Shoreline Adaptation Plan: Manukau Harbour East

2024

[Report Series 1]

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Shoreline Adaptation Plan: Manukau Harbour East

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Auckland Council

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Front Cover

Artist's reconstruction of pre-colonial view of Ngā Hau Māngere, looking north from Te Pane ā Mataoho (Māngere Mountain). Painting by Chris Gaskin (source: DOC/Mangere Mountain Education Centre (2016) as included in the Māngere-Ōtāhuhu Area Plan (August 2022).

Acknowledgements

This Shoreline Adaptation Plan (SAP) was developed in conjunction with Te Aakitai Waiohua, Te Ahiwaru, Ngaati Te Ata Waiohua, Ngaati Tamaoho, Ngāti Whātua Orākei, Ngaati Whanaunga, Waikato Tainui. The SAP team would also like to acknowledge all iwi who have been involved in this kaupapa as strategic observers and consulted throughout the development of this document. We thank Mitchell Daysh and our colleagues in Ngā Mātārae for support with growing our relationships with the aforementioned iwi.

The document was prepared by Resilient Land and Coasts, supported by advice from Healthy Waters, Parks and Community Facilities and numerous other Auckland Council departments, Eke Panuku, Auckland Transport and Watercare Services. As consultants to Auckland Council, Tonkin & Taylor led the technical risk assessment and ecological context; Barker & Associates, the social, cultural and policy context and RCP supported programme management and engagement.

In addition, we would like to acknowledge and thank the Local Boards, Manukau Harbour Forum and Ward Councillors for their ongoing support of the Shoreline Adaptation Plan Programme. The Local Boards and Ward Councillors have actively supported the development of this report, promoting and attending community events and providing valuable insights regarding the challenges for shoreline engagement in the Manukau Harbour area. The project team would like to acknowledge their support for the programme, as well as the local community, key stakeholders and landowners and users of the wider Manukau East coastline for their engagement, support, and ongoing interest in this SAP.

Mātauranga Protection Statement (Disclaimer)

Auckland Council acknowledges that all cultural information within this document is the intellectual property of iwi who have contributed to the development and co-authoring of the Manukau East SAP. To ensure the protection of Mātauranga Māori, cultural information must not be recirculated to other workstreams without direct consultation with and approval by 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.

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Summary statement

The Manukau Harbour East Shoreline Adaptation Plan (SAP) which extends along approximately 90 km of coast, sets the long-term strategic direction for the management of shoreline from the Puhinui Reserve in Wiri, to Taumanu Reserve in Onehunga Bay and includes the shoreline of the Māngere Inlet, Te Motu Hiaroa (Puketutu island), the Onehunga Port, Māngere Watercare wastewater treatment facility and walkway network; and Whakarongo/Ngaa Hau o Māngere | Ambury Regional park. The area includes a mix of land uses with residential, rural, industrial and commercial uses, alongside significant infrastructure, such as the Auckland Airport and the State Highway network. The area has extensive areas of parkland (Puhinui reserve), regionally unique ecosystems and locations, landscapes and sites of significant cultural value.

The development of these shoreline adaptation strategies is a starting point for dynamic adaptation planning for the Auckland region and also acknowledges Te tiro ā Māori ki tōna ake ao, a Māori worldview. This reflects the consideration of intergenerational time horizons as a fundamental part of addressing the impacts of climate change and sea-level rise. It also acknowledges the need to consider the tangible and intangible, the inter-relationship of all living and non-living things and the vital connection between people and te taiao (the natural environment) in which they live. The adaptive strategies (Section 5.0) which guide how coastal land and assets owned by Auckland Council will be sustainably managed have been informed by:

- Local iwi, acknowledging the cultural values and associations of iwi which centred on supporting local iwi objectives and aspirations set out in Section 1.0
- The objectives of the local community, identified through community engagement and analysis of social context, set out in sections 2.0 and 4.0
- Technical inputs including hazard risk, coastal hazard and climate change projections, ecological and policy framing (as set out in Section 2.0)
- Advice from infrastructure and assets owners/managers (Auckland Council asset owners, Auckland Transport, Eke Panuku and Watercare Services).

Due to the highly modified nature of the Manukau Harbour East Shoreline, much of the Auckland Council-owned land and assets within the Manukau Harbour East SAP are identified as being managed in both the short and medium term through ***limited intervention***, maintaining and ensuring the safe and continued functions of exiting assets and uses, and ***hold the line*** reflective of the need to protect areas of the shoreline to maintain existing uses, support highly valued community connections to and along the coast and respond to the current risk from coastal hazards and catchment flooding. These strategies are, by large, retained into the medium term while acknowledging the need to realign and consider the design of assets located in proximity to the coast, in order to mitigate increasing risks from coastal inundation with sea-level rise.

Managed retreat is identified in the long mid to long term for low-lying areas along the southern shoreline of Māngere Bridge (Kiwi esplanade) the southern Māngere inlet, Onehunga Bay lagoon, Puhinui reserve and the causeway to Te Motu ā Hiaroa | Puketutu island where coastal inundation with sea-level rise and catchment flooding risks require the need to strategically plan to reduce maintenance and renewal costs by moving Auckland Council assets out of exposed areas to accommodate natural coastal processes, build a more resilient shoreline and support ecological and cultural outcomes.

Where land is subject to evolving strategic direction for its future management, including areas of parkland, Pūkaki Lagoon and Te Motu ā Hiaroa | Puketutu island (with unique governance arrangements) and the Port of Onehunga (with revitalisation and master planning led by Eke Panuku) ***limited intervention*** is identified as a 'placeholder' to enable those processes to develop and be reflected in further revisions of the Manukau Harbour East SAP.

Implementation of this SAP is a live and developing process which will require continued collaboration across multiple Auckland Council departments and Auckland Council-controlled organisations and entities. This will be undertaken alongside ongoing engagement with iwi to ensure that iwi have a partnership/co-management role in the project design, development, and implementation phases. Regional matters identified through the development of this SAP, including the management of risk to cultural values and sites; and the maintenance of significant public accessways and infrastructure; will require further detailed consideration and planning. Adaptation planning will more generally need to respond to national and regional legislative and policy changes and transition to the use of signals, triggers, and thresholds in place of static timeframes (refer to Section 1.4).

Purpose of this document and navigation

Purpose

This Shoreline Adaptation Plan (SAP) for Manukau East has been developed to provide a strategic management approach for Auckland Council-owned land and assets located within coastal areas. It is a non-statutory plan developed in collaboration and consultation with local iwi, communities and asset owners.

As part of Auckland's first series of Shoreline Adaptation Plans, it is intended to set out long-term adaptation strategies over the next 100 years. As such, it will remain a living document, subject to review and updated over time to ensure it remains dynamic, relevant and fit-for-purpose.

Audience

The SAP is intended to be accessible to and utilised by a diverse range of users including asset owners and managers, planners and policy makers, local iwi and communities. While this document contains technical detail, a suite of supporting reports are available to provide further guidance to the reader.

Navigating this document

This document has five (5) key sections as follows:

Section 1	• Provides an overview of the Shoreline Adaptation Programme, the development process for area plans (of which this is one) and the general principles which inform the development of this SAP area plan. This section is supported by other programme documentation.
Section 2	• Provides a select summary of the social, physical, and ecological context applicable to the development of shoreline adaptation strategies for Auckland Council-owned land and assets within the Manukau East SAP area. This is expanded upon in additional programme documentation.
Section 3	• Identifies the outcomes of engagement with local iwi, including cultural outcomes, aspirations, and principles applicable to the development and implementation of this SAP report.
Section 4	• Summarises the community engagement undertaken and identifies the community objectives selected for this SAP area. This summary is supported by additional engagement reporting.
Section 5	• Provides commentary of the development of adaptive strategies for the SAP area and includes general guidance for the implementation of strategies identified in the Manukau East SAP report. • Includes the adaptation strategies as identified for each of the nine (9) units and stretches.

Associated and supporting documents

The following reports can be read in support of this Shoreline Adaptation Plan:

- Tonkin & Taylor (2024) *Manukau Harbour East Shoreline Adaptation Plan: Risk Assessment technical report*
- Shoreline *Adaptation Plans: Community Engagement Analysis SAP Area P Manukau Harbour East*
- Auckland Council (2024). *Shoreline Adaptation Plans: SAP Area P Manukau Harbour East supporting report – coastal & hazardscape*
- Auckland Council (2023). *Shoreline Adaptation Plans. SAP area P Manukau Harbour East supporting report - policy, social and cultural.* Prepared by Barker & Associates for Auckland Council
- Auckland Council (2023). *Shoreline Adaptation Plans: SAP Area P Manukau Harbour East supporting report – ecology*
- Cultural statements/value assessments as provided by iwi:
    - Ngaati Te Ata Waiohua
    - Te Kawerau ā Maki.

Glossary

Adaptation Strategy: Hold the line	• The **coastal edge is fixed** at a certain location. • Defence of the coastal edge may be through nature-based options (e.g. beach nourishment) or engineered hard structures (e.g. sea walls). • Nature-based options are the preferred method where possible, but **in most cases engineered hard structures would be required**. • An identified use or service is maintained within its existing location, e.g. a road is maintained in a fixed location or parks' land uses are maintained in an existing location. • This approach could result in losing some intertidal areas or beach space due to preventing landward realignment of the coast in response to sea-level rise.
Adaptation Strategy: Limited intervention	• Generally focussed on **maintaining and making safe.** • Works may be undertaken to repair existing protection structures for the purpose of extending the asset's life. • Works may support localised realignment of individual asset classes. • Does not support a fixed coastline.
Adaptation Strategy: Managed Retreat	• Assets and land uses are **relocated** or realigned from hazard-prone areas to reduce risk to assets and maintain identified values (ecological, cultural, recreational etc). • Relocation is planned and undertaken proactively over time. • Planning to retreat or relocate assets and land uses are responsive to community, cultural and ecological opportunities needs and aspirations. • Supports opportunity for nature-based solutions, and maintenance of coastal values.
Adaptation Strategy: No active intervention	• **Natural processes are allowed to continue.** • Includes no investment in the provision or maintenance of any hazard protection structures associated with coastal hazards and flood protection (does not apply to the management of land stability or subsidence or other hazard risk management). • This strategy is identified for areas of the coastline where Auckland Council-owned land and assets are not exposed/vulnerable to coastal hazard and catchment flooding risk.
Annual Exceedance Probability (AEP)	• The probability of an event occurring in any given year. For example, the 1% AEP has a 1% chance of being met or exceeded in any given year.
AVD-46	• Auckland Vertical Datum – 1946 was the mean sea level established in 1946 and used to define the zero datum for land development.
Biodiversity focus area (BFA)	• An area of ecological significance prioritised by Auckland Council for conservation actions.
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.
Embayment	• An indentation of the shoreline resembling a bay.

Fetch	• The length of an area of the harbour, estuary or sea in which waves are generated by wind, measured in the direction of the wind.
Highest Astronomic Tide (HAT)	• The highest tidal level that can be predicted to occur under average meteorological conditions and any combination of astronomical conditions.
Mean High Water Springs (MHWS)	• The average of high levels of spring tide.
Ngā iwi Mana Whenua o Tāmaki Makaurau	• 'Ngā Iwi Mana Whenua o Tāmaki Makaurau' refers to the nineteen iwi of the greater Auckland region and recognises that each iwi is wholly autonomous, individual and unique.
SAP unit	• The SAP is divided into smaller SAP units to enable a more detailed and comparative view of how risk is attributed across the subject area.
SAP stretch	• Each SAP unit is typically broken down into smaller stretches considering coastal processes, Auckland Council-owned land and asset location, public-land boundaries, and infrastructure considerations. • A stretch is the smallest scale at which the SAP plans apply adaptation strategies.
Significant Ecological Areas	• Identified areas of significant indigenous vegetation or significant habitats of indigenous fauna located either on land or in freshwater environments or in the coastal marine area.
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.

Kupu Māori – Māori glossary

Local iwi advised that their tribal dialect utilises double vowels in place of macrons. In keeping with Auckland Council's Te Reo policy, we have generally maintained the use of macrons for consistency with Council documents and publications. Where iwi names and placenames are provided by iwi, these utilise double vowels.

1.0 The Shoreline Adaptation Plan programme

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

1.1 Purpose and scope

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 (including sea-level rise). They seek to provide an adaptive planning approach that responds to the changing nature of Auckland's coastal environment, asset and infrastructure owners' requirements, and the needs and values of local iwi and local communities.

This 'first generation' (Series 1) of plans have been developed in response to the *Coastal hazards and climate change guidance* from the Ministry for the Environment[1]. SAP area plans provide a 'roadmap' for changing coastal management strategies over time (over three timeframes) which can be further developed to implement Dynamic Adaptive Policy Pathways. The SAP area plans' development process also ensures consultation and the initiation of an opportunity for collaboration with mana whenua and communities to develop and implement the strategies identified in the SAP area plans. While this 'series' of SAP reports applies specifically to Auckland Council-owned land and assets, the programme acknowledges the need for holistic 'systems' thinking both in relation to coastal management and adaptation.

1 Ministry for the Environment (2024). Coastal Hazards and Climate Change – Guidance for Local Government

1.2 Limitations

The SAP Series 1 reports are strategic documents which set a high-level direction for shoreline management and the assets within those areas. It is important to note there are limitations to the scope of these plans:

- They are not developed with the intention of applying directly to privately-owned land and/or assets within the wider SAP area
- With a focus on Auckland Council-owned land and assets, they are developed with limited consideration of third-party land, assets, interests and values.
- Adaptation strategies are selected using a multi-criteria, decision-making process. This analysis is supported by the best available information as set out in this report and supporting reports
- They do not consider site-specific options assessments for what may be delivered in implementing each of the adaptive strategies
- They do not consider any site or parcel-specific legal mechanisms, covenants or requirements or identify specific conditions or actions associated with individual resource consents (such as consents for coastal structures or discharge consents associated with water infrastructure).

1.3 Review

The SAP area reports are currently anticipated to be reviewed on a ten-yearly cycle. This will enable updated information to become available and be appropriately considered. Review may also be requested by iwi, following a significant storm event, or required because 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 legislative reforms to be addressed and appropriately reflected in the future scope and implementation of the SAPs.

1.4 Dynamic approach: signals, triggers and thresholds

Once an adaptation strategy has been identified for a given area, it may be implementable subject to various timeframes, leading to different pathway options. The need to switch from one management strategy to another is usually tied to a ‘signal’, an indicator that highlights the upcoming need for change, or a ‘trigger’, an identified threshold that requires an immediate change. The identification of appropriate signals/triggers requires a robust framework which may involve multiple scales and factors. This may include the need for monitoring and feedback associated with physical systems, indications of risk tolerance or other cultural or community-based indicators. Implementation at the asset level will also require development of specific signals and triggers, establishing these will be progressed as a component of implementation planning.

2.0 Manukau East SAP area context

The Manukau Harbour East SAP covers some 5,905 ha and extends along approximately 90 km of coast. It covers the shoreline from Puhinui Reserve in Wiri, to Taumanu Reserve in Onehunga Bay and includes the shoreline of the Māngere Inlet, Puketuku (Te Motu Hiaroa) and Wiroa Islands. This SAP area has a diverse shoreline environment including a mix of sandy beaches, inlets, high steep cliffs and wharves. There is a mix of land uses with residential, rural, industrial and commercial uses including the Auckland Airport and Onehunga Port. The area also has extensive areas of parkland and culturally significant land.

Manukau Harbour East includes parts of areas within the Ōtara-Papatoetoe, Māngere-Otahuhu and Maungakiekie-Tamaki Local Boards. There are communities along the coastline of Māngere Inlet and Manukau Harbour, including Onehunga, Southdown, Otahuhu, Favona, Māngere Bridge, and Māngere.

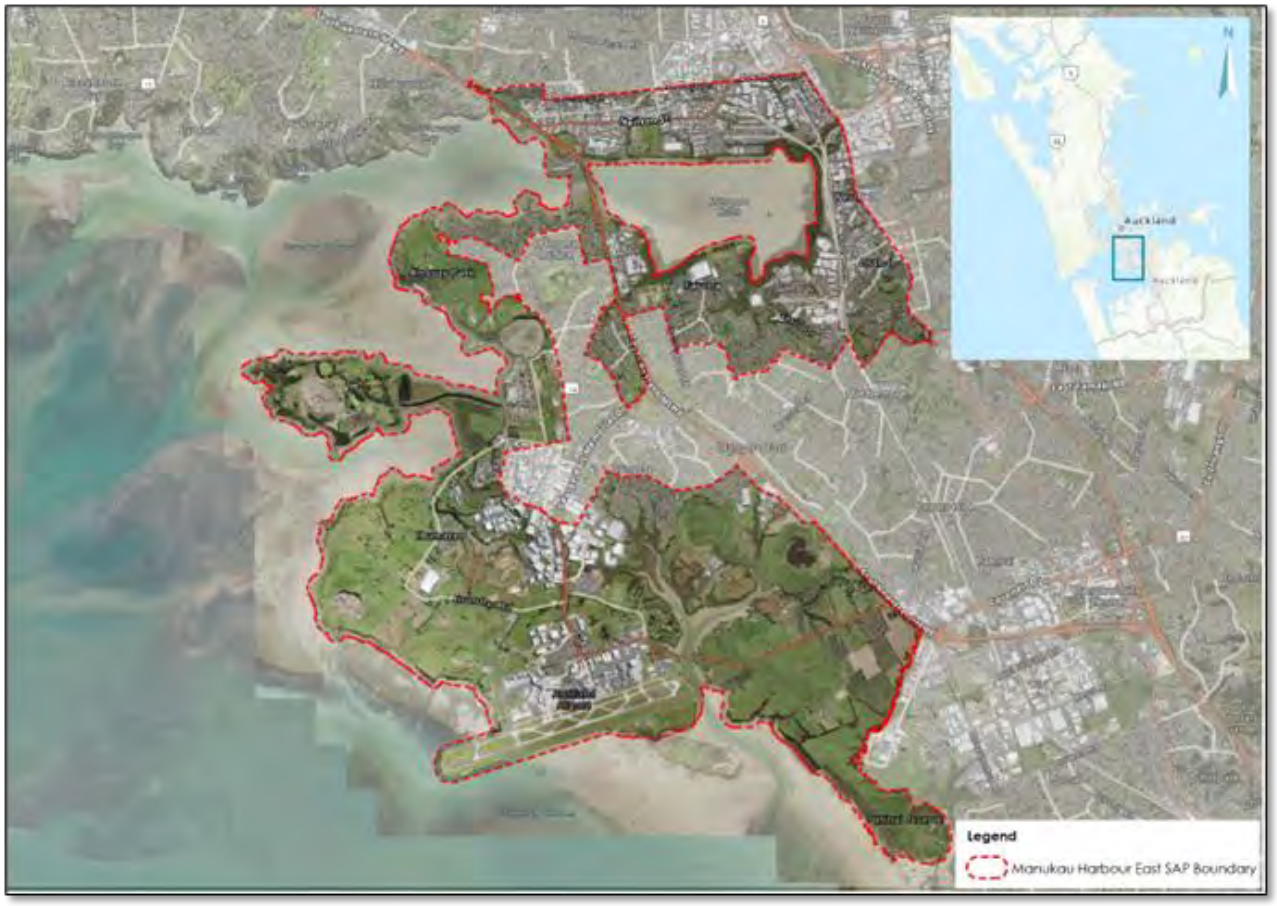

Figure 2-1: Area for the Manukau Harbour East SAP

2.1 Auckland Council-owned infrastructure, assets and land

Auckland's SAPs are directed at Auckland Council-owned coastal land and assets, including but not limited to reserves, coastal defence structures and public facilities, roads, and water infrastructure. This includes infrastructure located within these coastal areas where it is located on, in, or under Auckland Council land or private land.

While the SAPs also consider third party infrastructure near the coast and identified areas of cultural and ecological value, these plans are not specifically directed at these assets and values. However, the strategies (and associated guidance) may acknowledge these linkages at a unit or stretch-specific level. These plans included input from stakeholder partners such as Auckland Transport, Watercare Services and Eke Panuku. Auckland Council-owned land is identified based on Council's GIS layers but in a few cases there are different management, interest, and ownership arrangements. This is particularly relevant for Pūkaki and Te Motu ā Hiaroa / Puketutu Island.

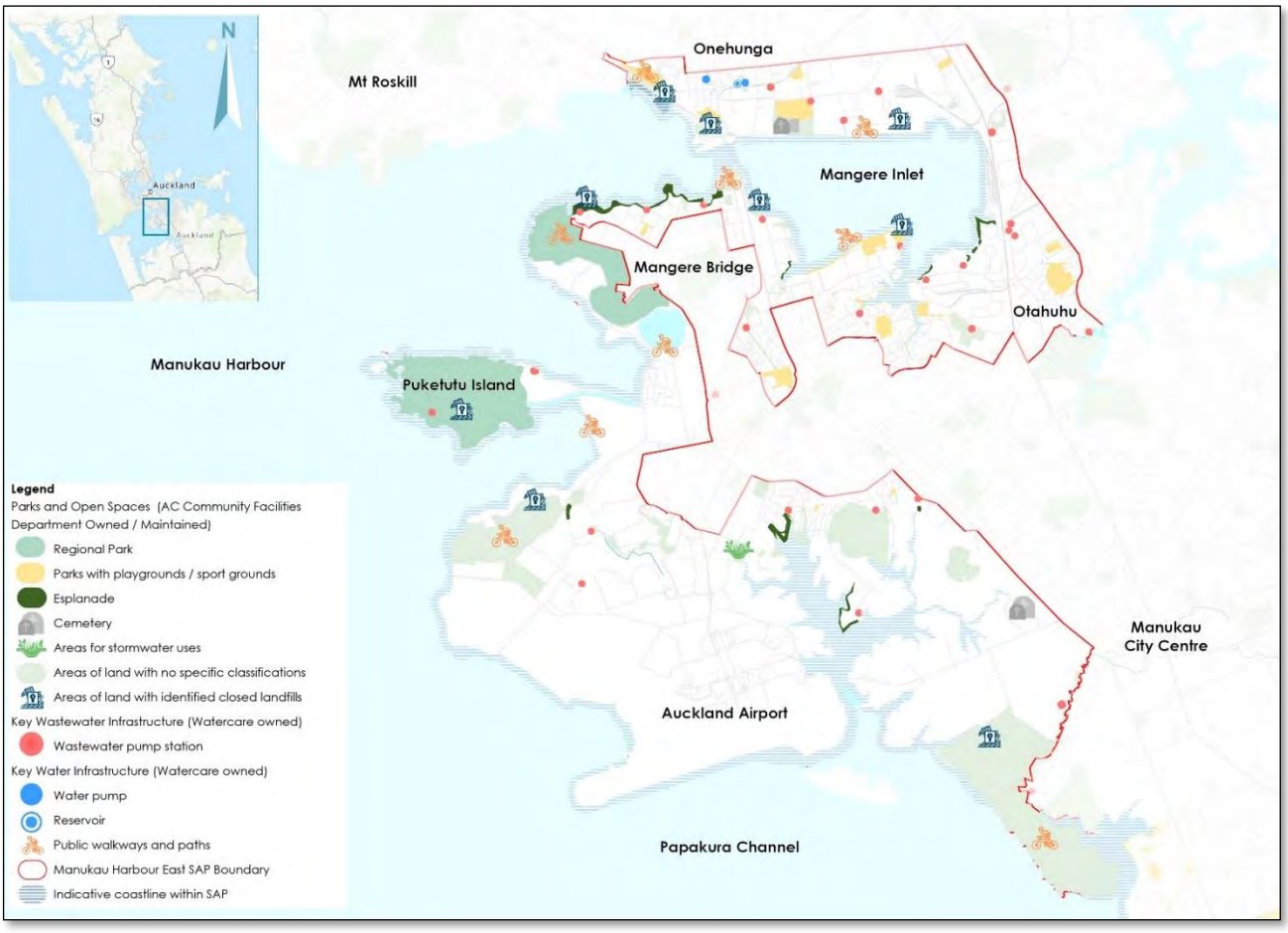

Figure 2-2: Auckland Council and CCO's assets within the Manukau East SAP area

Figure 2-2 shows the general location of Auckland Council land and assets located within the Manukau East SAP area. The technical risk assessment provides a summary of assets and land which have been identified and assessed through that assessment. Specific identification of the locally relevant assets is provided within each coastal 'stretch' in section 5.0. Of note at an SAP scale, are the following assets, facilities and landholdings:

- ~1,018.5 ha of parkland, which includes 15.3 ha of assets such as carparks, paths, playgrounds and buildings; including Ambury Regional Park, Te Motu ā Hiaroa (Puketutu Island), Pukaki Lagoon, and Puhinui Reserve.
- There is an extensive network of coastal paths including the Watercare Coastal Walkway extending from Ambury Regional Park to Otuataua Stonefields, the Kiwi Esplanade Walkway and the Manukau Foreshore East Cycleway.
- There are also nearly 129 km of transport corridors owned by Auckland Council. The SAP is also traversed by several Waka Kotahi NZTA State Highways which are located in close proximity to the coast.
- The area has 708.5 kms of water pipes including several key connections to the Māngere Watercare wastewater treatment plant (located within Unit 3).
- The Onehunga wharves (managed and redevelopment led by Eke Panuku) are within this SAP area. As well, there are active Watercare-managed sludge landfills and biosolid disposal facilities.
- There are multiple Auckland Council-owned and managed closed landfills located across the SAP area including significant areas of reclamation and filling within the Māngere inlet. These are identified within each stretch, as applicable in section 5.0.
- Key connections to the harbour are facilitated by boat-launching facilities in and around the Manukau Harbour East shoreline. Several all-tide boat access ramps are located within Unit 6.

2.2 Coastal and catchment context

Manukau Harbour is the second largest harbour on the west coast of the North Island (Kaipara being the largest) and has an area of about 368 km^2 with over 450 km of shoreline (Auckland Council, 2021).

The harbour entrance is narrow, bringing water from the Tasman Sea, with approximately half the water draining out of the harbour on each tidal cycle (Auckland Council, 2021). The volume of water between high and low tides is around 918 million m^3. The Manukau East SAP area includes the coastline along the Purakau and Papakura Channels.

The shoreline's character is largely a result of the topography, local geology, and the coastal processes (including tides, waves and currents) that act upon the land-sea interface. Human modifications such as land reclamation and construction of coastal defences have also altered the shoreline's position along significant lengths of coast, e.g. around Auckland Airport and the northern shoreline of Māngere Inlet.

There are numerous beaches interspersed along the coastline. However, due to their relatively small size they do not provide much of a buffer to the coastal processes that act upon the shoreline. Beaches are located at Onehunga Bay, along the shoreline of Kiwi Esplanade, Ambury Regional Park, Ōtuataua Stonefields Reserve, and the Ihumātao and Puhinui coastlines. Several have been artificially created, including those at Taumanu Reserve, Onehunga Bay and near Ōtuataua Stonefields Reserve along the shoreline previously occupied by the former Māngere wastewater treatment plant oxidation ponds.

Extensive tracts of mangrove forest also buffer the shoreline at key locations, particularly within the Māngere Inlet, the Pukaki, Waokauri and Puhinui Creeks, and along the Puhinui Reserve/Colin Dale Park coastline. Mangroves also commonly fill the more minor indentations along the shoreline.

Several creeks discharge into the harbour along the Manukau East shoreline, notably Anns Creek, Harania and Tararata Creeks (all within Māngere Inlet), and Ōruarangi, Pukaki, Waokauri and Puhinui Creeks. The catchments these creeks drain into vary in size, and all are highly urbanised.

2.2.1 Coastal processes and climate change

Natural processes, such as coastal inundation and erosion, become hazards when they have the potential to adversely impact land, assets, and sites of value. Auckland is frequently affected by natural hazard events and is likely to experience more frequent and severe events in the future due to climate change. Coastal land instability and erosion, coastal inundation, and flooding (fluvial and pluvial – result of extreme rainfall) hazards have been identified as high to medium frequency events with consequences that range from relatively minor to localised severe consequences[2].

The coastal processes and hazardscape report[2] provides a detailed discussion of the Manukau East shoreline and the natural processes to which it is subject. There are some key nuances associated with the coastal processes for this SAP area. Coastal inundation, erosion and catchment flooding are discussed at a SAP-wide scale below while site or area-specific matters are identified in section 5.0 of the report as relevant.

2.2.1.1 Coastal inundation

The entire Manukau East shoreline is a relatively low wave-energy environment. The shoreline with the highest wave exposure is between Puhinui Creek and Ambury Park with the greatest fetch of between 10 km and 18 km towards the west and southwest. The land is, in many areas of this SAP, of sufficient elevation to assist in the mitigation of sea-level rise impacts. However, there are some low-lying areas, such as in the vicinity of Puhinui Reserve, Māngere wastewater treatment plant and Harania Creek where coastal storm surge impacts will be exacerbated by sea-level rise. Figure 2-3 below identifies coastal inundation for 1% AEP storm surge for present day and with 0.5 m, 1 m and 2 m sea-level rises.

