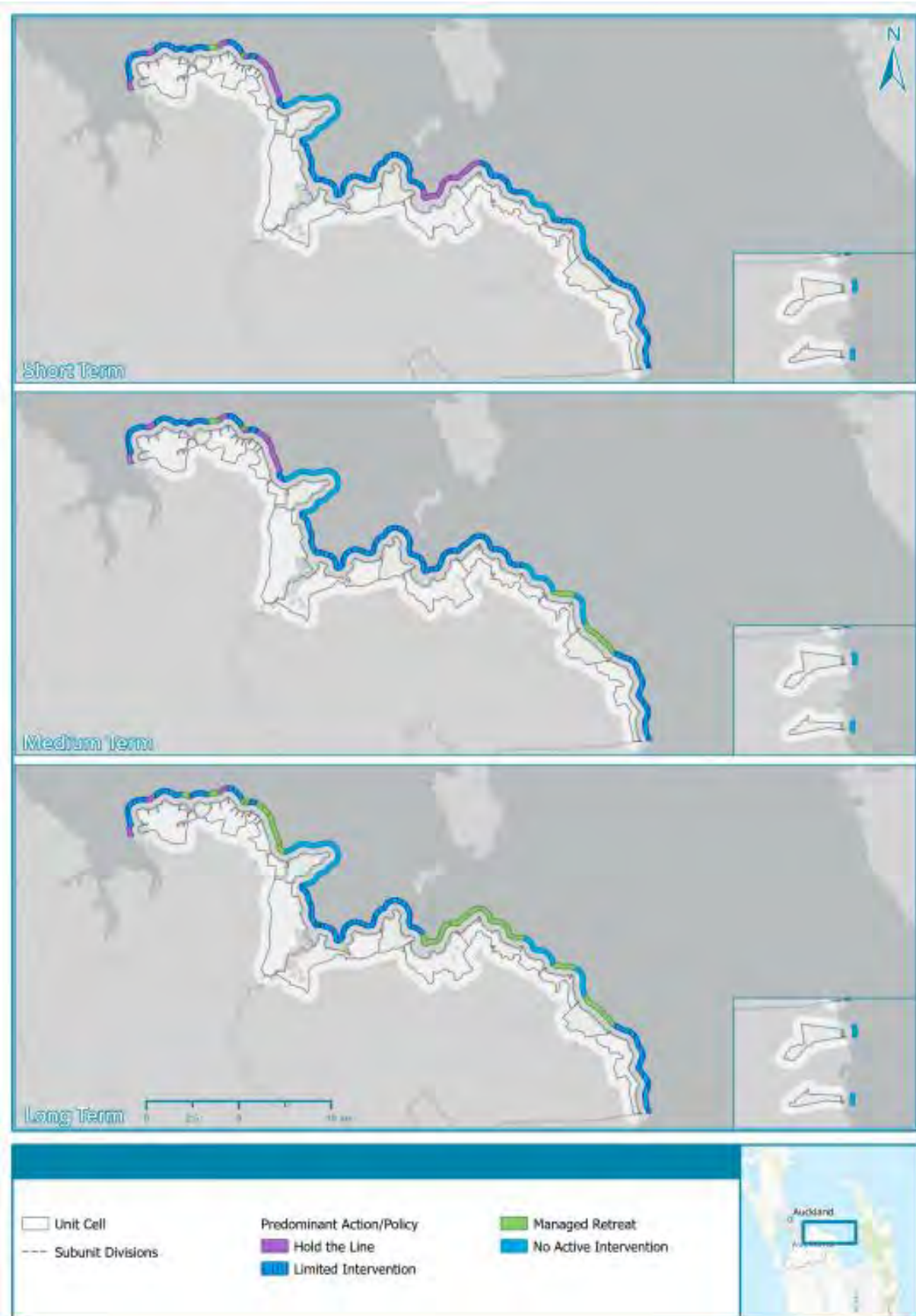


Figure 50: Adaptation strategies across all 35 coastal stretches

8.1 Implementation of the Shoreline Adaptation Plan

The Kahawairahi ki Whakatīwai SAP has identified high-level, adaptive management strategies across the short (0-20 years), medium (20-60 years), and long (60+ years) term for the 31 coastal stretches defined along the coast. To sustainably manage the shoreline, these strategies are now available to be integrated into the relevant long-term plan budgets, infrastructure strategies, Reserve Management Plans, Regional Parks Management Plans, and Asset Management Plans that include assets exposed to the long-term impacts of coastal hazards and climate change, as these documents are reviewed. Considering the broad extent of Auckland Council-owned land and assets along the shoreline and the non-statutory nature of SAPs, implementation of the SAP will be a continued, collaborative effort across Auckland Council departments, with individual projects implemented in partnership with mana whenua.