[2] Auckland Council (2023). Shoreline Adaptation Plans. SAP area P Manukau Harbour East supporting report – coastal and hazardscape

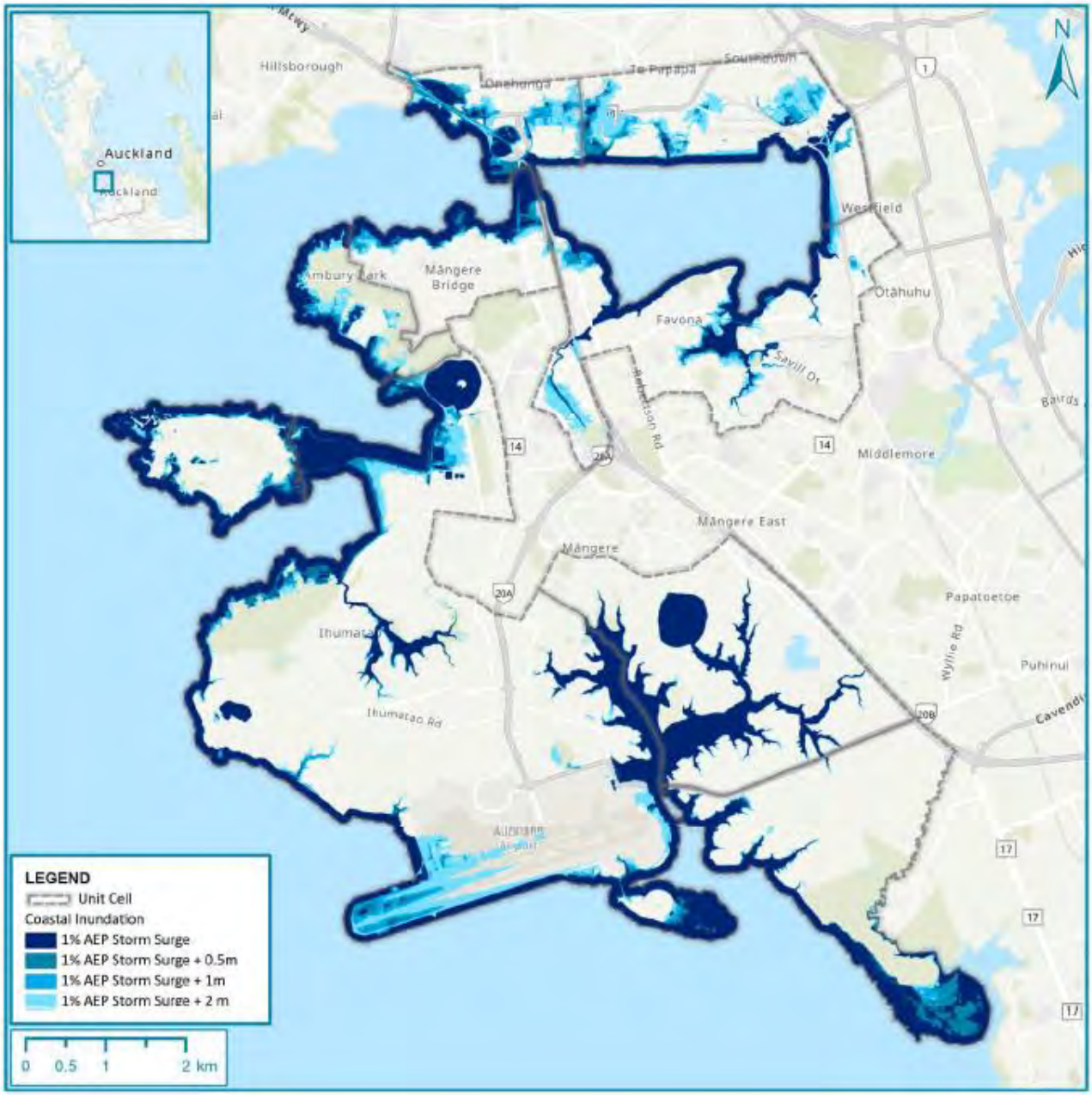

Figure 2-3: Coastal inundation for 1%AEP storm surge for present day and with 0.5 m, 1 m and 2 m sea-level rise (Source Manukau Harbour East Shoreline Adaption Plan: Risk Assessment Technical Report, January 2024, Tonkin & Taylor)

2.2.1.2 Coastal erosion and instability

The change at the shoreline brought by coastal instability and erosion can be slow and incipient, resulting in a gradual landwards retreat through the processes of weathering, marine and bio-erosion processes, or more evident, occurring as episodic failures, due to changes in mass balance, e.g. loading or when a cliff yields along a geological feature such as a fault.

The cliffs and coastal slopes along the Manukau East shoreline are predominantly composed of soil materials (Tauranga Group - alluvial sediments) or volcanic rocks (Auckland Volcanic Field). Tauranga Group sediments are generally weak with low material strength and are susceptible to coastal instability and erosion. In contrast, basalt rock is hard; though scoria, tuff and volcanic ash

are less so. They can be reasonably soft, capable of slumping and are prone to erosion. Due to the complexity of the combination of the forces acting upon the land, various parts of the shoreline erode at different rates (differential erosion). The main natural physical causes of coastal erosion include:

- Marine erosion: mechanical erosion and hydraulic action
- Bio-erosion
- Weathering: mechanical and chemical
- Sub-aerial processes: mass movement, rain-runoff, wind.

The areas along the Manukau East shoreline that are susceptible to coastal instability and erosion for a range of climate change (sea-level rise) scenarios and periods are published on Auckland Council's GeoMaps (Natural Hazards Theme). The mapping is based on Auckland Council's technical report *Predicting Auckland's Exposure to Coastal Instability and Erosion*[6]. Figure 2-4 below identifies the key areas of mapped erosion susceptibility identified in the *Manukau Harbour East Shoreline Adaption Plan: Risk Assessment Technical Report*, January 2024, Tonkin & Taylor.

It can be expected that coastal instability and erosion along this shoreline, as elsewhere, will be greater in areas of higher exposure to the forces of erosion, e.g. along parts of the shoreline with the greatest wave exposure, and where the cliff/slope is over-steepened and has little vegetative cover (exposed soil is more readily eroded by weathering and sub-aerial processes). Climate change and associated sea-level rise is likely to exacerbate the natural processes resulting in slope instability and erosion, e.g. by changing (elevating) the zone of exposure.

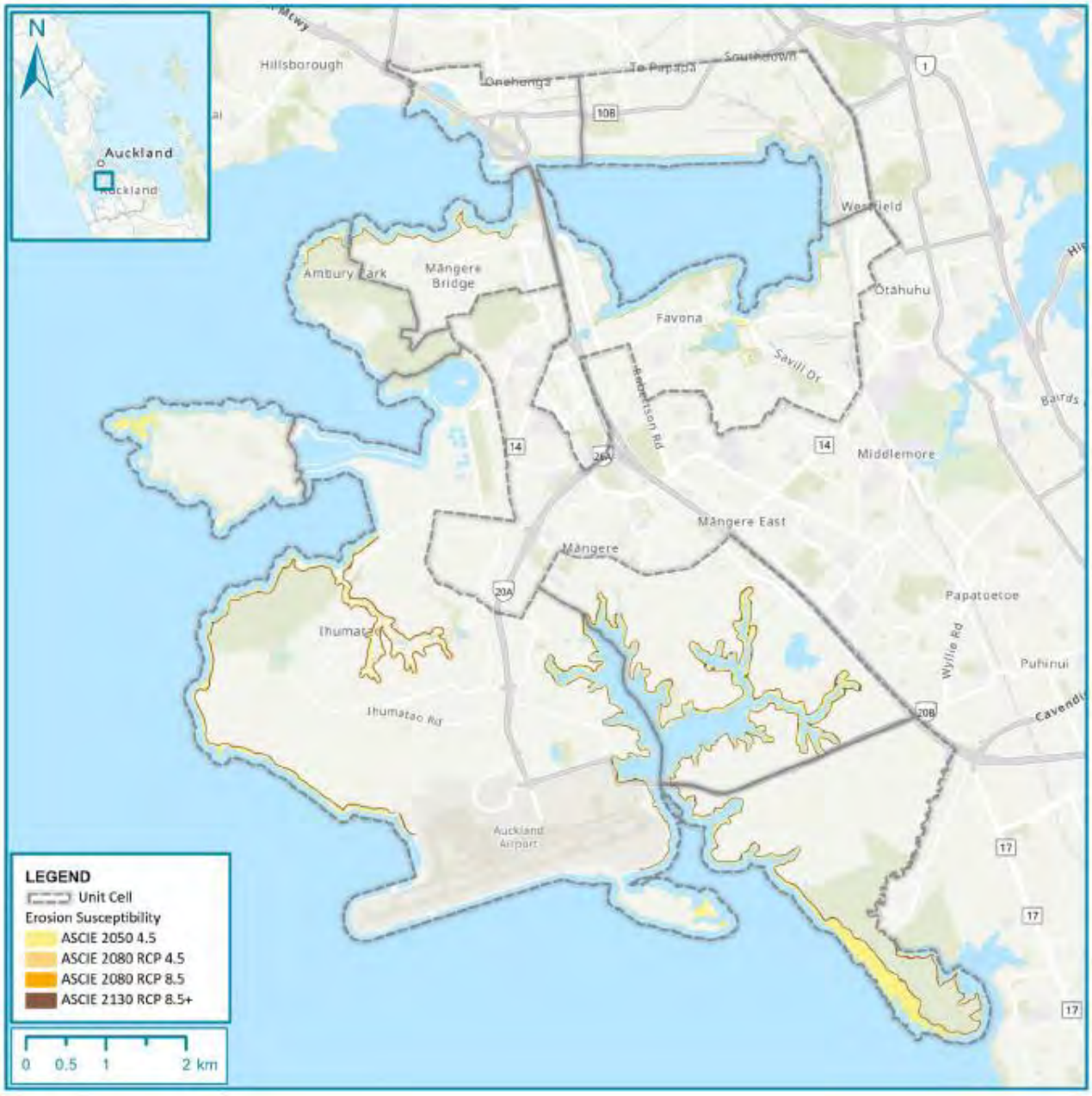

Figure 2-4: Coastal erosion susceptibility for 2050, 2080 and 2130 considering RCP4.5 and RCP8.5 emission scenarios (Source: Manukau Harbour East Shoreline Adaption Plan: Risk Assessment Technical Report, January 2024, Tonkin & Taylor)

Sediment can be deposited and retained in the areas inhabited by saltmarsh and mangrove forest, at least in the short to medium term, potentially enabling those habitats to adapt and survive in a transitional stage and continuing to provide the shoreline with a buffer to wave energy. In the long term, or if sea level rises at a greater rate than predicted, thus far those ecosystems in this area appear to be significantly threatened. Where coastal edges are modified and urban land uses prevent the natural retreat of intertidal areas, there are threats to the habitat of many fauna and flora alike. This is discussed in further detail in the Manukau Harbour East Supporting Report – Ecology.

2.2.2 Catchment flooding

Flooding as a result of extreme rainfall, when the drainage capacity of the natural and/or built environment systems cannot cope, is Auckland's most commonly occurring natural hazard. Flood events vary in size, frequency, and location. Approximately 16% of the Auckland land area is within the 1% AEP floodplain. A 1% AEP event is experienced somewhere in the region every three to five years.

Flooding can be caused by long, intense rainfall events over a large spatial area and, as more commonly experienced in Auckland, high intensity rainfall events on a smaller geographic scale. These events can cause flooding in a number of catchments or sub-catchments. Most catchments in urban Auckland are relatively small and prone to impacts from high-intensity rainfall events. Factors influencing flood levels, especially in small urban catchments, are:

- The often-significant proportion of impervious surfaces
- The capacity of artificial drainage – pipes and concrete channels
- Reduced storage in floodplains, e.g. through earthworks and building development
- Obstacles in the flow path, e.g. culverts, buildings, landscaping.

Auckland Council has a developed an extensive flood mapping programme. The modelled spatial extent of potential flooding is published on Auckland Council's web-based portal GeoMaps (under the Natural Hazards theme). The flood hazard maps developed at catchment scale indicate flood plains, flood-prone areas, flood-sensitive areas, and overland flow paths which may be affected by a rainfall event that has a 1% AEP (which is also generally known as a 1 in 100-year ARI).

2.3 Risk assessment

A coastal hazard risk assessment was undertaken by Tonkin & Taylor to support this SAP report[3]. This aimed to measure how risk to Auckland Council-owned land and assets (and selected regionally available representations of ecological and cultural values, where located on Auckland Council-owned land), from coastal hazards, is changing over time due to climate change. The risk assessment process involves assessment of the exposure of land and assets in coastal areas to two natural hazards, coastal inundation and coastal erosion susceptibility, including the impacts of climate change. Exposure and risk have been assessed and aggregated into six groupings at a 'unit scale'. This was then grouped by assets to enable a view of risk to each grouping and the ability to consider the change in risk over time. The Tonkin & Taylor (2024) Risk Assessment Report includes a detailed discussion of the methodology applied and the assets identified in each unit. A summary of this is provided, at a unit scale, in section 5.0.

[3] Manukau Harbour East Shoreline Adaption Plan: Risk Assessment Technical Report, January 2024, Tonkin and Taylor.

Table 2-1: Six groupings and descriptions of assets

Grouping	Description
Auckland Council-owned land	• Park and reserve land area
Auckland Council community facilities	• Carparks, accessways, paths and tracks, ramps, seawalls, wharves and jetties, community buildings and park amenities
Transport infrastructure	• Roads, bridges, ferry terminals and train stations
Water assets and infrastructure	• Publicly-owned three waters infrastructure
Environmental	• Areas of ecological significance (SEA) based on the Auckland Unitary Plan
Culture and heritage	• Cultural heritage points, Mana Whenua areas of significance and sites of historical heritage significance

2.4 Social context

New Zealanders have a long-standing and traditional regard for access to the coast. For the Manukau East SAP, the harbour and coast hold significant history. The development and establishment of the area is documented back to pre-1800s, and it has been significantly altered from its natural state, in particular, through reclaimed land on Manukau Harbour's shore for railway, airport and industrial uses. The policy, social and cultural context for this SAP was researched in a supporting report[4], which can be referenced for further detail.

The SAP area includes a large urban area, residential development and associated activities which are predominantly concentrated along the coastlines of Māngere Bridge and Favona and in Onehunga. It also has large areas that support non-residential uses, including commercial, industrial, education, and other special land uses while the southern areas of the SAP have more rural characteristics.

Coastal access is predominantly concentrated in areas close to residential areas. The coastline is extensively used for walking, running, and cycling using the significant coastal network of paths and tracks with picnicking and social connection in the parks. People also partake in water-based activities including swimming, boating, sailing, and fishing but the tidal nature of this SAP area does impact on these.

2.4.1 Communities and demographics

Manging the impacts of coastal hazards and climate change must consider potential implications for the community. The demographic data below in Figure 2-5 provides a general overview of the existing profile and trends of the SAP area, highlighting the unique local context.

[4] Auckland Council (2023). *Shoreline Adaptation Plans. SAP area P Manukau Harbour East supporting report - policy, social and cultural.* Prepared by Barker & Associates for Auckland Council.

Population growth is expected to continue to occur within this SAP area. Based on the 2018 census, this area has a large percentage of population who are under 14 years old and/or are 65 years and over. Population densities are generally concentrated along the southern side of the Māngere Inlet, as well as around the existing centres of Māngere, Favona and Onehunga. Other areas are mostly occupied by industrial or special land-use activities, as shown in Figure 2-5. There is a lower percentage of house ownership and over 10,0000 State housing across three local board areas[5]. Greater intensification of residential development across most of the existing urban area including Māngere Bridge, Favona, Māngere and Onehunga will result in an increase in the intensity of development, and as a consequence, is likely to put increased pressure on coastal areas and assets within the SAP area.

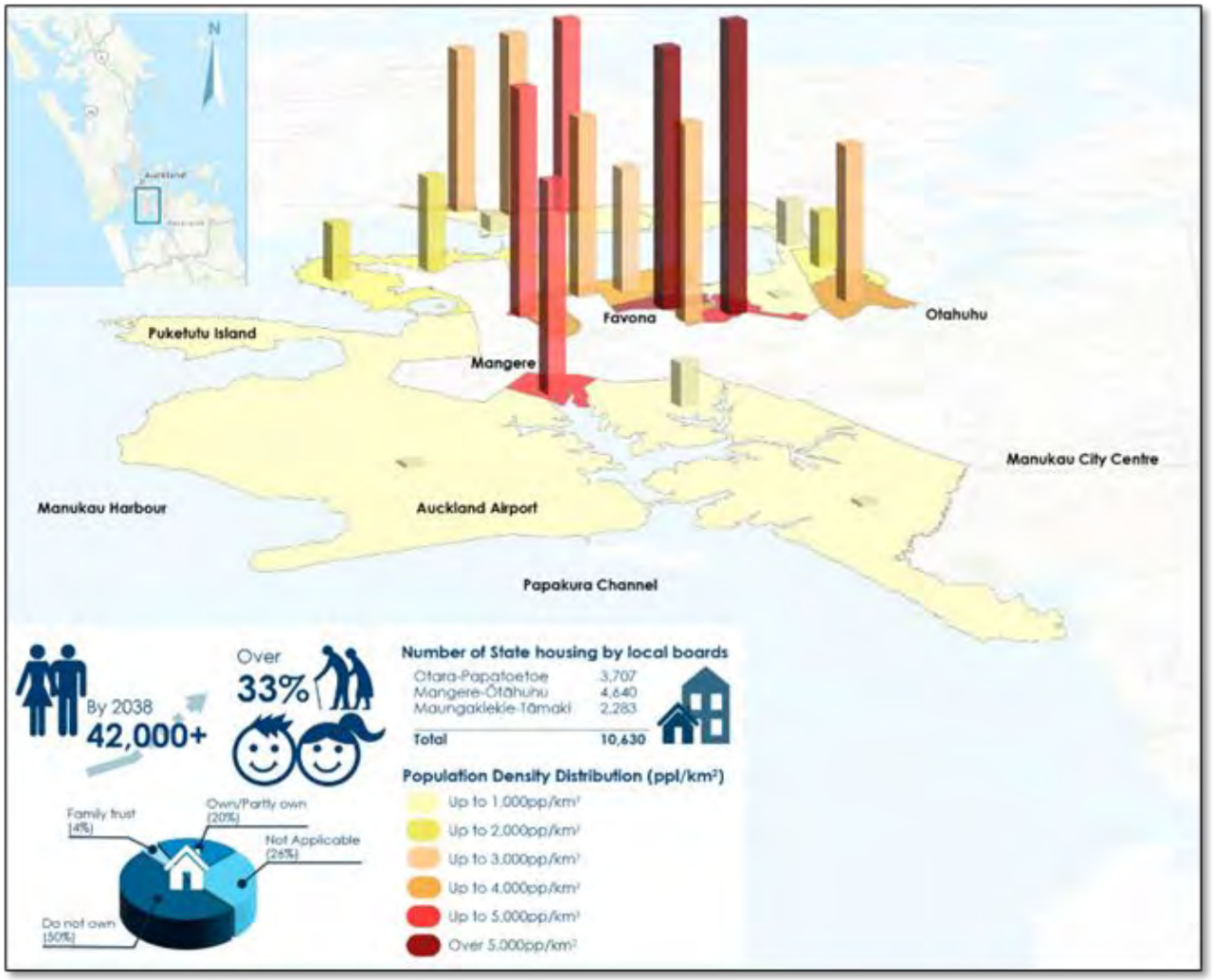

Figure 2-5: Demographic profile of Manukau East SAP

There are no site- specific studies available in regard to the relationship between social demographics and climate change within the SAP area. However, international studies have shown that changes to the demographic profile of an area could heighten vulnerability to climate change, including, forcing people to migrate to areas that are either environmentally marginal or more at risk. Based on the demographic profile of the SAP area, the following themes have been acknowledged and considered during development of this SAP to support an understanding of the community's use,

5 Auckland Council (2023). *Shoreline Adaptation Plans. SAP area P Manukau Harbour East supporting report - policy, social and cultural.* Prepared by Barker & Associates for Auckland Council.

value and the likely future demand on coastal areas. This acknowledges that community engagement is only one avenue to understanding a community's value, use and aspirations for Auckland Council-owned land and assets located within their area:

- Changes in population growth and age structure could result in changes in use of the coastal environment. For example, there may be more demand on recreational and leisure assets to accommodate needs for both younger and more senior residents. Population growth might also increase demand in access to the coastal environment. This is supported by feedback identified through engagement and in discussion with Local Boards.
- Changes to existing assets and public services could potentially impact on vulnerable people, such as those with disabilities, lower income households, and family households with young children, e.g. closure of an existing playground would reduce options for recreational activities. The need to support vulnerable communities wellbeing through provision of access to public coastal areas was also identified through engagement activities (see section 4.0 below).

The SAP area's extensive coastal walkways, its access to the harbour through boat launching and the popular regional parks attract recreational visitors from the wider Auckland population. The subsequent impacts of this increased pressure on the coastal land and assets has been recognised during the SAP process.

2.4.2 Community groups, clubs and organisations

As an area with rich historic background and well-established local communities, there are a number of community groups and organisations, including environmental groups, youth groups and other groups for whom access to the harbour is important for their activities and who actively use the coastal and associated assets within the Manukau East SAP area. For example, the boat ramps and facilities, all-tide harbour access areas and associated open space to allow for set-up of vessels is essential for groups such as the Aotea Sea Scouts, Waka Ama groups and recreational fishers. Environmental groups actively support conservation and restoration efforts of both catchments and coastal areas. Acknowledging and supporting their efforts, as members of the local community, has been a consistent theme across community feedback (see section 4.0).

It is important to acknowledge the social and community values held by these groups and organisations, while recognising that any changes to these assets will likely affect their current uses and interests. The policy, social and cultural supporting report identifies the approximate location of community groups and clubs within the area and details further information on each group in relation to the coastal environment.

2.5 Regulatory and policy context

The policy, social and cultural supporting report provides an extensive overview of the legislation that is relevant to the development of this SAP. Understanding the regulatory and policy context applicable to the area helps us understand previously expressed issues by the communities, as well as their values, objectives and aspirations. The following are key plans and documents of relevance to Manukau East SAP development and will require further consideration through implementation.

2.5.1 Local Board-led planning

Local Board Plans

There are three 2023 Local Board Plans that are relevant to this SAP area, being for Ōtara-Papatoetoe, Māngere-Ōtāhuhu, and Maungakiekie-Tāmaki:

- All plans include a section on climate action and cover the challenges and opportunities of dealing with climate change under their sections on the environment. Māngere-Ōtāhuhu Local Board acknowledges the 2023 weather events and all note the need to prepare for flooding and more extreme weather events.
- The Maungakiekie-Tāmaki Local Board Plan 2023 includes a vision statement on the environment - *'Our arawai / waterways and whenua / land are healthy and thriving. We are resilient to the impacts of climate change. Mana whenua and our community are supported to be kaitiaki / guardians for our environment.'*
- Maungakiekie-Tamaki and Ōtara-Papatoetoe Local Boards have prepared Climate Action Plans. These look at actions the local boards are committed to, to build resilience and adapt to the impacts of climate change, including reducing carbon emissions, increasing public awareness of climate change through community educational initiatives and delivering environmental restoration programmes.

Greenways and local paths plans

These highlight the priority connections that local boards will focus on to deliver safe and enjoyable walking and cycling networks while also providing opportunities for ecological restoration. For Manukau East, the following are identified:

- Ōtara-Papatoetoe Greenways / Local Paths Plan 2017 includes a priority route through the Puhinui Reserve and the Manukau Memorial Gardens. It notes that there are also greenway paths proposed along the east side of Colin Dale Park and the Otaimako Creek and along the north of Waokauri Creek. Te Araroa walkway runs along Puhinui Road and passes through the north of Puhinui Reserve.
- The Maungakiekie-Tāmaki Local Paths (Greenways) Plan Review 2019 reviewed the earlier 2012 plan providing further priority paths that support active transport. It identifies the Manukau Foreshore East Cycleway as an express path and gives high priority to extending this through Anns Creek as part of the West-East Upper Manukau Sylvia Park route.
- The Māngere-Ōtāhuhu Local Board does not have a greenways or local paths plan but the area does have an extensive network of coastal paths. Te Araroa walkway runs from the Kiwi Esplanade to Otuataua Stonefield's Reserve.

2.5.2 Local and regional parks planning

Regional Parks Management Plan 2023

The Ambury Regional Park Regional Parks Management Plan includes a section and general policies on 'Sustainable Management and Climate Change'.

This recognises that Ambury is one of Auckland's most popular regional parks and recorded visitor numbers are consistently around 400,000 over the past five years.

Local Parks Management Plans (LPMP)

These are omnibus management plans:

- The Maungakiekie-Tāmaki LPMP is currently under development and close internal collaboration is occurring to ensure that the SAPs and LPMP are aligned.
- At this stage, LPMPs for Ōtara-Papatoetoe and Māngere-Ōtāhuhu Local Boards have not yet been scheduled. Some parks have individual management plans, such as the Waikaraka Park Reserve Management Plan 2021.

Te Whakaoranga o te Puhinui

This plan is a regeneration programme in the heart of Tāmaki ki te tonga (south Auckland), focused on the ancestral stream of Te Puhinui.

- It is the result of a collaborative partnership between Te Waiohua iwi, the Auckland Council whaanau, Crown agencies, community organisations and diverse communities of Te Puhinui.
- It includes a roadmap for action and seeks to draw on existing knowledge about the catchment and is intended to deliver improved social, cultural, environmental and economic outcomes. This is of particular relevance to Unit 1 Puhinui.

2.5.3 Co-managed parks

2.5.3.1 Pūkaki Tapu o Poutukeka

The Pūkaki tapu o Poutūkeka co-management agreement establishes a relationship between Auckland Council and the Pūkaki Māori marae committee and the Āakitai settlement trust for the governance of the Pūkaki Tapu (crater) and Ngā Kapua Kohuroa (Crater Hill lake).

The next step identified through this agreement is the development of a reserve management plan for Pūkaki Tapu (crater) and Ngā Kapua Kohuroa (Crater Hill lake). This plan is anticipated to identify the importance and value associated with connections to the inlets (of the Manukau Harbour) and Pūkaki crater (lagoon). Noting that traditionally, the lagoon and coastal inlets were a place where mana whenua would gather kai from the estuaries, they used the inlets as a travel route to the Manukau Harbour and the lagoon was a safe place to berth their waka.

The management plan may address some of the following topics and matters (noted as relevant to the SAP scope and purpose):

- Ecological restoration and conservation
- The future of the land including further investigations into the whether the crater returns to being a lagoon, involving the bund which prevents inundation of the lagoon from the coast
- Mitigating further erosion of the crater/land
- Exploring opportunities for future walkways around the crater
- Protection/preservation of the natural and heritage features of the site.

2.5.3.2 Te Motu ā Hiaroa (Puketutu Island)

The island is owned by Te Motu ā Hiaroa Charitable Trust which consists of representatives from Te Kawerau ā Maki, Te Ahiwaru Trust and Waikato Tainui and is managed by the Management Trust which also includes representatives from Auckland Council and Watercare Services. Auckland Council holds a lease over the island for the provision of public accessible open space or cultural parks and the Te Motu ā Hiaroa Charitable Trust (owners) are developing cultural facilities on the island. The island also includes the Living Earth composting plant, Kelliher homestead (a historic place) and several residential properties[6].

Puketutu Island (Unit 4 in this report, see section 5.0) forms part of a significant cultural landscape rich in history, customs, and traditions. The Te Motu ā Hiaroa Charitable Trust is leading master planning for the island, including consideration of access to the island which is located within Unit 3.

2.5.4 Master planning and significant infrastructure

There are a number of other planning processes which impact the land uses and infrastructure of the Manukau East area:

- The Eke Panuku-led redevelopment and master planning for the Onehunga Wharf which will be implemented over the next 25 years has been progressing since 2018, when Auckland Council purchased the land and facilities from the Ports of Auckland. The project, which is being advanced in partnership with mana whenua, is anticipated to include public spaces, and better connections to the Manukau Harbour.
- The restoration of the 'Watercare waterfront', the reintroduction of saltwater to the Ōruarangi creek and the development of stormwater network discharge consents for the urbanised catchments within this area are also identified as significant projects within this area, primarily Unit 3.
- The Auckland light rail project, proposed East-West link roading project and successive studies to consider the location of a major port within the Manukau Harbour are also relevant to the lands and coastline of this area. These projects are acknowledged and the need to review adaptation strategies depending on their progress (subject to statutory process) is noted.
- The Making Space for Water 'Blue Green' Programme led by Healthy Waters is part of Auckland Council's flood recovery programme. It proposes nine operational initiatives, ranging from increased stormwater maintenance and stream rehabilitation, to blue-green projects and site-specific solutions for high-risk properties. Two of the nine catchments are located with the Manukau East SAP area. Harania Creek and Te Ararata Greenway are both located within Unit 7.

6 Māngere-Ōtāhuhu Local Board 2023

2.6 Ecological context

The Manukau East SAP shoreline comprises a wide variety of habitats of varying ecological significance. A separate supporting report on the ecology of this SAP has been prepared by Tonkin & Taylor[7]. Key findings and discussion are summarised here.