All future coastal stretch projects related to the future management of Kahawairahi ki Whakatīwai/ Beachlands and East coastline need to ensure that iwi/tāngata whenua have a partnership/co-management role in the project design, development, and implementation phase. Individual projects must also consider the Kia Ora Tāmaki Makaurau Māori Outcomes Performance Framework, the Te Ora Tāmaki Makaurau Wellbeing Framework, the values highlighted in Section 3.2 and cultural outcomes and objectives identified in Section 3.3.4. Furthermore, all future projects need to ensure that iwi/tāngata whenua are engaged with and have a partnership / co-management role in the project development and implementation phase

Integration of the SAP recommendations across key Auckland Council documents will cascade through to support associated Council decision making (such as landowner and leasehold approvals for structures and buildings on Council-owned land) and will in turn direct the future operational maintenance and renewals work programmes (e.g. for the future management of Community Facilities' assets that provide a coastal defence or amenity function through Auckland Council's Coastal Assets Renewals Programme).

Using coastal defence structures as an example, the implementation of a 'hold the line' strategy may consider either hard coastal engineering solutions (such as seawalls and revetments) or nature-based options (such as beach nourishment). In contrast, a 'Managed Retreat' strategy may consider removal or setback of hard structures with enhancement of the coastal environment to provide a natural buffer. Identification of preferred coastal engineering options will be supported by site-specific assessment of coastal processes, option feasibility and costings. The renewal or provision of new coastal defence structures will require regulatory approvals to ensure they meet the regulatory requirements of the Resource Management Act or any successor Acts, including giving effect to the New Zealand Coastal Policy Statement.

Implementation of the strategies at the asset level will also require development of specific 'signals', indicators that highlight the upcoming need for change, and 'triggers', identified thresholds that indicate an immediate change. These signals and triggers will help inform when a change of strategy needs to be undertaken as directed under the Dynamic Adaptive Policy Pathways approach outlined by the Ministry for the Environment. Specific signals and triggers for individual assets may include end of asset consent, significant asset damage due to a hazard event, increasing flood risk (e.g. flooding multiple times a year) or erosion exposure. In addition to asset specific triggers, cultural triggers must also be built into decision making processes. Together, these triggers will be used to inform when an adaptation strategy needs to be actioned beyond the indicative timeframes provided

in the SAP. To understand and account for cultural triggers and signals, ongoing engagement and consultation with iwi involved in the development of this plan needs to take place.

The implementation of the Kahawairahi ki Whakatīwai SAP will be supported by monitoring coastal assets and the surrounding coastal environment. Monitoring will include coastal asset condition assessments, beach level surveys and tracking the rate of future coastal hazards and climate change impacts. This information will directly feedback into the development of signals and triggers for the dynamic adaptive pathways.

8.1.1 Māori outcomes

The Kia Ora Tāmaki Makaurau: Māori Outcomes Performance Measurement Framework was approved by the PACE Committee in August 2020 and adopted by the Auckland Council family later that year. Within this framework, Kia Ora Te Tātai is the aspirational outcome in which the interconnections of all things, both spiritual and physical, within the Tāmaki Makaurau ecosystem is acknowledged, maintained, and enhanced. SAPs contribute to Kia Ora Te Tātai by considering the long-term impacts of climate change on Auckland’s shoreline and developing adaptive plans for sustainable management of public land and assets within coastal areas. The outcome of SAPs can be specifically measured under the Kia Ora Te Taiao and Kia Ora Te Hononga priorities and the cultural outcomes and objectives identified in Section 3.3.4

8.2 Next steps

The Kahawairahi ki Whakatīwai SAP is the second SAP to be developed under the Coastal Management Framework. It has been completed as a second pilot to further refine the best-practice process for development, including approaches for mana whenua and community engagement, coastal hazards assessment and establishment of long-term adaptation strategies. Importantly the Kahawairahi ki Whakatīwai SAP is a living document. Ongoing review of this document and recommended strategies will be undertaken by the project team (including mana whenua partners).

To sustainably manage the Kahawairahi ki Whakatīwai/Beachlands and East shoreline, the adaptive strategies will be integrated into all relevant Auckland Council Asset Management Plans and decision making. Implementation of adaptive strategies outlined in this SAP may be required at any stage here on out through a direct request from iwi as treaty partners. Implementation will require continued collaboration across multiple Auckland Council departments to provide for iwi/tāngata whenua as partners and co-managers. As discussed, the Coastal Management Framework divided the shoreline of Auckland into a series of coastal cells. Through development of the SAP work programme, these cells have been further refined. Each cell will have its own SAP which will be supported by a regional coastal hazards risk assessment. Completion of the first round of SAPs will enable a regional understanding of changing coastal hazard risk, future funding requirements and subsequent prioritisation of coastal works to be developed.

8.2.1 Review of SAP

The Kahawairahi ki Whakatīwai SAP will be reviewed on a ten-yearly cycle and/or when a review is requested by iwi or required as a result of a specific trigger or signal being met which requires an accelerated need for change. The review will incorporate any new information available for each SAP area, including coastal hazards, climate change and coastal asset data, signals and triggers (including cultural and environmental), along with any changes to cultural values and associations (including cultural outcomes and objectives). The future review cycle will also enable any implications of the Resource Management Act reforms to be addressed and appropriately reflected in the future scope and implementation of the SAPs.

9.0 References

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