The Manukau Harbour catchment has undergone many changes in land cover since the arrival of humans. This has resulted in a significant loss of native habitat, leaving fragmented remaining pockets which are impacted by their isolation, introduction of non-indigenous species and plant diseases. This SAP area has also been subject to several large-scale reclamations and shoreline modifications.

Manukau East includes some unique habitats associated with volcanic features, including volcanic craters and lagoons (such as Pūkaki and Māngere lagoons) and basaltic lava rockland/coastal needle grass tussockland (SA1.5). The SAP area also includes the Onehunga volcanic aquifer, which is located to the north of the Māngere Inlet, with springs that interface with the coastal marine area at locations along the Māngere Inlet northern shoreline, such as Anns Creek. Other habitats and ecosystems found within the SAP area are associated with intertidal sand and mud flats, beaches, wetlands, saltmarsh and mangroves.

The expansive intertidal area is of significant ecological value as feeding and roosting areas for international migratory birds and New Zealand endemic wading birds. Fringing coastal vegetation, mangroves and saltmarsh, also provide habitat for coastal bird species, including banded rail and fernbird.

Manukau Harbour has the longest State of the Environment marine monitoring programme in Auckland, and this has been underway for several decades. This long-term data is valuable in being able to detect trends and changes over time, to understand the way the harbour is being used and how it has been impacted over time.

2.6.1 Identified ecological areas and values

The Manukau East SAP is subject to 18 Marine Significant Ecological Areas (SEA-M), and 35 Terrestrial Significant Ecological Areas (SEA-T). There are six Biodiversity Focus Areas (BFAs). The SAP sits within a wider West Coast North Island Marine Mammal Sanctuary which was created by DoC in 2008 to help protect the critically endangered Māui dolphin.

2.6.1.1 Significant Ecological Areas

The Manukau East SAP area includes multiple SEA-Ms, affording protection to a variety of intertidal habitats, including soft sediments, shell banks and saline vegetation sequences (such as eelgrass and mangroves). Many of these habitats are protected because they are utilised by both endemic and international migratory wading and coastal birds, for roosting, nesting (endemic species only) and

[7] Shoreline Adaptation Plans: Ecological Supporting Report SAP Area P Manukau Harbour East, Tonkin and Taylor Ltd, January 2024

foraging. These SEA-Ms also afford protection to volcanic features within the coastal marine area, including lava flows and vegetation at Anns Creek, Māngere Lagoon, lava flows at Puketutu Island and the Otuataua coastline, showing the spatial extent of each SEA-M.

For the terrestrial SEAs within the Manukau East SAP, threat status, rarity, migration pathways and buffers are key drivers for protection. Terrestrial SEAs that are located in the coastal margin and those that abut SEA- Ms are of greatest relevance to inform SAPs.

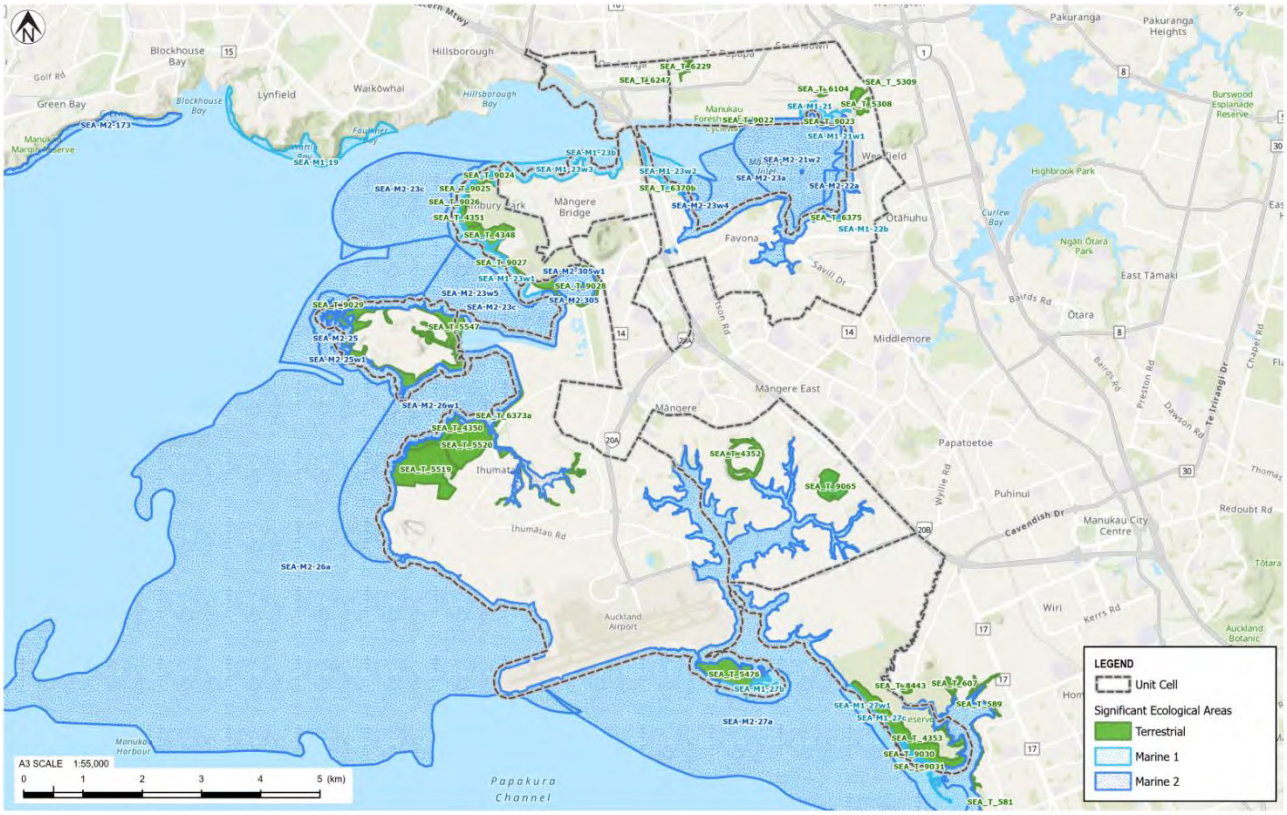

Figure 2-6: Significant Ecological Areas – Marine and Terrestrial

2.6.1.2 Biodiversity Focus Areas

A biodiversity focus area (BFA) is a prioritised area of ecological significance. They represent the minimum number of sites required for targeted management to ensure protection of Auckland's indigenous species and threatened ecosystems. BFAs are non-statutory and enable Auckland Council to guide the delivery of conservation activities on public land and help guide biodiversity management on private land (Tiaki Tāmaki Makaurau, 2023a).

There are six BFAs within the Manukau East SAP, located at:

- Puhinui Reserve
- Prices Road Wetlands
- Otuataua
- Puketutu Island
- Ambury
- Anns Creek.

2.6.2 Marine environment

The Manukau East SAP area contains a variety of coastal habitats and associated species. Several of these are identified below:

- **Seagrass and saltmarsh** are highly productive systems that provide vital ecosystem services such as buffering coastal erosion, providing habitats, sediment/contaminant retention and carbon sequestration. Pockets of seagrass and saltmarsh habitats are found notably within Anns Creek, Māngere Lagoon, Pūkaki Lagoon crater, Puketutu Island, Ambury Foreshore and Puhinui shellbanks.
- **Mangroves** are a common ecosystem type in the Manukau Harbour and line much of the coastline. The mangroves found within Puhinui and Pūkaki Creeks and are known to be some of the oldest mangroves in the harbour. Mangroves provide a natural defence against coastal hazards, play an important role in sequestering carbon and support a diversity of animal life. Equally, mangroves are considered a nuisance, due to their visual amenity, and recreational and cultural impacts. Auckland Council and other interested groups have undertaken targeted mangrove removal within the Manukau East SAP area.
- **Intertidal sand and mudflats** form a dominant habitat type within this SAP area, particularly within Māngere Inlet, Ambury Foreshore and along the Otuataua coastline. They provide habitat for many invertebrate species who live and forage both within and on the sand and mudflats, including polychaete worms, crab and shrimps, gastropods, bivalves, amphipods, isopods and echinoderms.
- Manukau Harbour plays a significant role for endemic and migratory shorebirds. Throughout the harbour, upwards of 30,000 birds use the exposed mud and sand flats daily to feed, while coastal open green spaces and shell banks provide important roosting areas. Forty-five different coastal shorebird and wader bird species have been identified in the Manukau East SAP area, including seven *Threatened* and 14 *At Risk* species. For the full list of species present in the SAP area refer to the Supporting Report (Appendix I).
- Manukau Harbour has many **fish species** which are important for cultural, recreational and commercial harvest. Many of the species found in the offshore environment of the Manukau East SAP area are commercially and recreationally targeted and have associated quota limits. Forty-four fish species may be present within the SAP area according to the National Aquatic Biodiversity System (NABIS).

2.6.3 Freshwater environment

River water quality and ecology is monitored at several locations within Manukau Harbour as part of the Auckland Council State of Environment Monitoring Programme. One river water quality and one ecology monitoring site is located on the Puhinui Stream, which discharges to the Manukau East SAP area, and is representative of intensive urban and industrial land use. Two additional river ecology monitoring sites are located in Te Ararata Creek and Anns Creek, which discharge to the Māngere Inlet. For further detail refer to the Ecological Supporting Report.

3.0 Cultural Context

The wellbeing of tāngata whenua 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 intrinsic connection of tāngata whenua to te taiao.

As an adaptation workstream within Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan, the SAPs seek to respect and acknowledge te ao Māori by giving effect to the Te Tirti o Waitangi, Kia Ora Tāmaki Makaurau and Te Ora ō Tāmaki Makaurau frameworks and recognising and providing for te ao Māori concepts.

Engagement and collaboration with ngā hapū me ngā iwi o Tāmaki Makaurau has sought to establish partnership with iwi through the creation and implementation of the SAP area plans under the SAP programme. This approach was developed at the programme's inception in 2021 and will continue beyond the completion of SAP area plans. The relevant programme principes which underpin this approach are included in Attachment A1. These principles are intended to reflect those of the Te Ora ō Tāmaki Makaurau Wellbeing Framework under which there are three dimensions of wellbeing that form a holistic approach:

- **Taiao** (environment)
- **Whenua** (land, earth)
- **Tāngata** (people).

When considered together, dimensions within the Te Ora framework can frame our adaptation to climate change by taking a whole living systems approach. These dimensions are discussed in greater detail in Attachment A1.

3.1 Ngā hapū me ngā iwi o Tāmaki Makaurau involvement in the development of the SAP

The hapū and iwi of Tāmaki Makaurau, hold important values as kaitiaki (guardians, protectors, stewards). These include their intrinsic ancestral connections ties to lands, water, wāhi tapu (sacred areas) and other taonga (treasures). Engagement with local iwi is vital in shaping the SAPs.

In general, the coastline, catchment and harbour hold great spiritual and culture value to Ngā hapū me ngā iwi o Tāmaki Makaurau.

To date, the engagement process within the SAP Programme has been facilitated via:

- Regional discussions with the Infrastructure and Environmental Services (I&ES) Mana Whenua Forum
- Local iwi engagement on each area-based plan
- Initial governance discussions with Te Pou Taiao and the Houkura (IMBS).

In the spirit of partnership, the Auckland Council I&ES 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
- Reconnect to ancestral shorelines (this aligns to Tuurangawaewae described in Kia ora Te Tatai of whakapapa interconnections and interdependencies).

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

3.2 Local iwi engagement

For each SAP area, local iwi are formally approached via a letter to engage. Updates on the programme are also provided through the I&ES Mana Whenua Forum, with an overview on the upcoming SAP areas and the extension of an invitation to engage if other parties wished to be involved in the development of upcoming SAP area plans.

For the Manukau East area, several iwi expressed an interest in the SAP development. While the use of statutory acknowledgement and treaty settlement documents provide a foundation for understanding documented and statutory interest, it is noted that Treaty Settlement processes are ongoing, and it is important to recognise that there are unresolved claims and disputes between the Crown and iwi and hapū. This can result in iwi who have strong affiliation or whakapapa to an area not holding a Statutory Acknowledgement.

The Manukau East SAP area includes an important portage (between the Manukau and Waitemata Harbours) which means this is of significance and interest to Ngā hapū me ngā iwi o Tāmaki Makaurau.

Those who whakapapa to the area and / or expressed an interest in the Manukau East SAP Kaupapa include:

- Ngaati Te Ata Waiohua
- Te Ākitai Waiohua
- Te Kawerau ā Maki
- Ngaati Tamaoho
- Te Ahiwaru
- Waikato Tainui
- Ngāi Tai Ki Tāmaki
- Ngāti Whātua Orākei
- Ngaati Whanaunga.

Through this engagement process, Auckland Council worked with the respective representatives of the group to provide cultural statements and cultural commentary to help guide the adaptation approaches set out within this SAP.

The development of this SAP and selection of coastal management strategies has been guided by Ngaati Te Ata Waiohua, Ngaati Tamaoho, Te Ahiwaru, Te Ākitai Waiohua and Ngāti Whātua Orākei. Throughout the development of this document, mana whenua engagement has taken place with those iwi named above and with Waikato Tainui and Ngaati Whanaunga and via a series of online and in-person hui, workshops and on-site hikoi. Each of these iwi groups has been involved in the development of this SAP in some shape or form as they expressed interest in the Manukau East area extent.

Auckland Council acknowledges that iwi and hapū involvement is critical to the success of the SAP programme. Engagement with the above iwi and ngā hapū me ngā iwi o Tāmaki Makaurau who express an interest will continue throughout completion of the SAP programme and its implementation.

3.3 Local cultural context

The lands and waters that now comprise Tāmaki Makaurau Auckland have been occupied and accessed for over 1,000 years by tāngata whenua as the first inhabitants of Tāmaki Makaurau and form the ecological and cultural fabric of the region. Te Ao Māori calls for the protection and preservation of whole living systems, and for maintenance, sustainability and regeneration of the whakapapa relationships that enable the wellbeing of these systems. Our coastal environment plays an important part of this system.

Each iwi has specific and wider cultural values, interests and associations with the coastal environment and the adjoining whenua that has been captured within this SAP and in individual, iwi-authored ‘Cultural Statements’ which outline each iwi’s guiding principles and cultural values. It is critical to note that each iwi is the kaitiaki (guardian) of their respective mātauranga associated with these areas and thus each ‘Cultural Statement Report’ is safeguarded and subject to a disclaimer to protect an iwi’s intellectual property. The same applies for all cultural kōrero, values and mātauranga embedded within this report.

In recognition of the partnership approach of the coastal environments and adjoining whenua, following publication of this report, 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 the implementation of the SAPs.

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. Therefore, 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.

The cultural history and context of the area, particularly how we embed mātauranga Māori and Te Ao Māori principles, is relevant to the Manukau East SAP development.

3.3.1 The Manukau Harbour Claim (Wai 08)

In 1985, the Waitangi Tribunal (the Tribunal) reported on a claim on behalf of the people of the Manukau Harbour. It concerned pollution of seafood resources and loss of surrounding land from confiscation after the New Zealand wars, and for public works.

This claim is integral in understanding the impact on the wellbeing of those iwi and hapu who live on and around the Manukau and have done so for centuries.[8]

Following are a number of findings by the Tribunal on the Manukau Harbour:

- There is insufficient research to assess the impacts of development on the Manukau Harbour and its environs
- The waters of the Manukau once supported abundant marine resources, and these are now seriously depleted and adversely affected
- Loss of fish stocks is unquantifiable, but overfishing has depleted stocks and the marine habitat has been seriously affected by reclamations, sedimentation, and discharges
- The Māori people have been substantially affected by the loss of their traditional access to the sea, the destruction of traditional fishing grounds, and by failure to define and protect areas of special significance to them.

The report has several recommendations that address the findings of the Tribunal; however, the claim remains unsettled. As such, the Manukau Report (WAI08) identifies the loss to the people of the Manukau Harbour.

3.4 Mātauranga ā iwi, cultural aspirations and outcomes

Sites and places of significance to iwi have both tangible and intangible cultural values in association with historic events, occupation and cultural activities. 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 Auckland Council has an interest and/ or assets within these areas, it is vitally important for direct engagement to be undertaken with iwi so that cultural impacts can be identified and avoided.

In addition, for each coastal stretch, iwi may share additional mātauranga through the implementation process. 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 of iwi and supports the cultural values that they have within their rohe.

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[8] The Manukau Report (1985). Report of the Waitangi Tribunal on the Manukau claim (Wai 8). 2nd ed. Wellington , N.Z.: The Tribunal

Auckland Council acknowledges that all cultural information within this document is the intellectual property of iwi who have contributed to the development and co-authoring of the Manukau East Shoreline Adaptation Plan. To ensure the protection of Mātauranga Māori, cultural information must not be recirculated to other workstreams without direct consultation with and approval by 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.

3.4.1 Ngaati Tamaoho

Ngaati Tamaoho has identified an interest in the Manukau East coastal area. As such, Ngaati Tamaoho has been involved throughout the development of the Manukau East SAP, providing feedback on the selection of coastal adaptation strategies of relevance to the Manukau Harbour SAPs (Awhitu, Manukau South, Pahurehure and Manukau East).

Mātauranga shared by Ngaati Tamaoho includes:

Tino Rangatiratanga	Self-determination
Ritenga	Right to determine its own practices
Oritetanga	To be treated equitably
Mana Whakahaere	Right to exercise their own tikanga
Maru Taha Tika	Activity protect rights and interests
Hono Marino	Not unreasonably deny public use of the coastal marine area, foreshore or seabed.
Kaitiakitanga	Guardianship and stewardship of te tiao
Manaakitanga	Support iwi and hapu aspirations for the foreshore and seabed.

As identified in Section 3.2 (local engagement) korero has been shared and Ngaati Tamaoho are considering the preparation of a cultural statement. Upon the completion of this, and through continuing to work collaboratively toward implementation of the SAPs, the SAP team will work with Ngaati Tamaoho and where appropriate, revise further iteration of this SAP report.

3.4.2 Ngaati Te Ata Waiohua

Mātauranga shared by Ngaati Te Ata Waiohua

PEPEHA

Ko Matukutuureia te maunga,
Matukutuureia is the ancestral mountain,
Ko Puhinui te awa,
Puhinui is the river,
Ko Te Maanukanuka o Hoturoa te moana,
Maanuka is the harbour,
Ko Kaiwhare te taniwha,
Kaiwhare is the spiritual guardian,
Ko Te Ata-i-Rehia te tupuna
Te Ata-i-Rehia is the eponymous ancestor.

The table below sets out a series of guiding principles provided and advocated for by Ngaati Te Ata Waiohua. Future coastal management strategies across the Manukau East SAP area (set out in the glossary) aim to acknowledge and support these principles through implementation, recognising the principles below as the starting point for more meaningful consultation with local iwi groups within the Manukau East area.

Mana Whakahaere	• Recognising whanau, hapu, and iwi rights to exercise their own tikanga concerning the coastal marine area, foreshore and seabed.
Iwi Rangatiratanga	• Recognising iwi rights to self-determination including their right of self-governance and self-regulation of their coastal marine area, foreshore and seabed.
Maru Taha Tika	• Actively protecting whanau, hapu and iwi rights as well as interests concerning the coastal marine area, foreshore and seabed.
Paneketanga	• Recognising the whanau, hapu and iwi rights to development over its foreshore and seabed within their own cultural preferences.
Manākitanga	• Recognising the role that government and Auckland Council must play in supporting whanau, hapu and iwi rights, needs and aspirations concerning coastal marine area, foreshore and seabed.
Hono Marino	• Acknowledging that Ngāti Te Ata Waiohua would not unreasonably or without good cause deny others the use and sharing of certain coastal marine area, foreshore and seabed resources consistent with the tikanga of the iwi.
Turukitanga	• Ngāti Te Waiohua consider the principles of access, certainty and protection can be met through recognition of the above principles as the starting point for more meaningful consultation.

Kaitiakitanga	• Our guardianship is inextricably linked to tino rangatiratanga and is a diverse set of tikanga or practices which result in sustainable management of a resource. Kaitiakitanga involves a broad set of practices based on a world and environmental view and is about healing and restoring the land and water. The root word is tiaki, to guard or protect, which includes a holistic environmental management approach which provides for the following: o Restore mana of the Iwi (e.g. protect sensitive cultural and natural features of the environment) o Restoration of damaged ecological systems o Restoration of ecological harmony o Ensuring that resources and their usefulness increases, i.e. plan for the provision for and the restoration of traditional resource areas for future generations (e.g. kaimoana, fish, tuna) o Reducing risk to present and future generations (i.e. plan long term management and use of taonga) o Providing for the needs of present and future generations. o Advocate for no illegal seawalls and coastal structures, reclamations that impede our ability to exercise our kaitiakitanga and access to our traditional fishing grounds.

3.4.2.1 Ngaati Te Ata Waiohua aspirations and outcomes

Further to the broader cultural objectives identified above, Ngaati Te Ata Waiohua have a set of aspirations and sought outcomes, as outlined in Ngaati Te Ata Waiohua Manukau Harbour Report 2023, as follows:

- Embrace and empower kaitiakitanga and rehabilitate and heal the natural systems that support us all. Ngaati Te Ata Waiohua has never relinquished its rangatiratanga or its kaitiakitanga over natural and physical resources including its coastal environment and coastal resources.
- Restore Ngaati Te Ata Waiohua capacity to manage our natural and physical resources according to our own preferences. The natural environment is a taonga. It is the source of our nourishment, our kai and our spiritual and physical welfare. We whakapapa to it and we are not separate from it. Inability to exercise our rightful kaitiakitanga affects our welfare and despoils our environment.
- Implement programmes such as riparian planting and protect sensitive receiving environments and protect and enhance water quality. Ngaati Te Ata Waiohua emphasise the importance of healthy uncontaminated water throughout the rohe. Waiora is the water of life, the purest form of freshwater that gives and sustains life and can rejuvenate damaged mauri. Mauri is the life force that regenerates and binds the physical and spiritual elements of resources together.
- Give special attention to the Manukau Harbour to rehabilitate it and secure its future.
- That no further species extinctions occur including the Maui dolphin and that biodiversity is managed to sustain our communities consistent with our kaitiakitanga practices.

Biodiversity is integral to Ngaati Te Ata Waiohua. We are not separated from it; rather it is part of us and our conception of health and wellbeing. Biodiversity continues to be under threat despite successive plans to 'turn the tide'. Its value cannot be over-estimated, and it is interwoven with many of our traditional values and practices. As Kaitiaki, we take an ecosystem view and we have a responsibility to manage and protect healthy ecosystems and the biodiversity that they support.

- No ashes of the deceased to enter into sacred waterways as this is a cultural insult and in conflict with the traditional harvest of kai moana.
- That Ngaati Te Ata Waiohua be supported to conduct its own monitoring of the effectiveness of environmental regulation in the protection of its cultural resources, biodiversity wāhi tapu and other taonga within its rohe.

Additionally, Ngaati Te Ata Waiohua has further articulated the need to suitably manage any effects in the hierarchy of avoid, remedy, minimise, mitigate or balance. This is a hierarchy where the first and preferred option to manage an effect is to avoid it, should this not be possible the next option is to remedy the effect, and so on through to suitably balancing the effect, which might include offset mitigation. Importantly only mana whenua can determine the effects and the degree of those effects on themselves and their cultural values.

3.4.3 Te Ākitai Waiohua

Over the course of the SAP programme, the SAP team had the opportunity to work with kaitiaki representatives from Te Ākitai Waiohua. Through development of the Kahawairahi ki Whakatiwai (Beachlands and East), Awhitu and Manukau South SAP area plans, hui were held and korero shared. Over the 2023 calendar year, the SAP team deepened their understanding of the cultural landscape through further hui and hikoi for the Manukau East SAP area. Korero and hui remain ongoing.

This SAP is considered a living document and the SAP team is committed to ensuring that the values, aspirations and outcomes sought by Te Ākitai Waiohua are represented in this plan and through implementation. The SAP team will continue to work with and support Te Ākitai Waiohua to prepare a cultural statement in response to the SAP programme and include linkages to this in further revisions of the Manukau East SAP report.

3.4.4 Te Ahiwaru

PEPEHA

Hoea tō waka tapū kia tau atu ki te Puketāpapatanga a Hape

Tirotiro kau atu ki ngā wairere o te Mānukanuka ō Hoturoa

E ū ana ki te awa Ōruarangi

Takatakahi ngō tapuwae ki te Ihu ō Mataoho

Kia tae ake ra ki te Waharoa ō Makaurau

Ka tū te Tupuna a Tāmaki Makaurau Me nga iwi o Te Waiohua, Ngāti Te Ahiwaru

Brief History and connection with Te Ahiwaru

The waters of Te Manukanuka o Hoturoa (the Manukau Harbour) are seen as a living entity with its own mauri (life force) and mana (prestige), representative of Te Ahiwaru mana whenua, hei ahi kaa and is acknowledged as the ancestral moana (ocean) in the pepeha (identity). The harbour is a traditional food source with access to fish, shellfish, and coastal birdlife, and was a vital transport route facilitating travel, exploration, communication, and trade throughout Tāmaki Makaurau. It was the ancestral passage to Ihumaatao and the Maangere-Otahuhu areas for Te Waiohua people, and the passage which the eponymous ancestor Hape travelled on Kaiwhare (the taniwha). Multiple settlements were established along the coastline of the Manukau Harbour, whereby the traditional knowledge of the environment saw Te Waiohua people move with through seasonal fishing villages. Manukau Harbour is still a primary mahinga kai and ipu kai (food bowl), and kaimoana collected from the area includes paatiki (flounder), taamure (snapper), kahawai (sea salmon), tuuna (freshwater and saltwater eels), kanae raukura (grey mullet), and historically tio (rock oysters), pipi (Paphies australis), tungangi (cockle) and puupuu (cat's eye). The mauri (life force) of the waters is seen as a sacred resource with cleansing, purifying, and healing properties. The Manukau Harbour is a taonga of great cultural and spiritual significance to Te Ahiwaru, and its life sustaining essence must be nurtured and protected for its vital importance to identity.

The SAP team had the privilege of engaging with Te Ahiwaru, through multiple hui and hikoi on the whenua within the Manukau East SAP area. Mātauranga shared by Te Ahiwaru is anticipated to be shared in a cultural statement in response to the SAP programme and will continue to guide the implementation of the SAPs for the Manukau East area.

Te Ahiwaru directed the SAP team to include specific reference to the following documents:

- Te Ahiwaru Environmental Plan 2019
- Nga Hau o Mangere Ngahere Guide.

These documents are references in this section (below) and referred back to in section 5.0. Te Ahiwaru have also chosen to share their aspirations associated with the enhancement and restoration of the mauri of the surrounding environs. This SAP report remains a living document and may be updated to reflect further cultural context shared by Te Ahiwaru. This will also serve to support the implementation of the Manukau Harbour East SAP.

Units	Stretches	Sites and names shared by Te Ahiwaru for the Manukau Harbour East SAP Area Plan*
Unit 1 Puhinui	Stretch 1: Puhinui Reserve/ Colin Dale Stretch 2: AIAL Landholdings South	Hononga ki Te Waiohua mai raa ano
Unit 2 Waokauri/ Pūkaki	Stretch 3: Waokauri Stretch 4: Pūkaki Lagoon Stretch 5: Pūkaki Road Stretch 6: Peninsula Point	Waokauri

Units	Stretches	Sites and names shared by Te Ahiwaru for the Manukau Harbour East SAP Area Plan*
Unit 3 Ihumātao/ Watercare waterfront	Stretch 7: Naylor Road South and AIAL landholdings Stretch 8: Renton and Ihumatao roads Stretch 9: Te Puna Wai a Hape Watercare waterfront Stretch 10: Te Ara Tahuna / Puketutu Island Causeway Stretch 11: Māngere Watercare Wastewater Treatment Plant Stretch 12: Māngere lagoon	Te Tiki paa Maungataketake Otuataua Te Ara Taahuna Te Taarai o Kaiwhare
Te Motu ā Hiaroa / Puketutu Island	Stretch 13: Te Motu ā Hiaroa	Te Motu aa Hiaroa Ngaa kuia e toru Waitomokia
Ambury	Stretch 14: Ambury South Stretch 15: Watercare section (Ambury) Stretch 16: Ambury North	Whakarongo settlement Te Waiohua whakapapa Waikato – Ngaati Whaatua
Māngere Bridge / Kiwi esplanade	Stretch 17: Manukau Yacht Club Stretch 18: Māngere Boating club Stretch 19: Māngere Bridge	Whakarongo
Māngere inlet south	Stretch 20: Te Ararata & Mahunga Stretch 21: Norana & Favona Stretch 22: Harania Creek Stretch 23: Otahuhu	Te Ararata Harania Creek Otahuhu portages
Unit 8 Māngere inlet north	Stretch 24: Southdown (Anns creek) Stretch 25: Te Papapa	Ipu Kai for Te Ahiwaru
Unit 9 Onehunga	Stretch 26: Onehunga East of SH20 Bridge Stretch 27: Onehunga Wharf Stretch 28: Onehunga Foreshore Stretch 29: Taumanu Stretch 30: Onehunga Bay	Te Hopua a Rangi

*The sites and places included are not a comprehensive list of sites or place names. This reflects what Te Ahiwaru are comfortable sharing in this document at this time.

3.4.4.1 Te Ahiwaru aspirations

The fundamental aspirations of Te Ahiwaru are to enhance and restore mauri within the surrounding environs including:

- High quality stormwater solutions applied to existing and proposed development discharging to Ōruarangi awa, Māngere Lagoon and the wider Te Manukanuka o Hoturoa
- Mandatory legislation and policies that emphasize the comprehensive water quality and of discharge to Ōruarangi awa; Māngere Lagoon and the wider Te Manukanuka o Hoturoa
- Setting proactive protection measures
- Restoring the native vegetation and dynamic systems along the coastline of Manukau Harbour and margins of the ancestral waterbodies
- Supporting the rejuvenating native biota and improve the ecological systems of Ōruarangi awa
- Retain and protect eroding riparian margins
- Restoring cultural and spiritual emphasis and importance of puna (springs) and kiwi kōhī (staining pools) in the Ōruarangi awa
- To have rohe moana and mataitai status
- Zero discharges directly to the Ōruarangi awa.

3.4.4.2 Te Ahiwaru Environmental Plan 2019

The Te Ahiwaru Environmental Plan, includes a Mihi which speaks to Te Ahiwaru association with the whenua and Moana located within the Manukau Harbour East, Te Ahiwaru may choose to share this mihi through their development of a cultural statement and speak to the deep cultural association with places, such as:

The purpose of the plan is to function as a tool for Te Ahiwaru to (among other outcomes[9]) express rangatiratanga to exercise kaitiakitanga and sustainable management, by applying Te Ahiwaru values and objectives to natural resource and environmental management. The policies identified for the Tapatai | Coastal areas include the following[10]:

He moana pukepuke e ekengia e te waka

[9] Please refer to the Te Ahiwaru Environmental Plan 2019 for the full purpose statement.

[10] Adapted from the Te Ahiwaru Environmental Plan 2019

Tapatai | Coastal Policies	• To protect the cultural and ecological value of coastal wetlands, estuaries and harbours regarding natural flow and water allocation regimes. • To recognise and support cultural conservation methods of the natural coastal area, its ecosystems and species such as rahui. • To provide for coastal water protection and enhancement in a way that allows for safe harvesting in the rohe. • To approach coastal water quality through catchment-based methods, by recognising and providing for impacts of the surrounding land and water uses. • To acknowledge and include the use of traditional tōhu (indicators), which monitor the health and management of the marine environment, and for cultural effects such as mauri can be measured and assessed properly. • To enhance and protect the marine habitat from contamination and effects from human activity.
Explanation	• Loss of knowledge was due to the inability of tribal members to continue to collect key species due to the degradation of the marine area over time. • Te Manukanuka o Hoturoa (Manukau Harbour) has high cultural, historical, spiritual and traditional significance to Te Ahiwaru. • The mauri of the coastal and aquatic environment has degraded over time due to a number of factors including urbanisation and industrialisation surrounding the Manukau Harbour with many streams and waterways feeding into the harbour have been largely modified. • The degradation of coastal water quality has adverse effects on Te Ahiwaru customary fishing practises, where contaminated stormwater could adversely affect habitats of importance to kaimoana along the shoreline. This has had a severe impact on the ability of Te Ahiwaru to use and protect traditional resources. • With further urban development and intensification of rural land use expected in some parts of the region in the future, comprehensive integrated catchment management plans and liaison with Te Ahiwaru will be required to ensure there are no adverse effects to the coastal environment.

3.4.4.3 Ngaa Hau o Maangere Ngahere Guide

The purpose of the Ngaa Hau o Maangere Ngahere guide is to set down values and guiding principles, as expressed by mana whenua, in the delivery of community aspirations for ngahere across Ngaa Hau o Maangere. The guide responds to requests for assistance with restoration guidance. Te Ahiwaru has sought that this guide be referenced in guidance for implementation where catchments within the SAP area are considered for restoration and enhancement within the Ngaa Hau o Maangere cultural landscape (refer to Figure 3-1 below). This is acknowledged in guidance notes within the relevant catchments of the Manukau Harbour East SAP area.

Figure 3- 1: Ngaa Hau o Maangere Planning Guide – cultural landscape

3.4.5 Waikato Tainui

The Waikato-Tainui Remaining Claims are made up of two parts. The first is a number of unsettled interests that were included in their original Wai 30 claim (alongside historical issues concerning raupatu and the Waikato River which have now been settled). These interests include the West Coast Harbours (Kaawhia, Aotea, Whaaingaroa and Manukau) and a number of specific land blocks (Maioro/Waiuku and East Wairoa). These are referred to as the Wai 30 Outstanding Claims.

The second part are the Waikato-Tainui Remaining Claims which include a number of Waitangi Tribunal claims filed by claimants with affiliations to Waikato or their claim area is within the Waikato-Tainui Area of Interest. The negotiation team is committed to their whaanau settlement aspirations, and to seek redress in a way that is consistent with the principles set out in 1987: it must be good for the people, for the whenua, for the moana, and for the taiao – for now and for generations to come.

Raupatu whenua and raupatu moana at the hands of Crown militia saw a livelihood of traditional practices taken away – a way of life that was centralised around the moana. A unique factor of this settlement draws on the social and cultural impacts of raupatu on their people.

Other special factors include the undermining of te mauri o te moana, the nature of land loss post-raupatu (across Waikato as a whole), the impacts of climate change and environmental issues generally.

Waikato Tainui directed the SAP team to the Waikato Tainui Environmental Plan to inform the understanding of the values, principles and objectives Tainui has in relation to coastal areas of their rohe[11]:

- Chapter 10 of the Environmental Plan sets out the Tribal Strategic Plan - Whakatupuranga Waikato -Tainui 2050
- Chapter 14 identifies customary activities - Ngaa Mahi Tuku Iho a Waikato -Tainui.

Both of these chapters have been identified by Waikato Tainui as being of relevance to the development of the SAP plan for the Manukau Harbour. However, other chapters within the plan can be relevant depending on future activity(s) required for shorelines to become resilient.

The Environmental Plan identifies the mana whakahaere of Waikato-Tainui has for associated requirements to responsibly use, protect, and enhance customary resources, and to ensure their on-going health and wellbeing. Waikato-Tainui customary activities and resource use include but are not limited to the activities below.

Waikato -Tainui's customary activities (outlined in Chapter 14) include:

Koroneihana	• The annual celebration of the coronation day of the Head of the Whare Kaahui Ariki
Waka or kohikohia	
Tangihanga and hari tuupaapaku	• The transportation of human remains and the accompanying funeral ceremonies
Tangohia ngaa momo takawai	• The collection of resources, such as river stones, shingle, and sand from the Waikato-Tainui rohe for the purposes of customary practices including: o The building of a tuahu (altars) o Carvings o The preparation of haangii.
Raahui	• The imposition of restrictions, from time to time, on all or part of an activity, or the use of a resource, or rohe
Hauanga kai	• The customary and contemporary gathering and use of naturally occurring and cultivated foods.

Core objectives in this chapter speak to enabling Waikato -Tainui to access and undertake, protect, and enhance customary activities.

[11] https://www.waikatoregion.govt.nz/assets/WRC/Council/Policy-and-Plans/HR/S32/Part-A/Waikato-Tainui-environmental-plan-Tai-Tumu-Tai-Pari-Tai-Ao.-Hamilton-New-Zealand-Waikato-Tainui-Te-Kauhanganui.pdf

Whakatupuranga Waikato-Tainui 2050 (outlined in Chapter 10) is the blueprint for cultural, social and economic advancement for the Waikato-Tainui people. It is a long-term development approach to building the capacity of Waikato-Tainui marae, hapuu, and iwi. Whakatupuranga 2050 will be Waikato-Tainui's legacy for future generations. Within Whakatupuranga Waikato-Tainui 2050, there are three critical elements fundamental to equipping future generations with the capacity to shape their own future:

- A pride and commitment to uphold their tribal identity and integrity
- A diligence to succeed in education and beyond
- A self-determination for socio-economic independence.

Waikato -Tainui's strategic direction charts a course of significant developments to protect tribal identity and integrity. The development of a core strategy designed to provide maximum support for Waikato -Tainui's kaumaatua, the caretakers of maatauranga, and experts of Waikato -Tainui's reo and tikanga, is a key priority. Waikato -Tainui's whenua, rivers, lakes, harbours and other waterways are living embodiments of Waikato -Tainui's tribal identity. The necessity to forge a partnership with the Crown is vital to the preservation and protection of 'te taiao', our environment:

- To preserve our tribal heritage, reo and tikanga
- To grow our tribal estate and manage our natural resources.

With the above in mind, Waikato -Tainui are primarily interested in ensuring that the affiliate marae are engaged and aware of the SAP programme and the opportunities to start korero about innovation, co-benefits and use of mātauranga (by iwi for iwi) in responding to environmental/climate change challenges, acknowledging these things are often interconnected and closely related to social/cultural and economic interest and outcomes too. Engagement with affiliate marae may be facilitated through local iwi connections; in particular, Ngāti Te Ata Waiohua, Ngāti Tamaoho, Te Ākitai Waiohua, Ngai Tai Ki Tamaki, and the marae at Whaataapaka, Umupuia, Tahunakaitoto, Puukaki, Kakaurau and Te Puea.

Waikato Tainui have identified the following ongoing outcomes of the SAP programme and its implementation:

- Remaining engaged with the development of SAP area plans which include areas of interest, as well as areas where Te Whakakitenga Marae have interest, including historical and significant areas which have connections to their shoreline landscapes
- Ensuring data and knowledge is shared appropriately with agreements and protection of mātauranga clearly specified/documented
- Supporting opportunities for innovation, utilise mātauranga, and being directly engaged in discussion around implementation of the SAP programme.

3.4.6 Te Kawerau ā Maki

Whilst Te Kawerau ā Maki has an interest in the Manukau East coastline, they acknowledge the interests of other iwi and hapu. Te Kawerau ā Maki place a high importance on the connection to Te Manukanuka, and many locations around the moana are important for traditional cultural practices, mahinga kāi and the Te Kawerau ā Maki way of life.

Some key shared korero identified key concerns and aspirations identified by Te Kawerau ā Maki as follows and have been considered through the development of the SAP plan for Manukau East.

Connection to the harbour	• Connections to the harbour are in many cases inhibited. • Te Kawerau ā Maki seek that Auckland Council works collaboratively to identify where there are opportunities for these historical connections to the coast to be reinstated, maintained and enhanced. • Access to the harbour should be responsive to the aspiration of ngā hapū me ngā iwi o Tāmaki Makaurau and the diverse communities that reside in Tāmaki Makaurau. • Opportunity for water transport in Manukau Harbour should be further explored.
Recognising cultural histories and complexity	• The harbour has a rich cultural past and remains highly valued to a diverse range of communities today. • It is important to recognise the many layers of history and many layers of aspirations.
Puketutu island / Te Motu ā Hiaroa	• Te Kawerau ā Maki are one of the iwi who form the Trust which governs the island. • Te Kawerau ā Maki identify the importance of the current development process (master planning) being undertaken for the island. Any future planning needs to incorporate any SAP strategies developed as part of this process. • Future opportunities for both Māori and public-use activations on the island require a co-design approach given the significance to Māori. • Access to the island will be essential to releasing some of the future-use aspirations. The need to '*hold the line*' utilising hard engineering may be appropriate given the need to provide enduring access. This will need to be further considered and strategies should remain responsive to the aspirations for the island.
Restoration and opportunities	• Auckland Council in all its forms needs to work with Te Kawerau ā Maki to identify assets and sites where positive outcomes can be achieved.
Closed landfills	• Te Kawerau ā Maki acknowledge there are numerous closed landfills and sites of historical refuse particularly around Onehunga and these areas may also require hard engineering where the sites cannot be remediated.

Mātauranga shared by Te Kawerau ā Maki includes:

Mana Motuhake	Independence
Kaitiakitanga	Guardianship and stewardship of te tiao
Whanaungatanga	Whanau-focused
Auaha	Innovation
Mātauranga Māori	Culture-led

3.4.7 Ngāti Whātua Orākei

The SAP team worked with Ngāti Whātua Orākei, through piloting of the Wai Manawa Little Shoal Bay 'mini' SAP and engaged on the Manukau East and Manukau North Plans with a view to seeking Ngāti Whātua Orākei response to the SAP programme as well as specific feedback on the development of

individual plans. Ngāti Whātua Orākei have expressed an interest in aspects of Manukau East, in particular, the Onehunga area (Unit 9) and connections to their rohe.

Multiple hui have been undertaken and a cultural statement in response to the SAP programme is anticipated. The SAP team will continue to work collaboratively with Ngāti Whātua Orākei to input into the implementation of the SAPs for the Manukau East area and other SAPs of interest within their rohe.

3.4.8 Ngaati Whanaunga

Over the course of the SAP programme, the SAP team had the opportunity to work with kaitiaki representatives from Ngaati Whanaunga through the development of the Kahawarahi ki Whakatiiwai (Beachlands and East- Gavin Anderson) Wai Manawa Little Shoal Bay 'mini' SAP, including the process at which hui were held and koorero shared. Over the 2024 calendar year, the SAP team has deepened its understanding of the cultural landscape through further hui and koorero with Ngaati Whanaunga at a local and regional scale, with hui remaining ongoing to support Ngaati Whanaunga to input into plans of interest.

Matauranga shared by Ngaati Whanaunga:

Kaupapa Matua Guiding Principles:

"Ki te whakarite te taha tinana, te taha hinengaro, te taha wairua, te taha whaanau ki te aoturoa, kia tino whai mana te mauri"

To ensure that there is a holistic balance between and in tune with the natural world and that the mauri of Te Taiao is enhanced via the implementation of all Shoreline Adaptation Plans

Whakatauakii by "Auntie Betty Williams"

"Kaitiaki Principles are practised by all"

Ngaati Whanaunga enhances the mauri elements of the Te Taiao and seeks to protect our whenua tuupuna, moana waahi tapuu and other taonga, from the effects of development and the many activities that take place within the rohe.

The core objectives of the Ngaati Whanaunga Environmental Plan seek to ensure the long-term wellbeing of land, freshwater, coastal and marine areas, biodiversity, air, culture, and heritage such as historic structures, archaeological sites, places of significance that may include natural features such as trees, springs, rivers, or awa[12].

Coastal and marine areas are important to Ngaati Whanaunga because they:

[12] Ngaati Whanaunga advocates for ongoing recognition, acknowledgement and reference to the Ngaati Whanaunga Environmental Plan. Kaitaitanga is the responsibility of all.

12 Ngaati Whanaaunga Environmental Management Plan 2019. Prepared by the Environmental Services Department. https://www.waikatoregion.govt.nz/assets/WRC/NgaatiWhanaungaEnvironmentalManagementPlan9September2019.pdf

- Provide valuable habitat, nurseries and feeding grounds for native species. Ngaati Whanaunga advocate for the protection and enhancement of the mauri of indigenous flora and fauna
- Provide mahinga kai, weaving and carving materials
- Regulate rainwater, drinking water, and climate
- Have recreational/ community values and amenities when they align with Te Taiao (kia tino whai mana te mauri)
- Bring economic values e.g. tourism/ ecology/ aquamarine areas/ commercial development of fisheries, shorebird adaptation centre (supporting the migration of taonga species).

Ngaati Whanaunga Aspirations and Outcomes for the Takutai and whenua

Ngaati Whanaunga seek to achieve the following goals in the Takutai moana space:

- To enhance coastal and marine habitats: regeneration of wetlands, use of mangroves as nature-based solutions and recognize their role in ecosystem services
- Sustainable resource use
- To recognise connections – mountains to the sea.

Documents that support Ngaati Whanaunga outcomes and aspirations include but are not limited to, the Estuarine Tool Kit developed by NIWA in consultation with Ngaati Whanaunga and the Shellfish monitoring toolkits supplied by Hauraki Gulf Forum/ translated in the dialect of Ngaati Whanaunga for use at schools[13],[14].

Further to the principles above, Ngaati Whanaunga seek to be included in any decision-making as part of the SAP kaupapa through:

- Encouraging applicants to consult with Ngaati Whanaunga prior to submitting any application for a Plan Change or resource consent application
- Ensuring plan rules and policies make provision for Ngaati Whanaunga involvement
- Recognising and supporting kaitiaki initiatives. For example, raahui, whakatapuu (cultural tools) as well as monitoring, enforcement and enhancement programmes
- Ensuring staff have read and understand the Ngaati Whanaunga Environmental Management Plan[15]
- Working with Ngaati Whanaunga to develop appropriate risk and mitigation measures for protecting and enhancing Te Taiao and all cultural sites of significance within and beyond the confines of the SAP kaupapa.

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[13] Estuarine tool kit developed by NIWA in consultation with Ngaati Whanaunga. This can be supplied via the Ngaati Whanaunga office @ 24 Wharf Road Coromandel. Ph 07 866 1011.

[14] Shellfish monitoring toolkit supplied by the Hauraki Gulf Forum/ translated in the dialect of Ngaati Whanaunga for use at schools – Yr 1- Yr 13. This can be supplied via Ngaati Whanaunga website www.ngaatiwhanaunga.maori.nz or office @ 24 Wharf Road Coromandel. Ph 07 866 1011.

Like all SAPs, the Manukau East SAP is considered a living document, noting that the SAP team is committed to ensuring that the values, aspirations and outcomes sought by Ngaati Whanaunga are represented in this plan and through its implementation. The SAP team will continue to work with and support Ngaati Whanaunga to prepare a cultural statement in response to the SAP programme and include linkages to this in further revisions of the Manukau East SAP report.

4.0 Community engagement and outcomes

The purpose of community engagement throughout the SAP area plan development process is to identify how communities use and value their coastal areas including contemporary interests, issues and aspirations regarding their interaction, and use of coastal areas. This assists with the development of broad community objectives which reflect shared contemporary outcomes or aspirations sought by each community for their coastal areas. These objectives, alongside specialist advice, asset-owners guidance, iwi feedback environmental and policy considerations, can then be utilised to inform the selection of adaptation strategies.

In addition, this community engagement provides opportunity to:

- Identify risk perceptions and experiences held by communities in relation to coastal change and coastal hazards and provides an opportunity to share information on hazards, risk and climate change and the potential impacts these may have over time. This can assist in refining signals triggers and thresholds (see section 1.4) through implementation.
- Facilitate community discourse on adaptive planning, the role of different values and the consideration of options to manage risk such as ***holding the line*** and ***managed retreat*** from areas of coastal risk.
- Provide unit or area-specific feedback on the use of coastal assets and land to inform adaption strategy selection and the inclusion of advice notes which will assist in informing asset owners of key considerations for future assets management planning and development.

It is important to note that the SAP programme does not include consultation with the community on the selection of adaptive strategies.

4.1 Engagement summary

Community engagement for Manukau East, North and Pahurehure Inlet SAPs ran in parallel and included a series of in-person, public out-reach events. Public engagement was open from 23 June - 7 August 2023. To capture a diversity of demographics, a range of events and engagement opportunities were utilised and supported by online engagement. In addition, feedback was also provided through email submissions.

Key stakeholders, community groups and networks with a potential interest in the coast were identified, while community partners were used to circulate information to the wider community, including Local Board networks, resident and ratepayer associations and local organisations such as EcoMatters and the Beautification Trust.

Online surveys and digital mapping tools were promoted alongside the opportunity to attend in-person events through ‘AK Have Your Say’, Auckland Council’s general SAP webpage and the People Panel engagement platform.

In-person events were spread across the three respective SAP areas where community engagement was occurring in parallel. The following venues were located within the Manukau Harbour East area:

- Māngere Boating Club, Kiwi Esplanade
- Aotea (Onehunga) Sea Scouts, Onehunga waterfront
- Māngere Markets, Māngere
- Associated events held in neighbouring SAP areas included:
    - Wesley Market, Mt Roskill
    - Ecomatters Environmental Trust, New Lynn
    - Titirangi Beach Hall, Titirangi
    - Weymouth Yacht Club, Weymouth
    - Sir Edmund Hillary library, Papakura.

Public events provided an opportunity to inform people of the SAP programme and receive feedback, with technical experts available to respond to questions. The key call to action at these events was encouragement to identify 'what matters most' to them with respect to public coastal areas and their facilities. Feedback was sought directly (through sharing this with the team or identifying this on sticky notes at engagement events) or online through the 'AK have your say' survey and social pinpoint. All feedback has been analysed alongside that which has been received from Local Boards and key stakeholders. This included:

- 25 comments left on the interactive digital Social Pinpoint map
- 73 completed online surveys.

Community objectives were developed based on the themes that were identified across the feedback (see Section 4.1). In early 2024, the final step to close the loop in community engagement, was posting a summary of the engagement and the community objectives online and distributing this via email. The purpose of this phase was to ensure that the community was informed of the results of their consultation. A more detailed overview of the community engagement for the SAP can be found in the Community Engagement Summary Report for Manukau East.

4.2 Analysis and key themes

Feedback was sorted into the several major categories alongside consideration of location and activity. The key categories included:

- **Social uses and activities:** Examples were generally grouped under the following; water-based sports, active recreation, passive recreation and community uses
- **Asset management and maintenance:** Including key feedback on the maintenance and management of parks and community facilities, coastal defence structures, coastal recreation structures, three-waters infrastructure and closed landfills / contamination
- **Community concerns, experiences, and coastal hazards:** Including matters raised regarding climate change, natural hazards, and impacts on risk through land use changes
- **Cultural:** Including associations with sites or landscape, connections to the coast (sense of place), and accessing/gathering shellfish or fishing

- Environmental: Including considerations of conservation, water quality and native species and biodiversity.

A summary of each category is captured below.

4.2.1 Social, uses and activities

Active and passive recreation play a central role in community engagement with their coastal spaces. Walking, cycling, water-based sports, and family-bonding activities are valued for their contribution to leisure and well-being. Aspirations focus on enhancing accessibility, promoting active lifestyles, and preserving the diverse recreational opportunities offered by coastal environments.

Family-friendly atmosphere, social gatherings, and tranquil environments contribute to the preservation and enhancement of social and cultural ties within coastal communities.

4.2.2 Asset maintenance and management

Residential connection (where people live) and participation in recreational activities in nearby coastal areas formed the majority of the feedback. Infrastructure such as the Watercare coastal walkway and boat ramps are valued for their aesthetic appeal, connectivity, and facilitation of coastal access. Feedback demonstrated a shared aspiration for managing and maintaining coastal assets for present and future generations.

4.2.3 Community concerns, experiences, and coastal hazards

The community expressed concerns about climate change-related challenges and natural hazards, such as floods, storms, erosion, and resulting pollution runoff. Destruction or damage to infrastructure demonstrated the vulnerability of coastal areas. Feedback identified the need for robust adaptation strategies. The urgency to address these concerns was identified in relation to maintaining usability, increasing resilience and emphasising the need for protective measures alongside environmental stewardship.

4.2.4 Cultural

Coastal connections are highly valued. Areas in the Manukau East SAP were identified as gathering grounds with historical and cultural significance. Spaces such as the Puhinui Reserve were seen as fostering connections to ancestral roots, a sense of belonging and appreciation for cultural heritage.

4.2.5 Environment

Community members emphasized the importance of preserving and accessing natural coastal features.

Native species and biodiversity are prioritized for preservation within coastal reserves. Concerns about water quality were frequently identified as were a commitment to continuing and supporting actions to nurture ecosystems and address pollution issues. Aspirations included fostering a balanced approach that safeguards ecosystem integrity while ensuring recreational enjoyment and cultural significance.

4.3 Community objectives for Manukau Harbour East

The information collected was collated and reviewed in collaboration with Auckland Council's Parks and Community Facilitates Department, to develop the following high-level objectives:

Table 4-1: Community objectives for Manukau Harbour East

Key theme	Community Objective
Coastal connections, use and access	1. The coastal walking, cycling, water sport and leisure networks within the Manukau Harbour East are accessible for all coastal users, providing for current and future active and passive recreation and general wellbeing. 2. Community infrastructure supports inter-generational connection to the coast and connectivity between coastal areas for all coastal users.
Cultural	3. The cultural ties of coastal communities are preserved and enhanced through the protection of key cultural and historic areas, such as Puhinui Reserve, providing for a range of traditional and contemporary coastal uses.
Responding to risk	4. Efficient and robust adaptive plans support useable, resilient, safe and environmentally healthy coastal areas. 5. Coastal community facilities aim to support community resilience and recovery for all coastal users.
Environmental	6. Native species and the ecosystems that support them are safeguarded and prioritised alongside recreational enjoyment and cultural significance.

5.0 Adaptation strategies for Manukau East

The Manukau Harbour East SAP includes a total of 30 'coastal stretches' selected based on coastal processes, Auckland Council-owned land and asset location, public land boundaries, and infrastructure considerations. Coastal stretches have been grouped into broader coastal unit areas as discussed in the risk assessment section above.

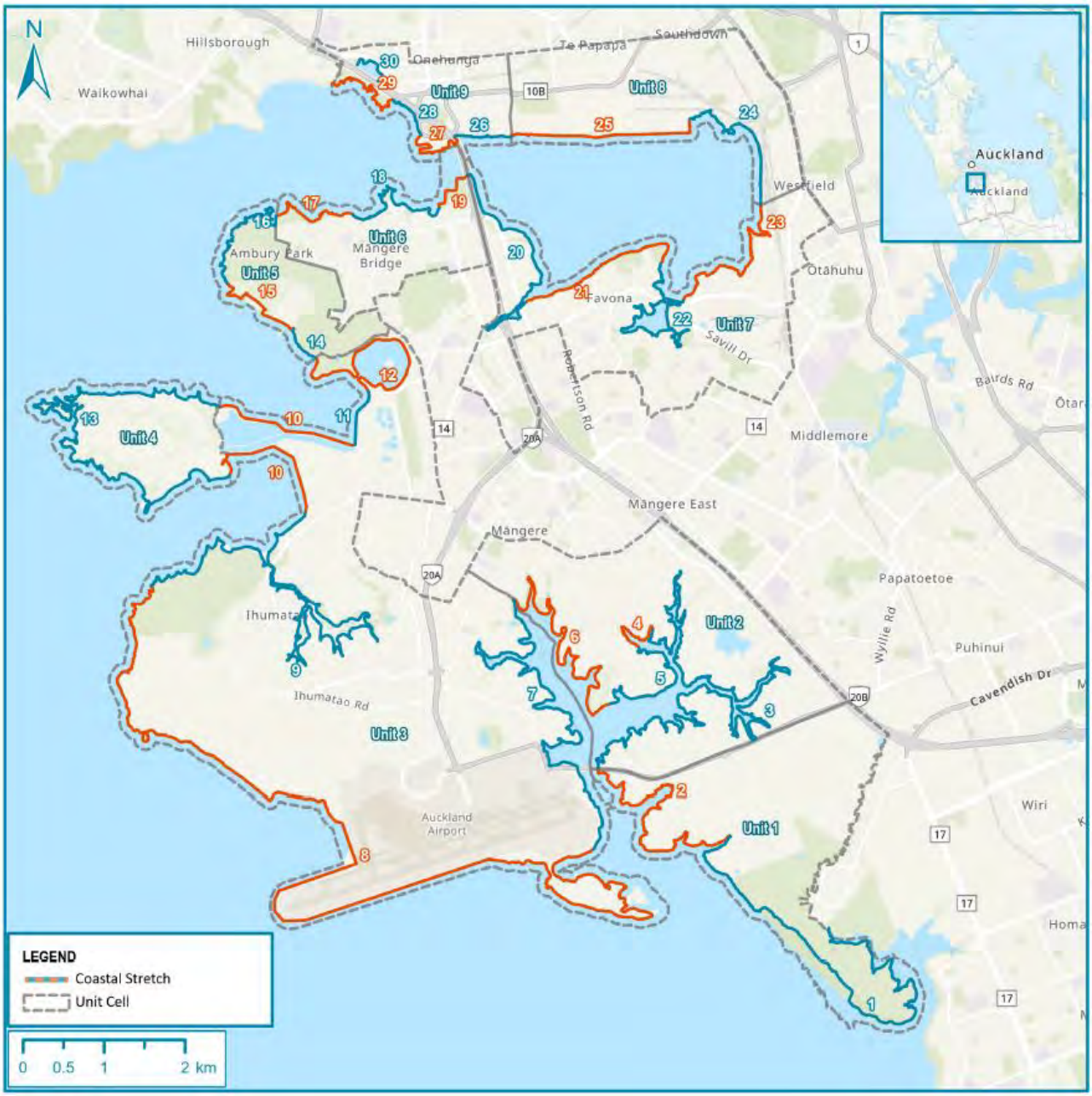

Figure 5-1: Manukau Harbour East SAP coastal stretches

As stated previously, coastal units and stretches do not strictly reflect the historical cultural boundaries which often extend over multiple units or coastal stretches.

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 local iwi and the local community. Importantly, strategies outlined within each unit and subsequent coastal stretch apply only to the area of Auckland Council-owned land and assets along the coastal margin. These recommended strategies do not apply to offshore activities (such as marine farms) or private property. Each high-level strategy provides flexibility for how it is applied to different assets. The value of the strategic approach is to ensure general continuity across asset management, acknowledging hazard risks and impacts of management of one asset class may impact on or have implications for others. More so, where protection is to be maintained (***hold the line***), or where planned retreat (***managed retreat***) is signalled.

5.1 Guidance for Auckland Council asset owners

The adaptation strategies developed in the SAP are designed to be integrated across relevant Auckland Council plans. The guidance below is specifically tailored towards asset management operational decision-making and planning:

- Best practice guidance should be identified and applied. It should include but not be limited to relevant technical regional publications and guidance documents and national guidance. Of particular importance, for areas with a high number of identified and unidentified cultural and historic heritage sites, are the accidental discovery protocols in the Heritage New Zealand Pouhere Taonga Act 2014 and as set out in the Auckland Unitary Plan.
- The location of new assets in the areas susceptible to coastal erosion and instability (over all timeframes) is not recommended.
- Where an asset has a functional need to be within the hazard zone (such as a boat ramp or beach access), the dynamic nature of the coastal environment must be considered and resilient design prioritised.
- The location of new assets in areas at risk of the present-day coastal inundation or rainfall flooding at 1% AEP is not recommended. Avoidance of risk is a priority where practical. Where an asset has a functional requirement to be located within the hazard zone, both increasing and residual risk must be considered.
- Where renewal of existing assets within hazard areas is contemplated, both increasing and residual risk should be considered as well as options which identify appropriate location and resilient design.
- To support natural drainage and not increase the risk of rainfall flooding, all projects in the shoreline area must consider the location of overland flow paths and ensure that future works do not block these paths.
- Consider the operational function of assets in natural hazards events and consider the opportunity provide design responses which increase asset resilience.

5.2 Māori outcomes

Future coastal projects in the Manukau East SAP area need to consider the Kia Ora Tāmaki Makaurau Māori Outcomes Performance Framework, the Te Ora Tāmaki Makaurau Wellbeing Framework, and the values highlighted in Section 3.0. Specific cultural values and outcomes for each coastal stretch are anticipated to be further shared and developed through ongoing involvement of iwi in respective work programmes.

5.3 Navigating section 5.0 by unit and stretch

Section 5.0 outlines the adaptation strategies for Manukau Harbour East. This section is structured by unit with stretches included under each unit. Units are numbered 1-9 and stretches 1-30, starting in the south at Puhinui moving North to Onehunga. Table 5-1 below provides a quick reference index to identify the location of stretches within the units.

Naming of units and stretches may be provided in both Te reo | English. The te reo names are reflective of the Māori cultural landscape; they are named as per the mana of the chief who held the land at the time. In some cases, this means that both a unit and stretch have a multiple or dual naming, or where the name is replicated at both a unit and stretch level.

Unit specific information is included for each unit as follows:

- **The environmental context**: Identifying the coastal setting, hazardscape and key ecological features within the unit
- **The social, policy and cultural context**: Identifying any specific cultural values, features or sites (to a level of detail chosen to be shared by iwi), social and community values including those identified through Sections 3.0 and 4.0
- **Identification of Auckland Council-owned land and assets** within the unit and corresponding risk ratings for those assets/land: As identified in the risk assessment and summary of Council-owned land and assets. Risk is identified in the tables included in these sections using blue colours - indicating risks changing from very low (light blue) to very high (dark blue).

Stretch-specific information is provided as follows:

- Description of the stretch
- Tabulated identification of the hazardscape, Auckland Council-owned land and assets and current management approaches
- Adaptation strategy
- Guidance for implementation.

Table 5-1: Summary of the Units and Stretches for Manukau East

	Unit	Stretches
Unit 1	Puhinui	Stretch 1: Puhinui Reserve/ Colin Dale Stretch 2: AIAL Landholdings South
Unit 2	Waokauri/ Pūkaki	Stretch 3: Waokauri Stretch 4: Pūkaki Lagoon Stretch 5: Pūkaki Road Stretch 6: Peninsula Point
Unit 3	Ihumātao/ Watercare waterfront	Stretch 7: Naylor Road South and AIAL landholdings Stretch 8: Renton and Ihumatao Roads Stretch 9: Te Puna Wai a Hape Watercare waterfront Stretch 10: Te Ara Tahuna / Puketutu Island Causeway Stretch 11: Māngere Watercare Wastewater Treatment Plant Stretch 12: Māngere lagoon
Unit 4	Te Motu ā Hiaroa / Puketutu Island	Stretch 13: Te Motu ā Hiaroa
Unit 5	Whakarongo/Ngaa Hau o Maangere | Ambury	Stretch 14: Ambury South Stretch 15: Watercare section (Ambury) Stretch 16: Ambury North
Unit 6	Māngere Bridge / Kiwi esplanade	Stretch 17: Manukau Yacht Club Stretch 18: Māngere Boating club Stretch 19: Māngere Bridge
Unit 7	Māngere inlet south	Stretch 20: Te Ararata & Mahunga Stretch 21: Norana & Favona Stretch 22: Harania Creek Stretch 23: Otahuhu
Unit 8	Māngere inlet north	Stretch 24: Te Karetuu | Anns Creek Stretch 25: Te Papapa
Unit 9	Onehunga	Stretch 26: Onehunga East of SH20 Bridge Stretch 27: Onehunga Wharf Stretch 28: Onehunga Foreshore Stretch 29: Taumanu Stretch 30: Onehunga Bay

Puhinui

Manukau Harbour East: Unit 1

N

Southwestern Motorway

State Highway 20

Puhinui Rd

Southwestern interceptor (Watercare asset)

Prices Rd

Puhinui Creek

Colin Dale Park

Matukutūreia / McLaughlins Mountain
Significant cultural values

Walkway network and rural park facilities

Puhinui Reserve

Ecological assets & environments

Te Wakaoranga o te Puhinui Regeneration Strategy, 2022

Activity in the Lower Catchment

Te Wakaoranga o te Puhinui Regeneration Strategy, 2022

- Unit boundary
- Informal recreation park
- Walkways
- Maunga
- Closed landfill
- Wetland
- Ecological habitats & environment

0 500m 1km

Unit 1: Puhinui

Unit 1 commences on the western shore of Puhinui Creek and extends approximately 10.5 km north along the coast to the southern side of Puhinui Road. Puhinui Road/SH20B runs along the northern extent of the unit and Puhinui Creek forms the southwestern boundary.

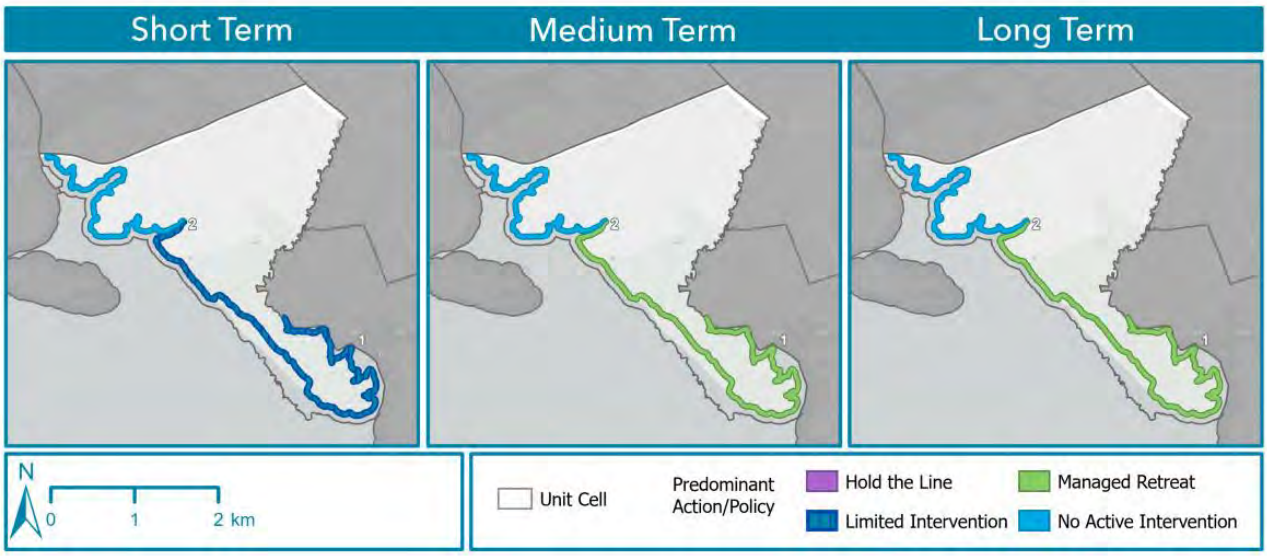

Figure 5-2: Adaptation strategies for coastal stretches within the Puhinui unit area.

Adaptation summary stretches 1 to 2

Stretch	Short term	Medium term	Long term
1: Puhinui Reserve	LI	MR	MR
2: Otaimako Creek	NAI	NAI	NAI

Council-owned infrastructure, land, and assets

This unit is within the Ōtara-Papatoetoe Local Board area and is largely open space, including farmland. The unit includes Puhinui Reserve which is a working farm with Auckland Council's recreational facilities limited to equestrian facilities, walking tracks and limited park facilities and amenities (car parking and toilets). To the north, Colin Dale Park has an area dedicated to kart and other motor sports. Auckland Council maintains an access road and carparking, while the racetrack assets are maintained by the Colin Dale Kartsport Development Charitable Trust. The remainder of the park is farmed and a closed landfill is located within the western areas of the Colin Dale Park.

There are limited piped assets within the unit, the most notable is the Watercare wastewater connection which traverses the northern area of the unit and crosses the Pūkaki inlet to the north. This is identified in stretch 2.

Table 5-2: Unit 1 Council-owned land & assets metrics and associated risk scores (short, medium, long terms)

Council-owned land			Council Community facilities			Transport infrastructure			Water infrastructure		
Park and reserve land (248.4 ha) Buildings, wharves (4 No.)			Park amenity structures, carparks, accessways, buildings (2.5 ha)			AT roads (1.1 km) Bridges (265.7 m^2)			Water pipes (5.1 km)		
Short	Medium	Long	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Coastal erosion susceptibility											
Moderate	Moderate	Moderate	Very low	Very low	Very low	Very low	Very low	Very low	Low	Low	Low
Coastal inundation											
Moderate	High	High	Very low	Very low	Very low	Very low	Very low	Very low	Low	Low	Low
Key											
None			Low			Moderate			High		Very High

Environmental context: Coastal setting, hazardscape and ecological setting

This unit has a southwest facing harbour shoreline between the entrance of Puhinui Creek to Pukaki Creek. Much of the sloping coastal margin and low cliff (up to 10 m high) is fringed with a mix of native and exotic scrub vegetation, with mature trees along the cliff top in the northern part of the unit. The foreshore is characterised by expansive intertidal flats that increase in width from approximately 300 m wide at Pukaki Creek mouth, to over 1 km wide at the mouth of Puhinui Creek.

The southern end of Puhinui Reserve is low-lying and fringed with saltmarsh. The Puhinui shellbanks provide important shell barrier beaches and saltmarsh habitat, and the wider reserve includes important and diverse ecological areas. Within the coastal marine area, important roosting and wading bird habitat are present. Puhinui Creek is the focus of Te Whakaoranga o te Puhinui regeneration programme; many physical projects are already underway to restore the health of Puhinui Stream, which provides potential habitat for native freshwater fish species.

The unit is subject to low to moderate wind-wave exposure. The low-lying saltmarsh area is susceptible to coastal instability and erosion in the short term. In the short term, coastal inundation is predicted to impact the low-lying periphery of the Puhinui Reserve estuary, including a substantial proportion of the saltmarsh area, smaller branches of tidal inlets and parts of the low-lying pasture at the southern end of the reserve.

In the medium and long term, the extent and frequency of coastal inundation is anticipated to increase significantly, impacting walking trails and farming activities over low-lying areas along the western entrance of Puhinui Creek. The cliff topography along much of this shoreline will limit the extent of coastal inundation, however low-lying areas (predominantly farmland) along the upper reaches of smaller branches of tidal inlet may be more frequently inundated.

There are few Auckland Council-owned assets in this area that are susceptible to coastal hazards and the overall risk to the built environment is low. At the unit level, environmental and culture and heritage groupings are at a greater risk from coastal erosion susceptibility and coastal inundation in the short to medium term due to the large area of ecological significance in and around Puhinui Reserve. Soft shore ecosystems are likely to adjust naturally, with spatial reconfiguration and the potential landward translation of wetlands to areas that are more frequently inundated.

Cultural context

Nga Tapuwae o Mataaoho is an area lying to the east of Te Manukanuka o Hoturoa stretching from the Māngere inlet in the north to the Puhinui awa in the south. The area is one of the oldest settled places in Aotearoa and includes numerous important sites. It is also an area of many traditions and many people, one that our tupuna shared with many others.

The entire area has been a place of intensive settlement since the first peoples of Te Ika a Maui. Its frontage to Te Manukanuka o Hoturoa made it a hub for trade and travel throughout the region, as well as guaranteeing its residence the bountiful kai ika and kai moana of the harbour.

While specific cultural values and outcomes for this unit stretch will be shared and developed through ongoing involvement with iwi in respective work programmes, guiding objectives and outcomes which have informed the development of adaptation strategies have been identified in Section 3.4.

Please refer to section 3.4.4 Te Ahiwaru cultural context and supporting Cultural Statement. Further engagement should be undertaken to inform implementation of this SAP.

Social and policy context

This unit covers a very rural area with limited residents. Through community consultation, the importance of shorebird roosting along the coast of Puhunui Reserve was noted, with mangroves offering fortification for natural habitats from erosion. There are also fish spawning grounds, galaxiid and eel access freshwater systems. It is recognised as an historical Māori kaimoana gathering ground.

Stretch 1: Puhinui Reserve

Stretch description

This stretch commences on the northern side of the Puhinui Stream and includes the Puhinui Reserve culminating at northern end of Colin Dale Park.

Council-owned infrastructure, land, and assets	Current management approach/ risks
• Puhinui Reserve (farm park infrastructure and track network).	• Revegetation planting landward of the saltmarsh. • Risk of coastal inundation and instability/erosion in the short term to low-lying areas. The extent and frequency is projected to increase in the medium to longer term, impacting the walking tracks and reserve uses.
• Colin Dale Park (motorsport / kart tracks, carpark and access road and Auckland Council-managed closed landfill.	• Risk of coastal erosion in the medium to longer term. The northern inlet is at risk of coastal inundation in the medium to longer term. • Carpark area subject to flooding.

Adaptation strategies

Stretch	Short term	Medium term	Long term
1: Puhinui Reserve	LI	MR	MR

Guidance notes for Implementation

- Engagement with local iwi is essential in implementing current actions and mid to long-term *managed retreat*.
- For ecological assets, across all timeframes, consider opportunities to restore and enhance shellbanks (roosting habitat for coastal birds), wetland restoration, stream habitat and coastal enhancement planting. Shellbank restoration, saltmarsh restoration, and provision of room for landward progression of coastal vegetation will support resilience in response to sea-level rise.
- Te Whakaoranga o te Puhinui Regeneration Plan includes social and physical works projects relevant to the Puhinui Reserve area and associated catchments.

Stretch 2: Otaimako Creek

Stretch description

This stretch extends from the northern boundary of the Colin Dale Park to Puhinui Road / SH20B where it crosses Pūkaki Creek.

Council-owned infrastructure, land, and assets	Current management approach/ risks
• No identified Auckland Council-owned land. • Southwestern interceptor wastewater pipe. • NOTE: Third party infrastructure: Waka Kotahi NZTA Road (SH20B) and bridge. Auckland International Airport Ltd landholdings.	• Edges of the Puhinui Road/SH20B bridge across Pūkaki Creek are at risk of coastal erosion in the medium to long term and coastal inundation in the longer term.

Adaptation strategies

Stretch	Short term	Medium term	Long term
2: Otaimako Creek	NAI	NAI	NAI

Guidance notes for Implementation

- *No active intervention* in relation to coastal management.
- The south-western interceptor transmission wastewater pipe crosses the bridge (NZTA asset) between Puhinui and the airport. Some localised works / management may be required to maintain pipes within this stretch.
- *Advocacy:* Future development of land should consider the avoidance of coastal hazard risks to enable the strategy of *no active intervention* to be maintained.
- *Cultural values*: This section of the coast has been highlighted as being of high importance. This presents an opportunity to advocate in support of local iwi groups to monitor risks to cultural heritage.

Waokauri/Pūkaki

Manukau Harbour East: Unit 2

N

Aerial showing Henning's dirt track speedway around the perimeter of the lagoon.

Retrolens, 1939

Southwestern Motorway

State Highway 20

Retreat Dr

Pūkaki Tapu o Poutūkeka /Pūkaki Lagoon crater

Outstanding Natural Feature Ngaa Kapua Kohuora Crater Hill

Closed landfill and Manukau Memorial Gardens

Manukau Cemetery

Peninsula Point Reserve

Pūkaki Rd

Pūkaki tidal bund

Pūkaki Marae

Puhinui Rd

Mangroves

ourauckland.aucklandcouncil.govt.nz

- Unit boundary
- Informal recreation park
- Sport & active recreation area
- Co-managed park
- Stormwater pond
- Walking tracks
- Walking
- Closed Landfill
- Maunga
- Ecological habitats & environment
- Cemetery
- Marae
- Auckland Council owned land

0 500m 1km

"This is where our whenua is. Pukaki Papakainga. We are tangata whenua. From the Takaanini whanau. Our awa is important to us. Our rangatahi still catch ika, tuna and shellfish. Our oysters can be found in the mango, our mussels across the way. Growing up pipi and karahu small mussels and pupu were plentiful. Our nan would bake bread and send us down the beach. We take our mokopuna down the point and talk of days. We are Te Akitai Waiohua!"

- Social pinpoint community engagement response 2024

Unit 2: Waokauri/ Pūkaki

Unit 2 comprises the majority of upper Pūkaki Creek (north of Puhinui Road), including Waokauri Creek and parts of Tautauroa Creek. Puhinui Road/SH20B runs along the southern extent of the unit, with the Southwestern Motorway along the northeast, Massey Road along the north, and the eastern shores of Pūkaki Creek forming the western boundary.

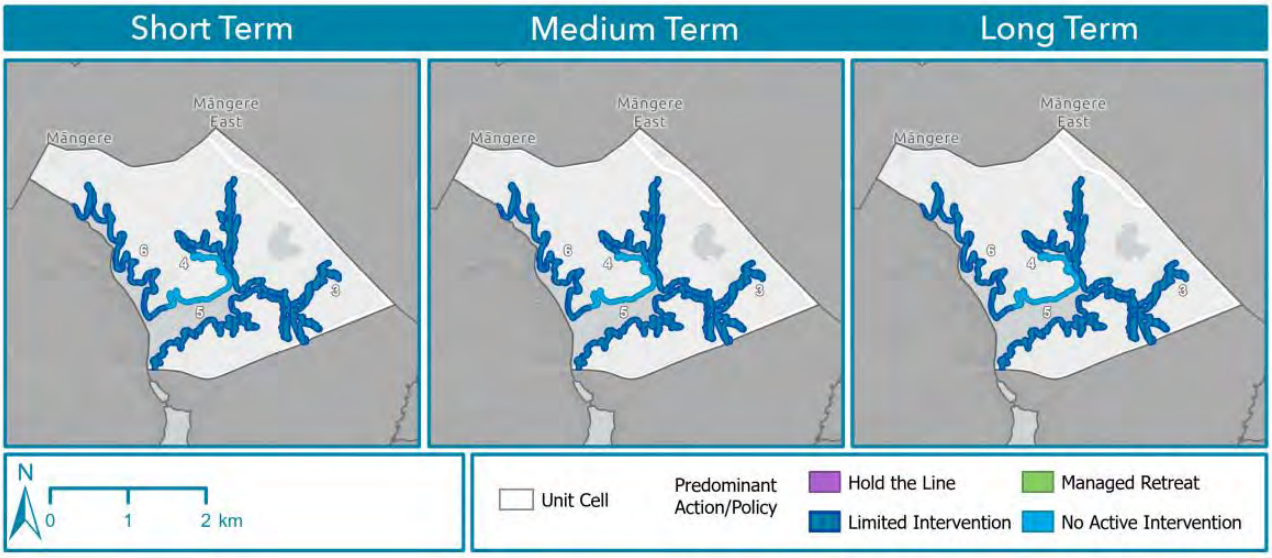

Figure 5-3: Adaptation strategies for coastal stretches within the Waokauri/ Pukaki unit Area

Adaptation summary stretches 3 to 6

Stretch	Short term	Medium term	Long term
3: Waokauri	LI	LI	LI
4: Pūkaki Lagoon	LI	LI	LI
5: Pūkaki Road	NAI	NAI	NAI
6: Peninsular Point	LI	LI	LI

Council-owned infrastructure, land, and assets

This unit is largely within the Māngere-Ōtāhuhu Local Board area with a small portion of the southern area located within the Ōtara-Papatoetoe Local Board area. Land use adjacent to Waokauri and Tautauroa Creeks is largely a mix of rural grazing and market gardening. The Manukau Memorial Gardens Cemetery is located adjacent to the upper reaches of the eastern arm of Waokauri Creek, part of which is identified as an Auckland Council-managed closed landfill.

Two culturally and geologically significant Auckland Council open spaces are the Portage Road Reserve / Crater Hill and the Pūkaki Crater Reserve which has been co-managed with Te Ākitai Waiohua since 2010.

Peninsula Point Reserve and Naylor Esplanade Reserve provide for local connections around the residential development; stormwater management is associated with the built development in the northern extent of Pūkaki Creek. There are a few unmaintained esplanade reserves along fragmented areas of the coast.

Table 5-3: Unit 2 Council-owned land & assets metrics and associated risk scores (short, medium, long terms)

Council-owned land			Council Community facilities			Transport infrastructure			Water infrastructure		
Park and reserve land (140.9 ha) Buildings, wharves (13 No.)			Park amenity structures, carparks, accessways, buildings (4.4 ha)			AT roads (19.9 km) Bridges (0 m^2)			Water pipes (101.6 km)		
Short	Medium	Long	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Coastal erosion susceptibility											
Moderate	Moderate	Moderate	None	None	None	None	None	Low	Low	Low	Low
Coastal inundation											
High	High	High	None	None	None	None	None	None	Low	Low	Low
Key											
None			Low			Moderate			High		Very High

Environmental context: Coastal setting, hazardscape and ecological setting

Pūkaki and Waokauri Creeks converge into a shallow, sheltered, tidal estuary that has an irregular shoreline with numerous indents and narrow tidal arms. The low (5-10 m high), soft cliff shoreline is formed in mainly alluvial sediments (generally pumiceous mud, sand, silt, and gravels), and the surrounding land is generally at 10 m elevation.

There is a proliferation of mangroves fringing along almost the entire circumference of the shoreline as well as filling the many indentations and tidal arms. Pūkaki Creek has some of the oldest mangroves in the Manukau Harbour (SEA – M2-27a), and is fringed with vegetation recognised as terrestrial SEAs in volcanic craters Pūkaki Lagoon and Crater Hill (T-4352 and T-9065). Te Pūkaki Tapu o Poutukeka/Pūkaki Lagoon is one of the best-preserved explosion crater and surrounding tuff rings in the Auckland volcanic field. In the 1920s, the upper Waokauri Creek arm was dammed, and the lagoon reclaimed to form farmland.

The inlets within this unit are relatively sheltered, however, general weathering of the soft geology along exposed cliffs and the impact of sea-level rise on the toe of cliffs influences slope instability within this unit. The regional ASCIE lines indicate a widening of the area susceptible to coastal instability and erosion over time increasing from 7 m in the present day to 12 m in the short term. In the long term, the predicted ASCIE will have the greatest potential impact extending 28 m at the headland on the northern side of the confluence of Pukaki and Waokauri Creeks. Pūkaki Creek retains the most natural features within the Manukau East SAP area, with relatively minor human modifications to this stretch of coastline, and there are few assets at risk.

Coastal inundation will impact Pūkaki Lagoon, subject to operation and maintenance of the existing the tidal bund. Coastal inundation will also impact the longer term function of stormwater ponds adjacent to residential development in the upper Pūkaki Creek. Asset owners and mana whenua have identified the ongoing challenge in managing the efficient function of low-lying stormwater assets in proximity to the coast in flood and storm events. There is currently limited public access to and along this shoreline due to private land ownership. Peninsula Point and Naylors Esplanade Reserves are areas of Auckland Council-owned and maintained public space along the upper reaches of Pūkaki Creek. Pūkaki Creek Esplanade Reserve extends around the headland at the confluence of Pūkaki and Waokauri Creek tidal channels.

Cultural context

Maunga such as Te Pane o Mataaoho, Te Motu ā Hiaroa, Te Kohuora, Maungataketake, Matukutureia and Matukutururu dominate the landscape. These maunga were the sites of ancient pā taua and the centers of large zones of occupation including papakainga and mara kai. Other important volcanic features include the many wahi tapu and mara kai of the stone-fields at Otuataua and Māngere, and the volcanic craters at Waitomokoia and Te Pukakitapu o Poutukeka. Each of these features has its own unique traditions and histories. Stretches 4 and 5 include the Pūkaki Marae and Urupa of significant cultural value to Te Ākitai o Waiohua and Te Ahiwaru.

While specific cultural values and outcomes for this unit stretch will be shared and developed through ongoing involvement with iwi in respective work programmes, guiding objectives and outcomes which have informed the development of adaptation strategies have been identified in Section 3.4.

Please refer to section 3.4.4 Te Ahiwaru cultural context and supporting Cultural Statement. Further engagement should be undertaken to inform implementation of this SAP.

Social and policy context

There is currently limited public access to and along this shoreline due to private land ownership. The community noted the importance whakapapa connections (Te Ākitai Waiohua, Takaanini Whanau), and the importance of this area for kaimoana gathering grounds (pipi and karahu).

Manukau Memorial Gardens is the second largest cemetery in Auckland and has significant capacity for further burials.

There is limited residential development within the unit which is predominantly located in the north. However, much of this is earmarked to intensify as part of Plan Change 78 (PC78) to the Auckland Unitary Plan, though a large portion of the unit has been excluded from PC78 as it is considered outside the urban environment. Within the current AUP, there is a large section north of Puhinui Road set aside as Future Urban Zone, as well as Business Light Industry Zone.

Stretch 3: Waokauri

Stretch description

This stretch commences to the north of SH20B (Puhinui Road) and includes much of Waokauri Creek culminating at Tautauroa Creek adjacent to the end of Retreat Road.

Council-owned infrastructure, land, and assets	Current management approach/ risks
• Unconnected esplanade reserves (485R Puhinui Road), and Waokauri Place esplanade. • Manukau Memorial Gardens (closed fill) multiple facilities associated with management of the cemetery.	• No coastal management structures associated with unmaintained esplanade reserve. • Closed fill subject to Closed Landfill Asset Management Plan (CLAMP). • Risk of coastal erosion in the medium to longer term, flooding in low-lying areas. Limited coastal inundation risk.
• Portage Road Reserve / Crater Hill, unformed road (Portage Road that surrounds the crater) and Orrs Road unformed road end.	• Unformed road areas exposed to flood hazards and potential for coastal erosion in the short, medium and long term.

Adaptation strategies

Stretch	Short term	Medium term	Long term
3: Waokauri	LI	LI	LI

Guidance notes for Implementation

- *Limited intervention* across all timeframes to enable management of risk to assets within the Manukau Memorial Gardens. Site-specific assessment will be required to inform management response to coastal instability and erosion hazards for the Manukau Memorial Gardens.
- The management of closed landfills is subject to the Closed Landfill Asset Management Plan.
- There are a significant number of cultural sites located within this stretch. Further engagement and collaboration with landowners and local iwi will be required to manage risks to these sites/locations.
- Land use zoning indicates potential for future development. Where esplanade reserves/strips are to be vested with Auckland Council, ensure the depth of these reserves are adequate to accommodate coastal processes, coastal connection and are responsive to cultural heritage and ecological values. Ecological outcomes and restoration should be undertaken with reference to the *Ngaa Hau o Maangere Ngahere* planting guide.

Stretch 4: Pūkaki Lagoon

Stretch description

This stretch encompasses the coastal edge of the Pukaki Crater Reserve.

Council-owned infrastructure, land, and assets	Current management approach/ risks
• Pūkaki Crater Reserve - Co-management reserve. • Bund and tidal gates. • Retreat Park (stormwater pond), Rock Daisy Crescent Reserve (playground), Cinnamon Road Reserve (walkway).	• Pūkaki Reserve subject to flooding and at risk of coastal inundation in the short term. • The bund and tidal gates at risk of erosion in the medium to long term.

Adaptation strategies

Stretch	Short term	Medium term	Long term
4: Pūkaki Lagoon	LI	LI	LI

Guidance notes for Implementation

- *Limited intervention* is selected to respond to the developing aspirations of the Pūkaki co-management trust. *Limited intervention* provides for the management and maintenance of existing Auckland Council-owned (co-owned) assets. Consideration on whether the tidal barriers to the lagoon are retained or removed should be part of medium to long-term planning. Adaptation strategies may be subject to revision in response to evolving aspirations for the co-managed reserve and subject to further engagement with local iwi. Ecological outcomes and restoration should be undertaken with reference to the *Nga Hau o Mangere Ngahere* planting guide.
- There are a significant number of cultural sites located within this stretch, including Pūkaki Urupa. Further engagement and collaboration with landowners and local iwi will be required to manage risks to these sites/locations.

Stretch 5: Pūkaki Road

Stretch description

This stretch originates to the south of the Pūkaki Reserve and includes the shoreline (largely private) around to Pūkaki Marae, terminating at the southern extent of the Pūkaki Road Esplanade.

Council-owned infrastructure, land, and assets	Current management approach/ risks
• Pūkaki Road (unformed road end).	• Risk of coastal instability and erosion in the short, medium and longer term. Generally unmaintained, unformed reserve and road end.

Adaptation strategies

Stretch	Short term	Medium term	Long term
5: Pūkaki Road	NAI	NAI	NAI

Guidance notes for Implementation

- This stretch is of significant cultural value. The area has a rich cultural context and includes the Pūkaki Marae. Further engagement and collaboration with landowners and mana whenua will be required to manage risks to these sites/locations.
- Ecological outcomes and restoration should be undertaken with reference to the *Nga Hau o Mangere Ngahere* planting guide.

Stretch 6: Peninsular Point

Stretch description

This stretch extends from the Pūkaki Road Esplanade around the coast to Manston Road and Naylor Drive, culminating at the western extent of Peninsula Point Reserve.

Council-owned infrastructure, land, and assets	Current management approach/ risks
• Pūkaki Road Esplanade. • Peninsular Point Reserve and Naylors Road Esplanade Reserve (including pathways, pedestrian bridge structures and park furniture). • Old School Reserve (community buildings and gardens) and Cyclamen Park (playground). • Stormwater ponds. • Underground piped water assets and wastewater pump station.	• Low-lying areas of the Pūkaki Road Esplanade subject to flooding and stretches at risk of inundation in the short to medium term. • The coastal margins of Peninsula Point and Naylor Reserves will be subject to coastal inundation in the medium to longer term. • Areas of the coastal walkway will be at risk of coastal instability and erosion in the medium to longer term.

Adaptation strategies

Stretch	Short term	Medium term	Long term
6: Peninsular Point	LI	LI	LI

Guidance notes for Implementation

- *Limited intervention* provides for the management of risk to assets located within the coastal margins of Peninsular Point and Naylor Reserves. The landward relocation of assets and the design of piped networks, stormwater assets and reserve uses should respond to changing risk from coastal inundation and erosion over all timeframes.
- *Limited intervention* also provides for coastal enhancement planting for shoreline protection. Ecological outcomes and restoration should be undertaken with reference to the *Nga Hau o Mangere Ngahere* planting guide.

Ihumātao and the Watercare Waterfront

Manukau Harbour East: Unit 3

Watercare Waterfront

watercare.co.nz

Oruarangi Restoration Watercare Waterfront

watercare.co.nz

Watercare Coastal Walkway

Māngere lagoon

Māngere Watercare Wastewater Treatment Plant

Te Motu a Hiaroa Puketutu Island

Island Rd

Te Ara Tāhuna causeway

Southwestern Motorway

State Highway 20

Oruarangi Road Esplanade Reserve

Otuataua Stonefields Walk Network

Oruarangi Rd

Watercare Coastal Walkway

Otuataua Stonefields Reserve

Auckland Airport Motorway

Te Manukanuka o Hoturoa marae

Pukeiti

Oruarangi Reserve Restoration Project

Ellets Beach

Maungataketake

Ihumātao Rd

Renton Rd

Tainui Marae

Outstanding Natural Feature Ihumātao buried forest

Puhinui Rd

Auckland Airport

Wiroa Island

N

- Unit boundary
- Informal recreation park
- Stormwater pond
- Walking tracks
- Shared use path
- Access point
- Maunga
- Outstanding Natural Feature
- Reserve
- Closed Landfill
- Boat ramp
- Walking
- Marae
- Auckland Council owned land
- Watercare asset

0 1km 2km

Unit 3: Ihumātao / Watercare waterfront

This unit includes the western side of the upper reaches of the Pūkaki Creek following the coast to the west, culminating north of Māngere Lagoon. It includes the coastline of the Wiroa Island Wildlife Refuge, Auckland Airport, Ihumātao, Oruarangi Awa, Watercare-managed land known as the 'Watercare waterfront' and the causeway out to Te Motu ā Hiaroa / Puketutu Island. It is bordered on the east by Kirkbridge Road and Montgomery Roads.

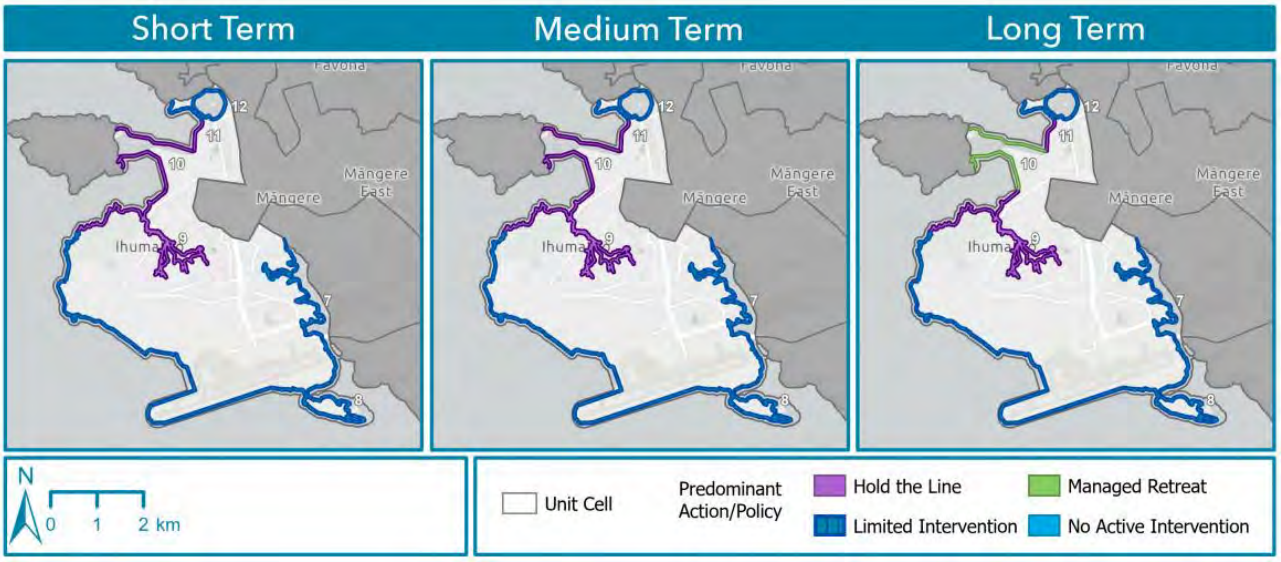

Figure 5-4: Adaptation strategies for coastal stretches within the Ihumātao / Watercare waterfront Unit

Adaptation summary stretches 7 to 12

Stretch	Short term	Medium term	Long term
7: Naylor Road south and AIAL landholdings	LI	LI	LI
8: Renton and Ihumātao Roads	LI	LI	LI
9: Te Puna Wai a Hape, Watercare Waterfront	HTL	HTL	HTL
10: Te Ara Tahuna / Puketutu island Causeway	HTL	HTL	MR
11: Māngere Watercare Wastewater treatment plant	HTL	HTL	HTL
12: Māngere lagoon	LI	LI	LI

Council-owned infrastructure, land, and assets

This unit is within the Māngere-Ōtāhuhu Local Board area. Within the north-eastern areas of the shoreline, in proximity to Naylor Road, there are areas of esplanade and stormwater reserves with associated infrastructure and assets. A large area of the eastern and southern portion of this stretch is owned and managed by Auckland International Airport. These landholdings and assets are not subject to the strategies identified in this plan.

The south-western areas of this unit include Renton and Ihumātao Roads, with road-end reserves providing basic parks amenities and access to the coast. The northeast of the unit's coastline is effectively in Auckland Council or CCO (Watercare) ownership.

Otuataua Stonefields is a significant cultural park that has limited infrastructure for walking and passive recreation. At the mouth of the Ōruarangi Awa there is a boat ramp, carparking and toilets. The Ōruarangi Road Esplanade Reserve extends up the northern side of the creek. An Auckland Council-managed closed landfill is in proximity to the coast.

The Watercare Coastal Walkway extends from west of the Ōruarangi Awa to, around, and beyond Māngere Lagoon and into Unit 5 to the north. This walkway is developed on land previously associated with (and restored) the wastewater treatment plant (WWTP).

The causeway/road providing access to Te Motu ā Hiaroa / Puketutu Island known as Te Ara Tāhuna is an Auckland Transport asset. This causeway also includes conveyance/treatment of wastewater, potable water supply to the island and a walkway.

Table 5-4: Unit 3 Council-owned land & assets metrics and associated risk scores (short, medium, long terms)

Council-owned land			**Council Community facilities**			**Transport infrastructure**			**Water infrastructure**		
Park and reserve land (131.9 ha) Buildings, wharves (5 No.)			Park amenity structures, carparks, accessways, buildings (0.5 ha)			AT roads (23.5 km) Bridges (1,191.4 m^2)			Water pipes (88.8 km)		
Short	Medium	Long	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Coastal erosion susceptibility											
Low	Moderate	Moderate	None	None	None	Moderate	Moderate	High	Low	Low	Low
Coastal inundation											
Low	Moderate	Moderate	Moderate	Moderate	Moderate	Very High	Very High	Very High	Low	Low	Moderate
Key											
None			**Low**			**Moderate**			**High**		**Very High**

Environmental context: Coastal setting, hazardscape and ecological setting

Unit 3 comprises low cliffs and reclaimed foreshore. The more westerly and south-westerly facing parts of the shoreline in this unit are exposed to some of the longest fetches across the harbour to the Āwhitu Peninsula, and consequently, have the highest wave exposure.

The cliffs along the eastern part of this unit, along Pūkaki Creek and Wiroa Island are low soft cliffs, carved in mainly alluvial volcanic sediments. Cliffs to the north of the airport towards Maungataketake/Elletts Mountain, range between 4 – 12 m high, have been carved in soft Puketoka Formation sediments and are fronted by the expansive Karore sandy intertidal banks. Fossilized remains of the Ihumātao buried fossil forests are exposed on the foreshore east of Maungataketake/ Elletts Mountain (near the end of Renton Road).

Mangroves are present in the sheltered tidal arms of Pūkaki Creek and the lee of Wiroa Island. Isolated pockets of mangroves have been established in the lee of reclamation adjacent to Elletts Mountain, and along the fringe of north-facing indentations adjacent to Ōtuataua Stonefields. The coastal marine area of this unit is recognised as SEA-M, valued as international migratory and endemic bird feeding and roosting areas.

The shoreline from the Ōtuataua Stonefields Reserve through to and including Māngere Lagoon is generally lower lying (2 – 5 m in elevation). Narrow upper tide beaches and rocky outcrops are

common along this shoreline that has been significantly modified by reclamation and construction of seawalls, several rock groynes, and small sandy/shelly beaches.

Ōruarangi Awa, was modified in the 1960s due to construction of the Māngere WWTP ponds. The awa was reopened to the tide again in 2005 as part of the Māngere Foreshore Restoration Project and the banks of the upper awa were planted with native trees and shrubs as part of riparian enhancement works.

Coastal defences currently protect the reclaimed foreshore at Auckland Airport and the Māngere WWTP from coastal instability and erosion. Cliffs along the most exposed Ihumātao section of shoreline are predicted to have the greatest potential for retreat. The extent of coastal storm inundation in the short term will impact on isolated low-lying sections of the western facing coastal walkway between Ōtuataua Stonefields, the Māngere Lagoon coastal walkway, and the causeway to Puketutu Island. In the medium term, it is expected that the entire length of walkway, and associated reserve and habitats will be subject to inundation.

WWTP and Watercare assets were not represented in the regional and SAP specific risk scoring for water assets, due to their unique components and design considerations. The treatment plant may also be impacted in the medium to long term with inundation which with sea-level rise.

Cultural context

Te Puke Tapapatanga a Hape is located in and around Ihumatao (Auckland's oldest pre-European settlement) and the Otuataua Stonefields Historic Reserve. Historically and culturally significant – it is the point at which Hape (Tohunga of Tainui waka and cited as one of Tamaki Makaurau's founding ancestors) came ashore and settled after his voyage from Hawaiki. This unit incudes significant cultural value, including several sites of cultural heritage significance, including Te Tiki Paa and Maungataketake (Ellets Mountain).

Many significant waterways within the Ihumātao-Māngere area are still used for food harvesting and traditional ceremonial purposes.

Further to the above, while specific cultural values and outcomes for this unit stretch will be shared and developed through ongoing involvement with iwi in respective work programmes, guiding objectives and outcomes which have informed the development of adaptation strategies have been identified in Section 3.4. Reference to these values, aspirations and further engagement is essential in the implementation of strategies within this unit.

Please refer to section 3.4.4 Te Ahiwaru cultural context and supporting Cultural Statement. Further engagement should be undertaken to inform implementation of this SAP.

Social and policy context

In relation to Auckland Council land, this unit provides part of a well-used coastal walkway and cycleway. The public feedback during consultation related to the importance of the environment for fish spawning, bird feeding and fishing and shell-fish gathering.

Much of the unit is zoned *Special Purpose*, including for airport uses, marae and other Māori purposes. Land around Ihumatao Road and Oruarangi Road that is currently managed as rural is zoned for *Mixed Housing Suburban* and *Future Urban Zone* respectively.

Stretch 7: Naylor Road South and Airport landholdings

Stretch description

This stretch extends from the western side of Pūkaki Creek, from Naylor Road, including the western end of the airport land holdings culminating to the west of the existing runway complex.

Council-owned infrastructure, land, and assets	Current management approach/ risks
• Small section of Naylor Road Esplanade Reserve and reserve land off Timberly Road with stormwater ponds and walkway. • George Cox Reserve (walkway) and stormwater reserve off Verissimo Drive. • Wastewater pipe and pedestrian bridge.	• Inundation risk to stormwater network over time. • Risk of coastal erosion in the medium to longer term may impact areas of the walkway, pipe assets and stormwater assets (ponds).

Adaptation strategies

Stretch	Short term	Medium term	Long term
7: Naylor Road South and Airport landholdings	LI	LI	LI

Guidance notes for Implementation

- *Limited intervention* provides for the Auckland Council-owned land and assets located within the north-eastern aspects of this stretch. *Limited intervention* provides for the maintenance of assets within the reserve and walkway accessway connecting to the east.
- Localised realignment and planting to mitigate risk from erosion and inundation is anticipated. The *limited intervention* strategy does not promote the need for hard coastal defences. Stormwater and other piped assets located within this stretch may also require realignment and further design to respond to hazard risk.
- For the southern portion of this stretch, a *no active intervention* approach is applied due to there being no exposure of Auckland Council-owned or managed assets located within this area. Coastal hazard and climate change risk to the AIAL landholdings is managed independently by Auckland Airport.
- *Ecological advocacy:* To enhance and maintain ecological values, including saltmarsh habitats. Ecological outcomes and restoration should be undertaken with reference to the *Nga Hau o Mangere Ngahere* planting guide.

Stretch 8: Renton and Ihumātao Roads

Stretch description

Commencing to the west of the AIAL landholdings including the shoreline around the western area of Ihumātao, culminating in the north at the start of the Watercare waterfront.

Council-owned infrastructure, land, and assets	Current management approach/ risks
• Rentons Beach and Renton Road / unformed road end with path and stairs. • Ellets Beach / Ihumatao Road end managed as a park. • Southern portion of the Otuataua Stonefields reserve.	• Slips at the end of Renton Road have necessitated fencing the coastal margin to ensure public safety. • At risk of coastal erosion in the short and medium term, and for the entire recreational areas at the road ends in the longer term.

Adaptation strategies

Stretch	Short term	Medium term	Long term
8: Renton and Ihumātao Roads	LI	LI	LI

Guidance notes for Implementation

- Land use zoning indicates potential for future development. Where esplanade reserves/strips are to be vested with Auckland Council, ensure the width of these areas is adequate to accommodate coastal processes and future change. This should in turn maintain coastal connection and be responsive to cultural heritage and ecological values.
- *Limited intervention* provides for the maintenance of access to the coast at Renton Road and Ellet's Beach/ Ihumātao Road while allowing natural processes to continue at the outstanding natural feature (fossil forest) at Renton Road. This may include the localised realignment of park amenities, access structures and road end.
- *Ecological outcomes:* Advocate for the enhancement and protection of identified ecological values within the landward and marine coastal areas.
- *Cultural:* This stretch is of significant cultural value, including several sites of cultural heritage significance, including Te Tiki Paa and Maungataketake (Ellets Mountain). Further engagement with local iwi and private landowners will be required to appropriately manage risks to cultural values and sites.

Stretch 9: Te Puna Wai a Hape Watercare waterfront

Stretch description

This stretch includes the area of the Otuataua Stonefields Reserve adjacent to the Watercare waterfront and includes the Oruarangi awa, and the northern coastline south of the causeway to Te Motu ā Hiaroa/ Puketutu Island.

Council-owned infrastructure, land, and assets	Current management approach/ risks
• Otuataua Stonefields Reserve (including walkway, Ihumatao, and heritage rock walls). • Oruarangi Road Esplanade Reserve. • Watercare waterfront (including parking, boat ramp, floating pontoon and toilets, rock revetment). • Ōruarangi Awa and associated areas of esplanade reserve. • Oruarangi Road, Ruaiti Road and Quarry Road (unformed to coast). • Auckland Council-managed closed landfill (located near to the Oruarangi awa entrance). • Pavillian Parks (1, 2 & 3) and Montgomerie Road Reserve with associated stormwater ponds. • Watercare wastewater pumpstation and piped assets.	• Watercare waterfront resource consent conditions of consent requiring management of the restored/remediated waterfront area, including associated groynes adjacent to Otuataua Stonefields. • Low-lying areas subject to flooding. • Much of the coastal edge, particularly on the northern side of the Stonefields, is subject to inundation in the medium to longer term which will impact the walkway. • Coastal edge is also at risk of coastal erosion in the medium to longer term impacting connection over Oruarangi Awa, parking, toilets and boat ramp. • Rock revetment (located within the Watercare waterfront) in proximity to the boat ramp with associated protection structures and closed landfill assets. Closed fill subject to Closed Landfill Asset Management Plan (CLAMP). • Restoration planting along northern end of walkway. • Oruarangi catchment management plan / ownership of the awa is to pass to Te Motu ā Hiaroa Charitable Trust following significant remediation following a pollution event. • Awa coastal edge planted. Rock revetment for urupa on south side of awa. Stream edge and inlets subject to erosion and inundation in the short, medium and long term.

Adaptation strategies

Stretch	Short term	Medium term	Long term
9: Te Puna Wai a Hape Watercare waterfront	HTL	HTL	HTL

Guidance notes for Implementation

- *Hold the line* for this stretch in the short term reflects the significant modification of the shoreline through the implementation of Watercare's waterfront remediation and reopening of the Ōruarangi awa to the coast. This includes engineered groynes, revetments and softer measures such as planting and beach nourishment. Where there are naturalised areas of the shoreline, further intervention should be carefully considered to respond to cultural and ecological values.
- *Hold the line* in the medium term is reflective of the significant cultural values, location of closed landfill assets and the highly valued walkway connections and harbour access within this location. Inundation will be an increasing risk, regardless of the maintenance of the coastal edge. As such, the design and alignment of assets and land uses should respond to the increasing inundation levels and be located beyond hazard areas, where possible.
- *Hold the line* in the long term applies to the response to coastal erosion and reflects the location of closed landfill assets and highly valued cultural and social land uses. Inundation will become an increasing challenge for low-lying areas in proximity to the coast and awa.
- *Targeted* ***managed realignment*** and/or a change in the available use of assets, such as the coastal walkway, will be required in the longer term.
- Ecological outcomes:
    - Support for ecosystems and species to adapt to changing coastal environments and sea-level rise (where landward migration is impeded by other land uses) should be considered in this stretch, e.g. the maintenance and renourishment of coastal birds' roosting habitats (including artificial roosts).
    - Oruarangi Awa – Consider enhancement opportunities, such as riparian infill planting to facilitate naturalisation of the awa and explore upstream catchment mechanisms to improve water quality.
    - Ecological outcomes and restoration should be undertaken with reference to the *Ngaa Hau o Maangere Ngahere* planting guide.
- Cultural heritage: There are numerous cultural and historic sites located within the erosive coastal landscape which will be subject to coastal hazard risks over time. The need for intervention has been identified for consideration by local iwi. Please refer to section 3.4 for specific interests and aspirations.

Stretch 10: Te Ara Tāhuna / Puketutu Island causeway

Stretch description

This stretch starts from the southside of causeway (Pond 2) and extends along the 1.7 km causeway to the entrance of Te Motu ā Hiaroa / Puketutu Island. The stetch culminates in the west at the island and to the north of the causeway.

Council-owned infrastructure, land, and assets	Current management approach/ risks
• Island Road (including bridge near island entrance). • Watercare conveyance channel and control gates for flushing discharges from the WWTP into the harbour. • Reclaimed land - Pond 2 planted waste deposition site (closed) and what is known as effluent return area on north side of Island Road. • Watercare coastal walkway.	• Road currently managed by Auckland Transport. • Rock revetment along coastal edge. • Sections of the causeway and reclaimed land on each side may be subject to flooding and at risk of coastal inundation in the medium term. • Sections of the land-based walkway is at risk of coastal inundation in the medium term.

Adaptation strategies

Stretch	Short term	Medium term	Long term
10: Te Ara Tāhuna Puketutu Island Causeway	HTL	HTL	MR

Guidance notes for Implementation

- *Hold the line* in the short and midterm are reflective of the current use of the island. This includes the use of Island Road to retain access to the island for Watercare's deposition (biosolids) project and the future uses of Puketutu Island as a cultural park, marae and wānanga. Ecological enhancement options can also be considered (armouring units, seawall panels and tiles) for hard rock revetment along the causeway.
- *Managed retreat* in the long term reflects the increasing inundation risk which would require mitigation to retain the function of the causeway in its existing form. The long-term strategy may be subject to change depending on the evolution of use, development and future ambitions for the island. Further engagement, with the governance and management trusts, will be necessary to test and refine the adaptation pathways for the island.

Stretch description

This stretch takes in the coastal frontage of the Watercare wastewater treatment plant, commencing in the south at the causeway and culminating at the Māngere lagoon to the north.

Council-owned infrastructure, land, and assets	Current management approach/ risks
• Watercare walkway on coastal edge. • Wastewater treatment plant (regionally significant infrastructure). • Greenwood Road.	• Rock revetment armouring coastal edge. • Hazard mapping identifies that part of the walkway and the Watercare facility are at risk of coastal inundation in short term and the entire walkway and much of the plant in the medium term.

Adaptation strategies

Stretch	Short term	Medium term	Long term
11: Māngere Watercare wastewater treatment plant	HTL	HTL	HTL

Guidance notes for Implementation

- *Hold the line* for this stretch in the short term reflects the current operational design and armouring of the shoreline associated with the facility.
- In the mid to long term, ***hold the line*** is also identified to reflect the regional significance of the infrastructure and the investment in the location of the facility. Long-term maintenance of the facility in this location will be subject to Watercare's strategic asset management planning. As such, mid- to long-term strategies will be subject to revisions in response to these future strategic planning processes.
- Community feedback identified that significant value is associated with the Watercare coastal walkway connections. These connections are located on the coastal edge and may become increasingly impacted by inundation. *Hold the line* in the mid- to long-term may not prevent all inundation from impacting this walkway.

Stretch 12: Māngere Lagoon

Stretch description

This stretch takes in the Māngere Lagoon and the coastal edge associated with this. The stretch culminates in the north at the edge of the Ambury Regional Park.

Council-owned infrastructure, land, and assets	Current management approach/ risks
• Creamery Road. • Carpark servicing the walkway. • Watercare coastal walkway. • Wastewater pipes connecting to the Māngere WWTP.	• Rock revetment along the coastal edge and pipes to allow tidal flows into and out of the lagoon. • Lagoon and walkway at risk of coastal inundation in the medium term and this extends to the carpark in the longer term. • The lagoon walkway may also be at risk of coastal erosion in the medium to long term.

Adaptation strategies

Stretch	Short term	Medium term	Long term
12: Māngere Lagoon	LI	LI	LI

Guidance notes for Implementation

- *Limited intervention* in the short and medium term reflects the value of the walkway connections, significant infrastructure, and the exposure of assets to hazards over the midterm. *Limited intervention* supports the continued maintenance and upgrading of existing coastal management structures while providing for assets to be realigned/redesigned when replaced to manage risks from hazards.
- *Targeted managed realignment* in the long term, primarily in relation to the western-most walkway connection along the coastal frontage may be required. *Limited intervention* continues to provide for this through retention of walking access within the wider landholding. The walkway will become increasingly impacted by sea-level rise and inundation. While aspects of the piped infrastructure may be suitably designed to remain in their current location, the feasibility of retaining walking/shared paths within the same fixed location may not be possible while meeting the identified social and cultural values associated with the lagoon.
- Ecological enhancement to support bird habitat within the wider unit has been identified within this stretch: coastal enhancement and infill planting at Māngere Lagoon, and associated predator control to protect important wading bird habitats.

Te Motu a Hiaroa Puketutu Island

Manukau Harbour East: Unit 4

Kia uu, kia mau, kia toa, kia manawanui kit te tiaki i te taonga nei araa ' Te Motu a Hiaroa'. Hei haapai i ngaa moemoeaa a ngaa tuupuna a poo. Kia tika te tiaki i te whenua, kia ora ai te wairua, me pupuru ki ngaa tongi.

Our vision for Te Motu a Hiaroa is to protect and enhance this treasure for the benefit of mana whenua and the people of Auckland as a special place of cultural significance.

TE MOTU A HIAROA
charitable trust

"The island is owned by Te Motu a Hiaroa Charitable Trust which consists of representatives from Te Kawerau a Maki, Te Ahiwaru Trust and Waikato Tainui and is managed by the Management Trust which includes representatives from Auckland Council & Watercare. Auckland Council holds a lease over the island for the provision of public accessible open space or cultural park and the Te Motu a Hiaroa Charitable Trust (owners) are developing cultural facilities on the island. This island also include Living Earth composting Plant, Kelliher homestead (a historic place) and several residential properties."

-Māngere-Ōtāhuhu Local Board 2023

- Unit boundary
- Co-managed park
- Community buildings (including leased)
- Farmland
- Outstanding Natural Feature, Puketutu Island Volcano
- Watercare asset

0 500m 1km

Te Motu a Hiaroa / Puketutu Island

Watercare - Rehabilitating Te Motu a Hiaroa to Mana Whenua (Puketutu Island) with biosolids
watercare.co.nz - The Puketutu Story

Unit 4: Te Motu ā Hiaroa/ Puketutu Island

This unit extends around the shoreline of Te Motu ā Hiaroa / Puketutu Island.

Figure 5-5: Puketutu Island. Photo credit J Farnworth

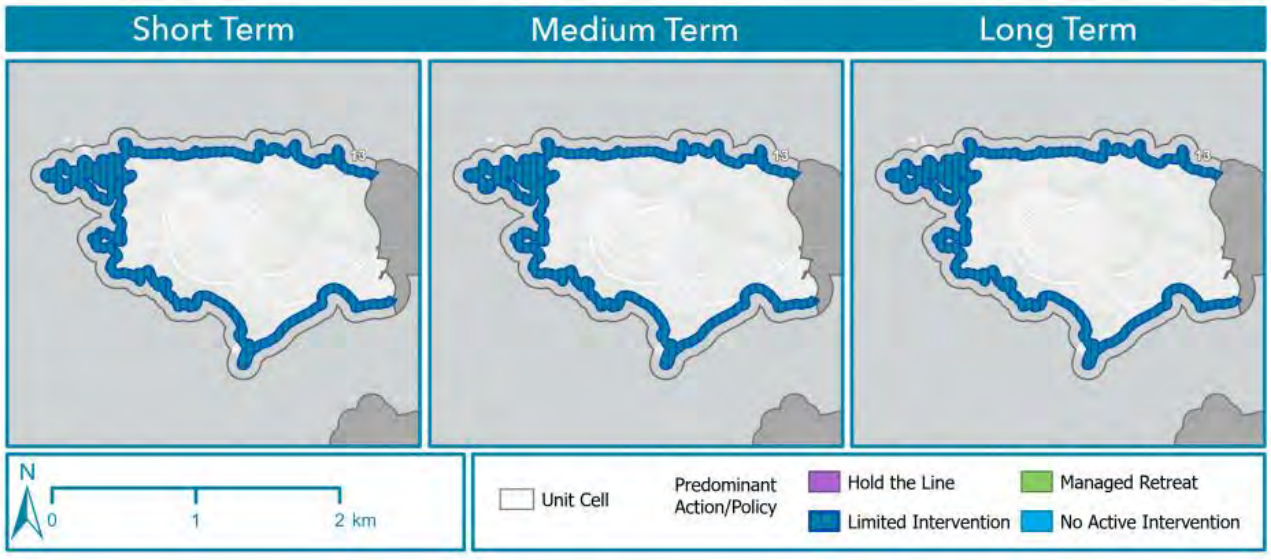

Figure 5-6: Adaptation strategies for coastal stretches within Unit 4: Te Motu ā Hiaroa/ Puketutu Island

Adaptation summary stretch 13

Stretch	Short term	Medium term	Long term
13: Te Motu ā Hiaroa	LI	LI	LI

Council-owned infrastructure, land, and assets

This unit is within the Māngere-Ōtāhuhu Local Board area. Te Motu ā Hiaroa is a 197 ha island accessed by a causeway (Te Ara Tāhuna). It is co-managed between the iwi owners and Auckland Council. Currently, a third of the island is dedicated to the Watercare Biosolids Deposition Project. Of the remaining land area, a portion is actively farmed, which is managed by Auckland Council. The remaining portion is being developed to accommodate a marae, waananga and papakāinga. It is intended that in the future, this will operate as a cultural park. Limited public access is currently available with the Watercare Coastal Walkway skirting the eastern end of the island.

Table 5-5: Unit 4 Council-owned land & assets metrics and associated risk scores (short, medium, long terms)

Council-owned land			Council Community facilities			Transport infrastructure			Water infrastructure		
Park and reserve land (193.4ha) Buildings, wharves (22 No.)			Park amenity structures, carparks, accessways, buildings (0.8 ha)			AT roads (0 km) Bridges (0 m^2)			Water pipes (2.2 km)		
Short	Medium	Long	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Coastal erosion susceptibility											
Moderate	Moderate	Moderate	None	None	None	None	None	None	None	None	None
Coastal inundation											
Moderate	High	High	Moderate	Moderate	High	None	None	None	Low	Low	Low
Key											
None			Low			Moderate			High		Very High

Environmental context: Coastal setting, hazardscape and ecological setting

The Island is a significant geological feature, as the only island volcano in the Manukau Harbour. It has a convoluted rocky shoreline, with a lava apron that extends into the foreshore around much of the Island. Narrow rocky beaches, lava flows, and mangrove filled indentations (~10 – 300 m wide) parallel the sloping vegetated backshore. Saltmarsh vegetation adjoining the island includes low mangrove forest on lava flows and salt meadow communities.

Extensive areas of the Island are recognised as terrestrial significant ecological areas (T-9029 and T-5547), and surrounded marine SEAs (SEA-M2-25 and 25w1) that recognise the extensive areas of feeding habitat for wading birds and the value of the island shoreline, which is used as a high-tide roost by a variety of waders including several threatened species.

A large portion of the island is classed as ‘surface mines and dumps’; the historic volcanic cone was quarried in the 1950s and is currently being rehabilitated through filling the quarry with biosolids from the Māngere WWTP.

There is a relatively low risk of coastal instability and erosion impacting along this shoreline, reflecting the predominantly harder basalt lava nature of the island, the low slope of the land, and low wave-energy exposure area. Coastal inundation of low-lying areas around the periphery of the island will impact the eastern end of the island, the Te Ara Tāhuna causeway and the associated wastewater treatment plant canal/and pond area.

There is a relatively low risk of coastal instability and erosion impacting along this shoreline, reflecting the predominantly harder basalt lava nature of the island, the low slope of the land, and low wave-energy exposure area. Coastal inundation of low-lying areas around the periphery of the island will impact the eastern and western ends of the island and these areas may become more susceptible to inundation in the short and medium terms.

At a unit level, there is a very high risk from coastal inundation to the culture and heritage assets in the short to medium term given that the majority of the island is identified as culturally significant. There is moderate risk from coastal inundation to Auckland Council facilities.

Table 5-3: Unit 4 environmental and culture and heritage assets and associated risk scores (short, medium, long terms)

Environmental			**Cultural and heritage**		
Ecological area (54.9 ha)			Cultural heritage assets (122 No.) Cultural heritage land (205.3 ha)		
Short	Medium	Long	Short	Medium	Long
Coastal erosion susceptibility					
Moderate	Moderate	Moderate	High	High	High
Coastal inundation					
High	High	High	Very High	Very High	Very High
Key					
None	**Low**	**Moderate**	**High**	**Very High**	

Cultural context

Te Motu ā Hiaroa (Puketutu Island) is a part of a significant cultural landscape rich in history, customs, and traditions. These link Te Motu ā Hiaroa to Mataaoho, the deity responsible for volcanic activity, who created the wider Auckland volcanic field cultural park, which three iwi co-manage/own. There are also traditions that speak to the activities of the secretive Patupaiere who occupied the area prior to human activity. Te Motu ā Hiaroa is protected by the ancestral guardian taniwha Kaiwhare.

Guiding objectives and outcomes which have informed the development of adaptation strategies have been identified in Section 3.4.The governance arrangements identified in section 2.5 are of particular relevance. Further to the above, specific cultural values and outcomes for this unit/stretch will be shared and developed through ongoing involvement with iwi in respective work programmes.

Please refer to section 3.4.4 Te Ahiwaru cultural context and supporting Cultural Statement. Further engagement should be undertaken to inform implementation of this SAP.

Social and policy context

There was no specific public feedback on this unit during consultation aside from reference to the coastal walkway connections. At this stage, public access is restricted to the eastern periphery of the island where Watercare has developed a small carpark and coastal walkway. Auckland Council has a lease over the majority of the island with the intention that this be developed as a cultural park. Public access is understood to be progressively available following Watercare's progressive rehabilitation of the island with its biosolids project.

Stretch 13: Te Motu ā Hiaroa

Stretch description

This stretch takes in the entire island from the western end of the causeway.

Council-owned infrastructure, land, and assets	Current management approach/ risks
• Watercare coastal walkway and parking area on Watercare-managed land. • Te Motu ā Hiaroa co-managed area – roads, buildings, heritage rock walls, farm assets, composting site. • Watercare-leased area – deposition site, roads and buildings.	• Vegetation around much of the coastline. • Eastern and western ends of the island are susceptible to coastal inundation in the short to medium term impacting the coastal walkway, parking area and importantly access to the island. • Western end of island and limited small areas at risk of coastal instability and erosion in the medium to longer term.

Adaptation strategies

Stretch	Short term	Medium term	Long term
13: Te Motu ā Hiaroa	LI	LI	LI

Guidance notes for Implementation

- *Limited intervention* is selected to respond to the developing aspirations of the Te Motu ā Hiaroa co-management trust and further engagement with local iwi. *Limited intervention* provides for the management, maintenance and operation of existing Auckland Council-owned (co-owned) and Watercare assets and management operations. Adaptation strategies may be subject to revision in response to evolving aspirations for the island and subject to further engagement with local iwi.
- *Ecological advocacy:* There is an opportunity for coastal restoration and riparian infill planting along the Puketutu Island coastline to enhance existing terrestrial vegetation and to maintain habitats important to native fauna. Pest plant and animal management to protect rare ecological habitats. Ecological outcomes and restoration should be undertaken with reference to the *Ngaa Hau o Maangere Ngahere* planting guide.

Ambury

Manukau Harbour East: Unit 5

Birds roosting

Ambury Foreshore Track, Auckland Council

"...protecting and restoring selected coastal wetland areas, prioritising those where a complete sequence from the sea can be obtained, while considering the need to maintain suitable roosting habitat for shore birds."

-Ambury Park Management Plan Management Intention 8, Special Management Zone 28c

Shorebird habitat

Ambury Regional Park North

Bird roosting

Watercare Waterfront and Coastal Walkway

Ambury Regional Park South

Ambury Riding Therapy

Māngere Pony Club

Māngere Lagoon

Te Pane a Mataaoho/ Māngere Mountain

Southwestern Motorway

State Highway 20

Muir Ave

Aubury Rd

Taylor Rd

Wallace Rd

N

- Unit boundary
- Regional park
- Walking tracks
- Pony riding
- Shared use path
- Camping
- Bird roosting
- Auckland Council owned land
- Watercare asset

0 500m 1km

Unit 5: Ambury

This unit extends around approximately 3 km of shoreline including the aspects of the Watercare waterfront and Ambury Regional Park, and extends landward to the boundary of the park where this meets Ambury Road and Wallace Road.

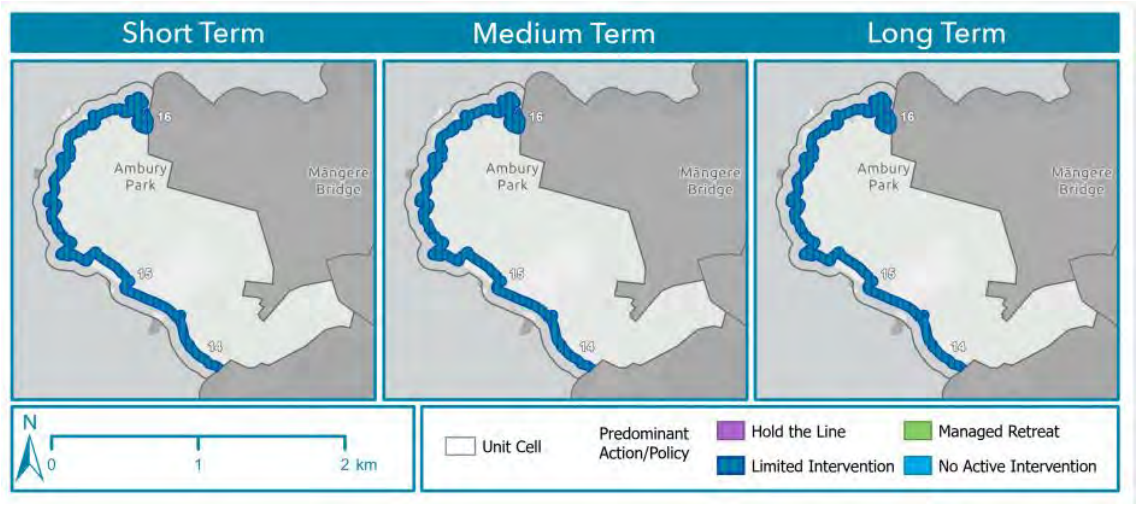

Figure 5-7: Adaptation strategies for coastal stretches within Unit 5: Ambury Regional Park

Adaptation summary stretches 14 to 16

Stretch	Short term	Medium term	Long term
14: Ambury South	LI	LI	LI
15: Watercare Section (Ambury)	LI	LI	LI
16: Ambury North	LI	LI	LI

Council-owned infrastructure, land, and assets

This unit is within the Māngere-Ōtāhuhu Local Board area and comprises entirely of Auckland Council-owned and Watercare-managed land. The Watercare landholdings are a mixture of coastal planting and open pasture with tracks throughout; within the coastal areas are engineered shoreline areas including bird habitats. The regional park is farmed and has an array of buildings and infrastructure to support these activities. The park also has a campsite, an educational centre, toilets, office and volunteer base. A network of roads and tracks support access including for horse riding and parking.

Table 5-6: Unit 5 Council-owned land & assets metrics and associated risk scores (short, medium, long terms)

Council-owned land			Council Community facilities			Transport infrastructure			Water infrastructure		
Park and reserve land (123.6 ha) Buildings, wharves (5 No.)			Park amenity structures, carparks, accessways, buildings (1.3 ha)			AT roads (0.2 km) Bridges (0m^2)			Water pipes (2.5km)		
Short	Medium	Long	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Coastal erosion susceptibility											
Low	Low	Low	None	None	Low	None	None	None	None	None	None
Coastal inundation											
Moderate	Moderate	Moderate	High	High	Very High	None	None	None	None	None	Low
Key											
None			Low			Moderate			High		Very High

Environmental context: Coastal setting, hazardscape and ecological setting

The landmass of Ambury Regional Park area is gently sloping, rising to approximately 10 m elevation. It is composed of an area of volcanic ash and tuff, and a series of lava flows (emanating from Te Pane a Mataaho/ Māngere Mountain) that taper into the harbour. The numerous rocky lava flow outcrops contain small, sandy, high-tide beach areas that grade to muddy intertidal areas. The shoreline slopes gently up to open grassland.

The southwest-facing shoreline in the lee of Puketutu Island is part of the Watercare buffer area and is fronted by a combination of a narrow gravel beach, a seawall, and an artificially constructed bird roost. Terrestrial SEAs includes oioi-coastal needle grass on saline margins of lava flows and small patches of saltmarsh, saltmeadow and a band of broadleaved scrub along part of the coastal margin. The coastal edge and intertidal area also provide important foraging habitats for endemic and migratory shorebirds and is recognised as a Significant Ecological Area – Marine (SEA-M1-23w1). Some mangrove management has been undertaken in the past to provide for wading bird habitat, and to enhance recreational and amenity values.

This shoreline is a low wave-energy environment. Coastal instability and erosion along the northern and western shorelines are predicted to be confined to a narrow zone around the shoreline. There is a low risk in the short to long term of coastal instability and erosion significantly impacting the rocky southwestern shoreline.

Low-lying areas around the shoreline margin are susceptible to coastal inundation, including some areas where the coastal walkway is located. Low-lying areas are predicted to become progressively susceptible in the medium to long term. The southwest shoreline, including the mine waste area (backfilled opencast mine area and overburden dump) is the area most susceptible to coastal inundation.

Figure 5-8: Ambury regional park in the foreground, Puketutu island and Manukau Harbour in the background (looking south west) Photo credit: Auckland Council

Cultural context

While specific cultural values and outcomes for this unit stretch will be shared and developed through ongoing involvement with iwi in respective work programmes, guiding objectives and outcomes which have informed the development of adaptation strategies have been identified in Section 3.4.

Please refer to section 3.4.4 Te Ahiwaru cultural context and supporting Cultural Statement. Further engagement should be undertaken to inform implementation of this SAP.

Social and policy context

The park is subject to the Auckland Regional Parks' Management Plan 2020. This recognises the park as one of the most popular regional parks with visitor numbers steadily around 400,000 between 2015 and 2020. It provides a variety of recreational opportunities close to the urban area and is very popular with large family and community gatherings. It is also used for school holiday programmes and events. Areas of the park are leased to the Māngere Pony Club and Centre for Riding Therapy.

The coastal walkway is well-used and community feedback highlighted the value of this in providing a wider connection to the adjacent Kiwi Esplanade walkway and the southern part of the Watercare Coastal Walkway; it is also part of Te Araroa Trail. The community also recognise the importance of the bird roosting and feeding sites and value the connection to the natural environment.

Stretch 14: Ambury South

Stretch description

The stretch extends around the southern areas of Ambury Regional Park, which includes a thin strip of Watercare buffer land on the coastal edge.

Council-owned infrastructure, land, and assets	Current management approach/ risks
• Regional park - leased areas for riding therapy and pony club, including buildings, arenas and parking.	• The current planting plan for the next 3-5 years is 10,000 trees/shrub, wetland species per year to be planted in this unit. • Risk of coastal inundation in the short term will impact the walkway. • This risk will extend to the Centre for Riding Therapy facilities in the longer term.

Adaptation strategies

Stretch	Short term	Medium term	Long term
14: Ambury South	LI	LI	LI

Guidance notes for Implementation

- *Limited intervention* is selected over all timeframes as risk can be managed through the adaptation and reconfiguration of uses within the park area. There are few underground assets or roading assets likely impacted by hazards over all timeframes.
- *Limited intervention* also provides for the ongoing adaptation of ecological assets and programmes to manage of stormwater outfalls and discharge. There may be opportunities for ecological outcomes and opportunity for enhancement, including management to maintain existing high value coastal bird habitats.
- Ecological outcomes and restoration should be undertaken with reference to the *Ngaa Hau o Maangere Ngahere* planting guide.

Stretch 15: Watercare section (Ambury)

Stretch description

The stretch includes Watercare landholdings located within the central portion of the regional park.

Council-owned infrastructure, land, and assets	Current management approach/ risks
• Section of Watercare waterfront - tracks, artificial bird roosts, bird hide.	• Rock revetment / seawall along extent of the coast. • Risk of coastal inundation in the short term to bird roosts and walkway. This risk will extend into the wider area in the medium to longer term.

Adaptation strategies

Stretch	Short term	Medium term	Long term
15: Watercare section (Ambury)	LI	LI	LI

Guidance notes for Implementation

- *Limited intervention* provides for the ongoing maintenance of the artificial coastal structures and defences. These defences may support the maintenance of the coastal edge but may be suitably realigned in future. *Limited intervention* also supports the realignment of assets, such as pathways and associated amenities to manage exposure to coastal hazards.
- *Ecological outcomes*: To achieve ecological outcomes identified as important by the community and iwi, nourishment of artificial roosts to protect against sea-level rise and the continued protection of existing high-tide roosts will be important considerations for future management.
- Ecological outcomes and restoration should be undertaken with reference to the *Ngaa Hau o Maangere Ngahere* planting guide.

Stretch 16: Ambury North

Stretch description

This stretch includes the northeastern shoreline section of Ambury Regional Park.

Council-owned infrastructure, land, and assets	Current management approach/ risks
• Regional park - roads, tracks, campground, buildings, farm infrastructure.	• Low-lying land along the southwestern shoreline is no longer farmed, and has significant areas of coastal revegetation and wetland restoration. • Coastal edge, particularly in the south and north of the stretch is at risk of coastal inundation in the short term. This will extend to a wider area in the medium to longer term impacting the camping area and coastal walk. • The coastal edge at risk of coastal instability and erosion in the short, medium and longer term.

Adaptation strategies

Stretch	Short term	Medium term	Long term
16: Ambury North	LI	LI	LI

Guidance notes for Implementation

- *Limited intervention* is selected over all timeframes as risk can be managed through the adaptation and reconfiguration of uses within the park area. *No active intervention* in relation to the development of coastal defences is anticipated through the selection of this strategy.
- *Limited intervention* reflects the management intentions of the existing Regional Park Management Plan with the identification of progressive retirement of the coastal edge from farming and the development of coastal infill planting to enhance coastal habitats. This includes allowing room for saline vegetation at the land-sea interface to migrate landwards with sea-level rise.
- Additional actions which may be explored to support ecological outcomes include mangrove management to maintain existing high-value coastal bird habitats as well as saltmarsh restoration and enhancement.

Māngere Bridge / Kiwi Esplanade

Manukau Harbour East: Unit 6

Unit 6: Māngere Bridge / Kiwi Esplanade

Unit 6 extends approximately 2 km along the west-facing shoreline of the Māngere Peninsula between Ambury Regional Park and the narrow entrance to Māngere Inlet. Ambury Park runs along the western boundary, SH20 on the eastern boundary and Taylor Road on the southern boundary.

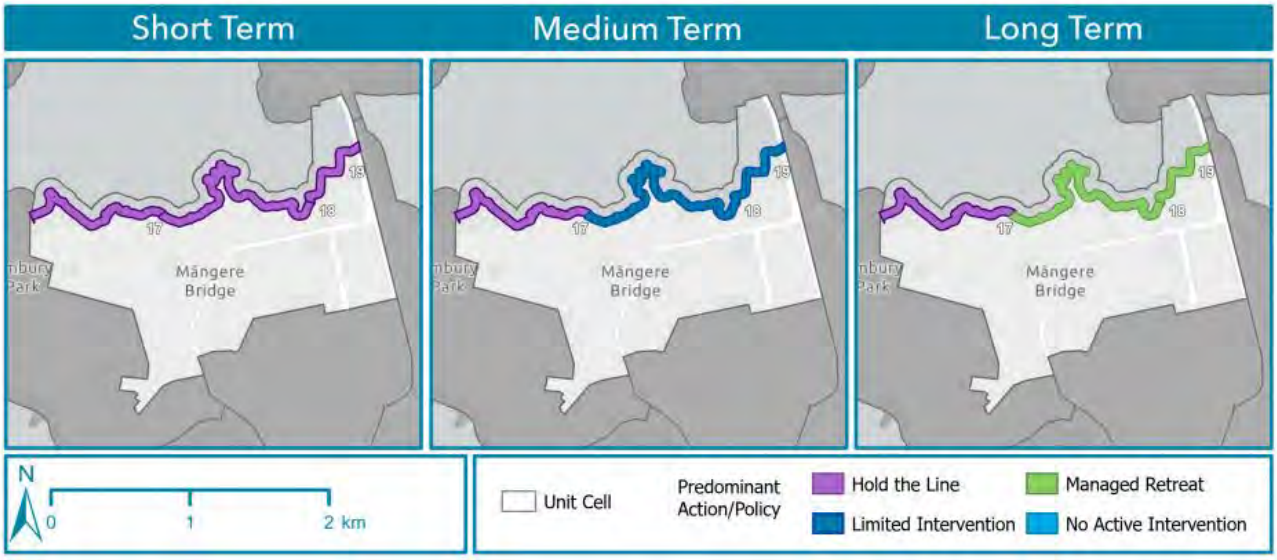

Figure 5-9: Adaptation strategies for coastal stretches within Unit 6: Māngere Bridge / Kiwi Esplanade

Adaptation summary stretches 17 to 19

Stretch	Short term	Medium term	Long term
17: Manukau Yacht Club	HTL	HTL	HTL
18: Māngere Boating Club	HTL	LI	MR
19: Māngere Bridge	HTL	LI	MR

Council-owned infrastructure, land, and assets

This unit is within the Māngere-Ōtāhuhu Local Board area and sits to the north of the Māngere Bridge suburb with the land use largely residential. The coastal edge is entirely held in reserve: Kiwi Esplanade Reserve and Waterfront Road Reserve. These provide a coastal walkway and connection to Onehunga via the pedestrian bridge Ngā Hau Māngere. There are a number of boat ramps in the unit and a couple of clubs providing for boating and sailing in the harbour. The boat ramps and a playground within Kiwi Esplanade Reserve are currently included within the coastal asset renewals programme, subject to multiple renewal projects.

There is a relatively extensive roading network close to the coast servicing the residential area, including Kiwi Esplanade that runs nearly the full length of the unit along the coast.

This unit also includes several areas of closed landfills within reclaimed sections along Kiwi Esplanade, the westernmost included within the coastal reserve area is managed by Auckland Council.

Table 5-7: Unit 6 Council-owned land & assets metrics and associated risk scores (short, medium, long terms)

Council-owned land			Council Community facilities			Transport infrastructure			Water infrastructure		
Park and reserve land (28.7 ha) Buildings, wharves (52 No.)			Park amenity structures, carparks, accessways, buildings (1.4ha)			AT roads (21.1 km) Bridges (0 m^2)			Water pipes (113.8 km)		
Short	Medium	Long	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Coastal erosion susceptibility											
Low	Low	Moderate	High	High	High	Moderate	Moderate	Moderate	Low	Low	Moderate
Coastal inundation											
Moderate	Moderate	Moderate	Hifh	High	Very High	Moderate	High	High	Moderate	Moderate	Moderate
Key											
None			Low			Moderate			High		Very High

Environmental context: Coastal setting, hazardscape and ecological setting

The low sloping shoreline (1 – 3 m high) is composed predominantly of basalt lava, that flowed from Te Pane a Mataaho/Māngere Mountain tapering into the harbour. This north-facing shoreline is a low wave-energy environment, characterised by three shallow embayments between basalt rock outcrops, with some interspersed small, sandy, upper beach areas that grade to predominantly muddy intertidal areas.

Figure 5-10: Kiwi Esplanade, looking east. Photo Credit J Morriss

Historic reclamation (including closed landfill areas) and coastal armouring (seawalls and rock revetments) have modified large parts of this shoreline that is backed by a low grass reserve and a coastal road (Kiwi Esplanade).

Ecological values are concentrated along the coastal margin. This shoreline is used as a high-tide roost by thousands of international migratory and New Zealand endemic wading birds including a

number of threatened species (Marine SEA-M1-23b). The feeding grounds are used seasonally by national and international migrant wading birds.

In the short term, the frontage along the entire length of Kiwi Esplanade Reserve including the coastal pathway and the eastern end of Kiwi Esplanade is at risk to coastal instability and erosion. However, coastal armouring comprising rock revetment and sections of tipped rock currently provide some protection to these assets. This risk is expected to markedly increase in the medium and long term. This will impact the open space grass reserve and park amenities, including boat launching facilities, access to ramps, parking areas and adjacent boat club facilities. Coastal instability and erosion is also predicted in the medium to long term to impact the entire width of Kiwi Esplanade.

Coastal inundation in the short term during a 1% AEP event is predicted to impact large parts of Kiwi Esplanade Reserve and Waterfront Road Reserve, as well as low-lying road sections of Kiwi Esplanade. The extent of area potentially inundated in extreme events is anticipated to markedly increase with expected sea-level rise, with the predicted inundation in the medium term impacting all areas of open space reserve, park amenities and Kiwi Esplanade.

Cultural context

While specific cultural values and outcomes for this unit stretch will be shared and developed through ongoing involvement with iwi in respective work programmes, guiding objectives and outcomes which have informed the development of adaptation strategies have been identified in Section 3.4.

Please refer to section 3.4.4 Te Ahiwaru cultural context and supporting Cultural Statement. Further engagement should be undertaken to inform implementation of this SAP.

Social and policy context

This unit has a significant coastal walkway that is valued for its connectivity. It is frequently used for walking, running, dog walking and cycling. Feedback during consultation noted the impact of the early 2023 weather events which flooded the esplanade reserve and road, and the sea was polluted. People were also concerned about the general water quality and the impact on their ability to swim in the area.

The coastal reserves were also valued for the boat ramps and connection to the harbour, views, providing a sense of place, and as a quiet place that is close to the city, but not too busy.

Over half the residential area in this unit is subject to PC78 which is proposing some intensification to the zoning. A large chunk of the eastern side of the unit sits within the area identified for the Auckland Light Rail Corridor. Currently, work on this has been deferred.

Stretch 17: Manukau Yacht Club

Stretch description

This stretch runs from the boundary of Ambury Regional Park through to approximately 55 Kiwi Esplanade where the reserve narrows.

Council-owned infrastructure, land, and assets	Current management approach/ risks
• Kiwi Esplanade Reserve including the following facilities: yacht club (leased), boat ramps and pontoon, carparking areas and access road, paths, toilets, and park furniture. • Closed landfill. • Wastewater pumpstation. • Kiwi Esplanade (road) and local roads off this.	• Seawall / rock revetment along western portion of stretch, associated with the closed landfill area. • Low-lying areas subject to flooding. • Risk of coastal inundation in the short term impacting access to the boat ramps and sections of the walkway. • Inundation in the medium term may impact greater reserve areas and roading assets. • Closed fill subject to Closed Landfill Asset Management Plan (CLAMP)

Adaptation strategies

Stretch	Short term	Medium term	Long term
17: Manukau Yacht Club	HTL	HTL	HTL

Guidance notes for Implementation

- *Hold the line* across all timeframes applies primarily to the management and defence of the coastal edge. Maintain and upgrade the existing protection structures.
- *Hold the line* may not resolve all inundation-related risk in the mid to long term. The design and function of harbour access (boat ramps and associated facilities) and roads, parks amenities and facilities and associated stormwater management should be designed or located to respond to inundation risks over time.
- *Ecological considerations*: The opportunity to support ecological outcomes, including bird habitat should be considered within this stretch.

Stretch 18: Māngere Boating Club

Stretch description

This stretch extends in the west from adjacent to 55 Kiwi Esplanade and includes the coastline around to the western edge of the carpark on the corner of Kiwi Esplanade and Coronation Road.

Figure 5-11: Shelly Beach, Kiwi Esplanade 2017. Photo credit: J Morriss.

Council-owned infrastructure, land, and assets	Current management approach/ risks
• Kiwi Esplanade Reserve, including Māngere Boating Club, boat ramps, carparking areas and access road, playground, paths, toilets, and park furniture and a replenished beach (Shelley Beach). • Kiwi House Reserve, Kiwi Ngaio Park, Rose Garden Reserve, Waterlea Park Swanson Park. • Wastewater pumpstations and associated pipe network. • Kiwi Esplanade (road) and local roads.	• Sea wall – stone wall foreshore, rock revetment and replenished beach area. • Risk of coastal inundation in the short term to those coastal assets located in close vicinity to the shore. Risks increase to impact all open space areas, the club building and park amenities and Kiwi Esplanade Road. • Kiwi House Reserve subject to flooding and at risk of coastal inundation in the short term while Kiwi Ngaio Park is at risk of coastal inundation in the longer term. • Reserves set back from the coastal edge are in part subject to catchment flooding.

Adaptation strategies

Stretch	Short term	Medium term	Long term
18: Māngere Boating Club	HTL	LI	MR

Guidance notes for Implementation

- *Hold the line* in the short term relates to the protection of the coastal edge. The existing seawall is currently being renewed.
- *Limited intervention* in the midterm provides for the ongoing maintenance of this protection structure while acknowledging the increasing risk from inundation and the challenges in engineering a response in a low-lying area subject to catchment flooding.
- *Managed retreat* in the long term is selected to identify the need to relocate some land uses and assets to ensure risks and asset function can be maintained to acceptable levels. Managed realignment in this instance may not signal the relocation of uses but require re-design to 'accommodate' increasing inundation frequency and duration.
- *Ecological values:* Consideration of adaptation actions under all strategies will need to respond to the identified ecological values (bird habitat) and the cultural and social value associated with the geological features of the shoreline.
- Watercare assets located within this stretch form part of a connected network associated with the Māngere WWTP and the provision of potable water. The alignment of these assets may need to be retained in place and design adapted to changing coastal risk.

Stretch 19: Māngere Bridge

Stretch description

This stretch extends from the western edge of the carpark on the corner of Kiwi Esplanade and Coronation Road around the SH20 motorway bridge. The stretch includes Ngā Hau Māngere to the north culminating before the bridge connects to Onehunga in the north.

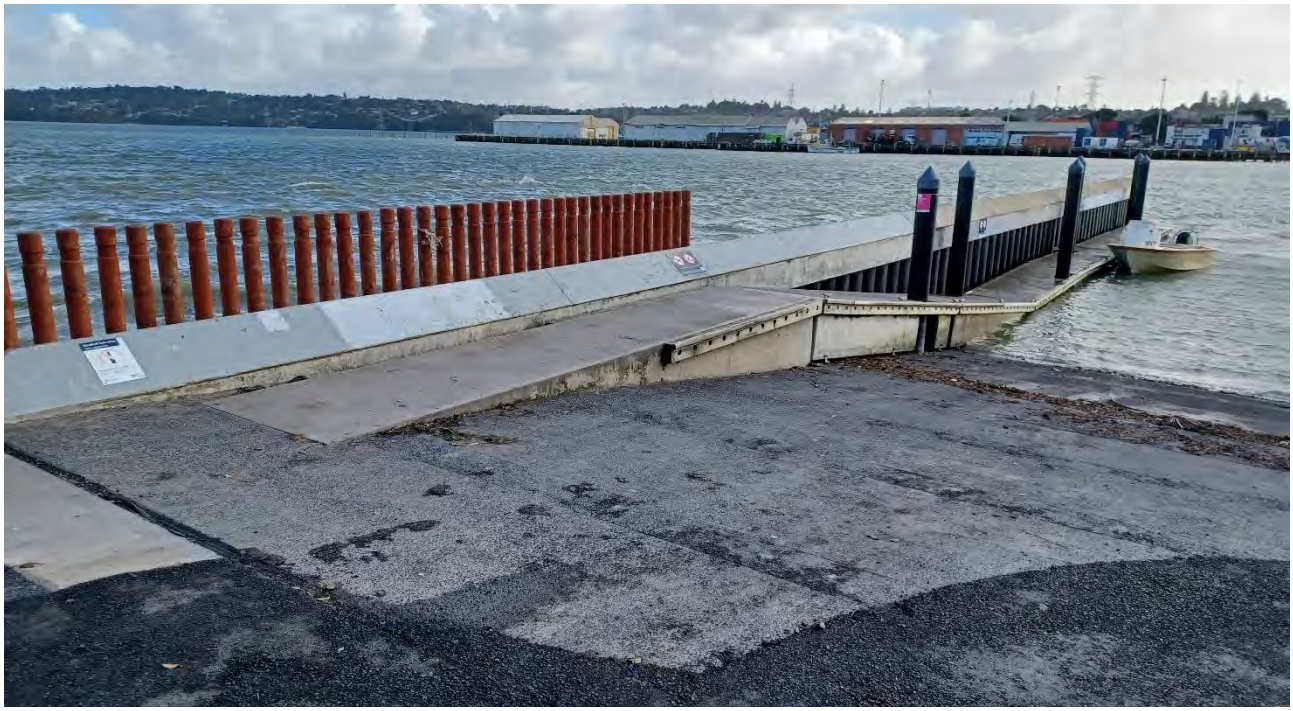

Figure 5-12: Māngere Bridge boat ramp, Coronation Road. Photo credit: J Morriss 2022

Council-owned infrastructure, land, and assets	Current management approach/ risks
• Kiwi Esplanade Reserve (including carpark and paths). • Waterfront Road Reserve (parking, toilets, paths, boat ramp). • Māngere pedestrian bridge - Ngā Hau Māngere (shared path and boat ramp). • Crawford Road Reserve. • Kiwi Esplanade, Coronation Road, Waterfront Road and Crawford Road and the on-ramp. • Pedestrian and cycle path (SH20 underpass).	• Seawalls and rock revetment, subject to renewal 2023/24. • Low-lying areas subject to flooding. • Risk of coastal inundation in the short term impacting Esplanade Reserve paths and some carpark areas. • Inundation risk increasing to impact greater areas of reserve and roading networks.

Adaptation strategies

Stretch	Short term	Medium term	Long term
19: Māngere Bridge	HTL	LI	MR

Guidance notes for Implementation

- *Hold the line* in the short term relates to the protection of the coastal edge. The existing seawall is currently being renewed and the Māngere pedestrian bridge - Ngā Hau Māngere, has been recently developed.
- *Limited intervention* in the midterm provides for ongoing maintenance of these protection structures while acknowledging the increasing risk from inundation and the challenges in engineering a response in a low-lying area subject to catchment flooding. Of note, the need to consider the relocation or design of assets on low-lying reserve areas and the ongoing suitability of low-lying areas for certain activities.
- *Managed retreat* in the long term is selected to identify the need to relocate some land uses and assets to ensure risks and asset function can be maintained to acceptable levels. Managed retreat in this instance may not signal the relocation of uses but require re-design to 'accommodate' increasing inundation frequency and duration.
- Watercare assets located within this stretch form part of a connected network associated with the Māngere WWTP and the provision of potable water. The alignment of these assets may need to be retained in place and design adapted to changing coastal risk.

Māngere Inlet South

Manukau Harbour East: Unit 7

Esplanade Walkway,
oxconcll.co.nz

Te Puea Marae

Norana Avenue Reserve

Norana Park

Favona Road Reserve & Harania Inlet

Norana Favona Esplanade Path

Te Ararata Greenway

Black Bridge Reserve

Mahunga

Church of Tonga

James Fletcher Dr

Favona Rd

Savill Dr

Robertson Rd

Southwestern Motorway

Radonich Park

Te Ara Tāwhana/ Moyle Park

Harania Marys Foreshore Reserve

State Highway 20

Boggust Park

Harania Creek

Lenore Foreshore Reserve & Wickman Way Tennessee Reserve

Te Kura Kaupapa Māori O Māngere

Buckland Rd

Massey Rd

N

Unit boundary
Informal recreation park
Sport & active recreation area
Stormwater pond
Walking tracks
Railway
Marae
Place of worship

Shared use path
Sports fields
Closed landfill
Flooding hazard
Auckland Council owned land

0 500m 1km

Unit 7: Māngere Inlet South

This unit extends along the southern shoreline of the Māngere Inlet from the constricted entrance beneath the Māngere SH20 bridge to the eastern shoreline at Portage Road, being the boundary between the Māngere Otahuhu and Maungakiekie-Tamaki Local Board areas.

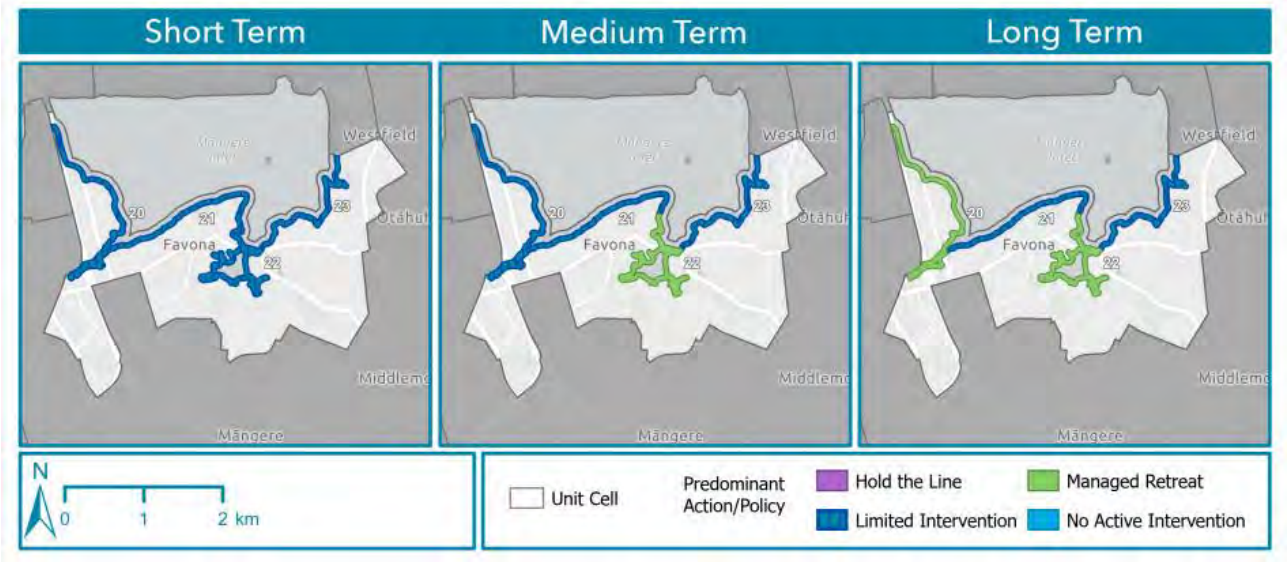

Figure 5-13: Adaptation strategies for coastal stretches within Unit 7 Māngere Inlet South

Adaptation summary stretches 20 to 23

Stretch	Short term	Medium term	Long term
20: Te Ararata Creek & Mahunga	LI	LI	MR
21: Norana & Favona	LI	LI	LI
22: Harania Creek	LI	MR	MR
23: Ōtāhuhu	LI	LI	LI

Council-owned infrastructure, land, and assets

This unit is within the Māngere-Ōtāhuhu Local Board area with predominant land use being a combination of residential and light and heavy industry. Auckland Council reserve land dominates the coastal edge, mainly as esplanade reserve, though there are a couple of larger parks. Norana Park, the largest, provides sports fields with associated facilities. Blake Road Reserve provides a BMX track. Many of the esplanade reserves have paths or provide for connection along the coast. The Norana Avenue, Black Bridge and Mahunga Reserves are Auckland Council-managed closed landfills adjoining the shoreline in this unit.

Table 5-8: Unit 7 Council-owned land & assets metrics and associated risk scores (short, medium, long terms)

Council-owned land			Council Community facilities			Transport infrastructure			Water infrastructure		
Park and reserve land (131.9 ha) Buildings, wharves (5 No.)			Park amenity structures, carparks, accessways, buildings (0.5 ha)			AT roads (23.5 km) Bridges (1,191.4 m^2)			Water pipes (88.8 km)		
Short	Medium	Long	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Coastal erosion susceptibility											
Moderate	Moderate	Moderate	None	None	None	High	High	High	Low	Low	Low
Coastal inundation											
Moderate	Moderate	Moderate	Low	High	High	High	Very High	Very High	Low	Moderate	High
Key											
None			Low			Moderate			High		Very High

Environmental context: Coastal setting, hazardscape and ecological setting

Māngere Inlet is a sheltered low wave-energy environment with extensive areas of intertidal mudflats exposed at low tide. Ngarango Otainui is a small island in the eastern inlet located 600 m north of Harania Creek inlet.

The low (3-7 m high) vegetated cliff shoreline is predominantly composed of soft sediments. The southern shoreline of the inlet is largely in a natural state, except for armouring along Mahunga Drive off-ramp from SH20, compared to the reclaimed and armoured northern and eastern shorelines of the Māngere Inlet. The eastern end of this unit is dominated by reclamation and adjacent KiwiRail yards.

The southern shoreline is largely colonised by mangrove forest and saltmarsh which extends at least 50 m wide into the muddy intertidal area, with a wider band up to 200 m at Te Ararata and Harania creek mouths. The intertidal habitats, that support a high diversity of native saline vegetation and provide extensive areas of feeding habitat for wading birds, are recognised as SEA marine.

The hazard assessment identified low susceptibility to erosion and instability within the sheltered wave-energy environment of the Māngere Inlet. There is low risk to short sections of the coastal pathway within the reserve bordering Te Ararata Creek. Sections of elevated pathway between Norana Avenue boardwalk and the sports fields are within the predicted ASCIE in the medium to long term.

Coastal inundation in the short term is predicted to impact several places on the southern shoreline, including reserve land at Mona Avenue and lower-lying sections of the coastal walkway along Hastie Avenue Reserve and the western shoreline of Harania Creek. In the medium term, inundation is predicted to impact parts of Mahunga Drive at the western end of this unit. Significant inundation of low-lying land adjacent the branches of Harania Creek is predicted in the medium and long term, including the Favona Road crossing at Harania Creek.

Transport infrastructure assets (e.g. James Fletcher Drive) are identified as being at a high risk from coastal erosion susceptibility in the short term and a high to very high risk from coastal inundation in the short to medium term.

Both the Harania Creek and Te Ararata catchments are identified through the 'Making Space for Water' programme as a holding opportunity for blue green linkages and an opportunity to reduce flood risk. Modification of these catchments, and the infrastructure located within them is subject to the outcomes of this programme which in turn may result in the need to revise the adaptation strategies included for Unit 7.

Cultural context

The area around the Māngere Inlet is steeped in indigenous and colonial history. This includes the prominence of Otahuhu as a portage route for early Māori and the history of Onehunga as a significant trading destination.

Nga Tapuwae o Mataoho is an area lying to the east of Te Manukanuka o Hoturoa stretching from the Māngere inlet in the north to the Puhunui awa in the south. The area is one of the oldest settled places in Aotearoa and includes numerous important sites and forms part of Ngaa Hau o Maangere.

The entire area has been a place of intensive settlement since the first peoples of Te Ika a Maui. Its frontage to Te Manukanuka o Hoturoa made it a hub for trade and travel throughout the region, as well as guaranteeing its residence the bountiful kai ika and kai moana of the harbour.

Guiding objectives and outcomes which have informed the development of adaptation strategies have been identified in Section 3.4. Further to the above, specific cultural values and outcomes for this unit stretch will be shared and developed through ongoing involvement with iwi in respective work programmes.

Please refer to 3.4.4 Te Ahiwaru cultural context and the supporting Cultural Statement. Further engagement should be undertaken to inform implementation of this SAP.

Social and policy context

Community feedback valued the unit's walkways and cycling connections. Over half the residential area in this unit is subject to a current plan change process which is proposing some intensification to the zoning. A large portion of the western side of the unit sits within area identified for the Auckland Light Rail Corridor. Currently, work on this has been deferred.

Stretch 20: Te Ararata Creek and Mahunga

Stretch description

This stretch commences to the east of the SH20 and includes the shoreline and catchment of Te Ararata Creek and culminates at the western side of the Mahunga Drive.

Figure 5-14: View of the Māngere inlet from Mahunga Drive walkway 2020, Photo credit J Morriss.

Council-owned infrastructure, land, and assets	Current management approach/ risks
• Waterfront Road Reserve (extending from under SH20 and along Mahunga Drive), Hastie Avenue Reserve – walkway / cycleway and a bridge across the creek. • Mahunga Drive Esplanade Reserve and Mahunga Reserves (1, 2 &3) No.2 has a walkway. • Black Bridge Reserve and Walmsley Road Reserve. • Tararata Creek Reserve (straightened extent of creek) with a walkway, and surrounding local roads. • Mahunga, Miro, Mona, Wamsley Roads and SH20. • Closed landfills (Mahunga Drive and Black Bridge Reserve). • Extensive walkway / cycleway including path, boardwalks and associated facilities. • NOTE: Te Puea Marae Reserve (and associated closed landfill) is not Auckland Council-owned.	• Seawalls and rock revetment around Waterfront Road Reserve. • Low-lying areas subject to flooding and coastal inundation with risk increasing in the medium term and impacting a larger land area including more landward reserve areas and road networks. • Risk of coastal instability and erosion in the short term impacting sections of the coastal path and access. • Closed fill(s) subject to Closed Landfill Asset Management Plan (CLAMP).

Adaptation strategies

Stretch	Short term	Medium term	Long term
20: Tararata Creek & Mahunga	LI	LI	MR

Guidance notes for Implementation

- *Limited intervention* in the short and mid-term to provide for the ongoing management of coastal esplanade reserves, noting that the landward relocation of assets when they are renewed and the consideration of the design and elevation of assets and walkway structures should be undertaken to respond to the inundation risk.
- *Localised protection* may be required to be maintained in relation to existing management approaches. This is of particular relevance to the management of closed landfill assets as further set out within the Closed Landfill Asset Management Plan (CLAMP). In other areas of the shoreline, a naturalised approach to coastal management should be preferred.
- Increasing inundation risk results in the need to identify ***managed retreat*** in the long term. Coastal connections and recreational use of esplanade connections will be threatened in the long term by both inundation and erosion. Planning for the realignment and accommodation of these uses and values will be important to meet future social and cultural outcomes.
- *Ecological opportunities* for restoration can also be considered through all timeframes. This may include maintenance of existing high value coastal bird habitats, wetland restoration and stream naturalisation at targeted locations in Māngere Inlet, including Te Ararata Creek, to maintain important habitats and improve water quality in the up-stream catchments. Ecological outcomes and restoration should be undertaken with reference to the *Ngaa Hau o Maangere Ngahere* planting guide.
- This stretch is subject to the Making Space for Water Programme. Developments with this programme and/or the evolution of the CLAMP may necessitate review of these strategies.

Stretch 21: Norana and Favona

Stretch description

This stretch commences at the western end of Favona Road Esplanade Reserve where the pedestrian bridge crosses Te Ararata Creek and extends around to the end of Norana Avenue at the mouth of the Harania Creek.

Figure 5-15: Norana Boardwalk, Māngere inlet. Photo credit J Morriss

Council-owned infrastructure, land, and assets	Current management approach/ risks
• Favona Road Esplanade and Norana Park - shared path, including boardwalks, sports fields, parking areas, playground, change room and toilet blocks. • Closed landfill (Norana Park).	• Natural vegetated coastal edge. • Risk of coastal inundation, instability and erosion which may impact sections of the coastal path. • Closed fill subject to Closed Landfill Asset Management Plan (CLAMP).

Adaptation strategies

Stretch	Short term	Medium term	Long term
21: Norana & Favona	LI	LI	LI

Guidance notes for Implementation

- *Limited intervention* is considered to provide for the ongoing management of coastal esplanade reserves. The landward relocation of assets and walkway structures, when they are renewed, should include design and elevation requirements when responding to the inundation risk.
- *Localised protection* may be required to be maintained in relation to existing management approaches. This is of particular relevance to the management of closed landfill assets. The evolution of the CLAMP may necessitate review of these strategies. In other areas of the shoreline, a naturalised approach to coastal management should be preferred.
- *Ecological opportunities* for restoration can also be considered through all timeframes. This may include maintenance of existing high-value coastal bird habitats. Ecological outcomes and restoration should be undertaken with reference to the *Ngaa Hau o Maangere Ngahere* planting guide.

Stretch 22: Harania Creek

Stretch description

This stretch commences at Norana Avenue and includes the Harania Creek shoreline and catchments to the south, around to where the Favona Road Bridge meets Fletcher Drive (at the northern end of the Pacific Steel Reserve).

Council-owned infrastructure, land, and assets	Current management approach/ risks
• Lolim Place Reserve and Favona Road Reserve - paths and boardwalks. • Harania/Marys Foreshore Reserve – paths, play facilities and closed fill. • Lenore Foreshore Reserve (wastewater pipe over creek, stormwater pond). • Wickman Way\Tennessee Reserve along upper reaches of creek. • Blake Road Reserve – BMX track, half court. • Pacific Steel Reserve. • Radonich Park (Lost City Reserve). • Favona Road. • Underground services and wastewater pumpstations.	• Mangroves around coastal edge. • Risk of coastal inundation in the short term impacting sections of the walkways. In the mid to longer term, inundation (and associated erosion) is anticipated to impact further landward within the reserve areas as well as impacting Favona Road and other low-lying roading connections. • Closed fill subject to Closed Landfill Asset Management Plan (CLAMP)

Adaptation strategies

Stretch	Short term	Medium term	Long term
22: Harania Creek	LI	MR	MR

Guidance notes for Implementation

- *Limited intervention* in the short term is considered to provide for the ongoing management of coastal esplanade reserves, noting that with increasing inundation risk, the landward relocation of assets when they are renewed and consideration of the design and elevation of park assets and walkway structures would be undertaken to respond to the inundation risk.
- *Localised protection* may be required to be maintained in relation to existing management approaches. This is of particular relevance to the management of closed landfill assets. In other areas of the shoreline, a *no active intervention* approach to coastal management should be preferred.
- Increasing inundation risk results in the need to identify *managed retreat* in the mid to long-term. Coastal connections and recreational use of esplanade connections will be threatened in the long term by both inundation and erosion. Planning for the realignment

and accommodation of these uses and values will be important to meet future social and cultural outcomes.

- Making space for water catchment: Harania Creek. Possible works to manage flood hazard risk in the short term. Strategies may need to be updated to reflect proposed works.
- *Ecological opportunities* for restoration can also be considered through all timeframes. Stream habitat restoration opportunities within Harania Creek including removal of fish passage barriers. Ecological outcomes and restoration should be undertaken with reference to the Ngaa Hau o Maangere Ngahere planting guide.
- It is noted that Watercare assets that are located within this stretch form part of a connected network. The redesign or relocation of these assets is complex and will have the potential to impact on the catchment dynamics. Developments associated with the relocation or design of Watercare assets, the Making Space for Water Programme and/or the evolution of the CLAMP may necessitate review of these strategies.

Stretch 23: Ōtāhuhu

Stretch description

This stretch includes the shoreline from the Favona Road Bridge / Fletcher Drive (at the northern end of the Pacific Steel Reserve) and culminates to the eastern shoreline at Portage Road at the boundary between Local Board boundaries.

Council-owned infrastructure, land, and assets	Current management approach/ risks
• James Fletcher Esplanade, Beach Road Reserve, Manu Street Esplanade, Canal Reserve Land Leases. • Underground services. • James Fletcher Drive, Tui Street, Beach Road(part) Savill Drive, Manu Street.	• Mangroves buffered coastal edge. • Unmanaged and generally disconnected esplanade reserve.

Adaptation strategies

Stretch	Short term	Medium term	Long term
23: Ōtāhuhu	LI	LI	LI

Guidance notes for Implementation

- *Limited intervention* across all timeframes reflects the nature of assets and land in this location and provides for the management of roading connection and associated infrastructure (stormwater).
- *Cultural and social values:* The value of the portage connection between the Tamaki Estuary and the Māngere inlet is of significance. Further management of this stretch will require engagement with local iwi and acknowledgement and engagement with communities in response to the aspirations for access and portage connections.

Māngere Inlet North

Manukau Harbour East: Unit 8

N

Auckland-Hamilton Motorway

State Highway 1

Great South Rd

Alfred St

Neilson St

Miami Parade

Onehunga volcanic aquifer

Onehunga Springs

Wastewater pump station

Wastewater pump station

Waikaraka Park

Waikaraka Cemetery

Waikaraka Cycleway

Managed closed landfill

Waste water pump station

Managed closed landfill

Anns Creek wading bird habitat

Māngere Inlet looking west

Auckland Council archives, Whites Aviation Limited Auckland

- Unit boundary
- Informal recreation park
- Sport & active recreation area
- Stormwater pond
- Walking tracks
- Railway
- Community buildings (including leased)
- Shared use path
- Speedway
- Closed landfill
- Sports field
- Ecological habitats & environment
- Bird watching
- Auckland Council owned land
- Watercare asset

0 500m 1km

Unit 8: Māngere Inlet North

Unit 8 extends along the eastern shoreline, from Portage Road, being the boundary between the Māngere Otahuhu and Maungakiekie-Tamaki Local Board areas, around the northern shoreline to the western end of Waikaraka Cemetery and Alfred Street. It is bordered by Great South Road to the east, and Church Road in the north.

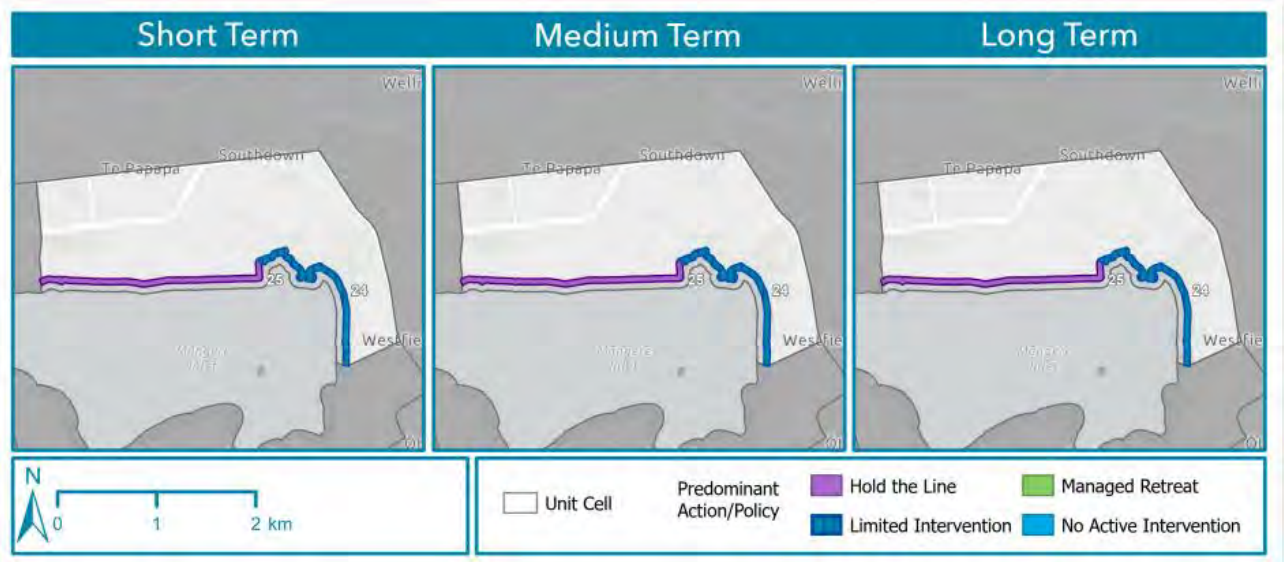

Figure 5-16: Adaptation strategies for coastal stretches within Unit 8 Māngere Inlet North

Adaptation summary stretches 24 to 25

Stretch	Short term	Medium term	Long term
24: Southdown (Anns Creek)	LI	LI	LI
25: Te Papapa	HTL	HTL	HTL

Council-owned infrastructure, land, and assets

This unit is within the Mangakiekie-Tāmaki Local Board area. Land use is predominantly business/industry, with a very small pocket of residential. There are Auckland Council-managed closed landfills adjacent to the shoreline at Waikaraka Cemetery, Pikes Point, and Captain Springs Road.

Waikaraka Park takes up a large area on the northern shoreline and provides for a variety of sports and community uses. It also includes the Waikaraka Park Speedway and Waikaraka Cemetery, which is closed. A 4.2 ha area of the park is yet to be developed and sits on refuse landfill reclamation with the intention that this will provide future playing fields. This is elevated above the level of the rest of the park.

The Manukau Foreshore East Walkway, a shared coastal path, runs along the northern shoreline and is protected by coastal armouring.

Table 5-9: Unit 8 Council-owned land & assets metrics and associated risk scores (short, medium, long terms)

Council-owned land			Council Community facilities			Transport infrastructure			Water infrastructure		
Park and reserve land (41.7 ha) Buildings, wharves (19 No.)			Park amenity structures, carparks, accessways, buildings (1.4ha)			AT roads (12.1 km) Bridges (607.7 m^2)			Water pipes (88.1 km)		
Short	Medium	Long	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Coastal erosion susceptibility											
Low	Low	Low	Low	Low	Moderate	None	None	None	Low	Low	Low
Coastal inundation											
Moderate	Moderate	Moderate	Moderate	High	High	Moderate	Moderate	High	Low	Moderate	Moderate
Key											
None			Low			Moderate			High		Very High

Environmental context: Coastal setting, hazardscape and ecological setting

The northern shoreline of Māngere Inlet has been significantly modified by large areas of reclamation/landfill that reclaimed the intertidal area of three embayments, railway causeways in the vicinity of Anns Creek in the northeastern corner of the inlet, and construction of basalt rock seawalls. The backshore is flat to gently sloping, generally 5 m in elevation, with some high points in the order of ~10 m elevation. The landmass is composed of volcanic rock (lava and pyroclastic).

Figure 5-17: View over Onehunga, looking west circa 1910.: circa 1960 (date unknown). Photo source Auckland Council

The enclosed inlet is a low wave-energy environment, with limited fetch for wind-wave generation and shallow water depths with a wide expanse of muddy intertidal flats exposed at low tide. Extensive tracts of mangrove forest (~100 – 200 m wide) inhabit the muddy intertidal area at the eastern end of the inlet. Elsewhere along the northern shoreline there are discrete stands of mangroves along the front of the revetment.

Anns Creek is identified as a significant ecological area, and is the only site in the region where a suite of native herbs remain growing together on lava, with ecological sequence including basalt lava shrubland, freshwater wetlands, saltmarsh, and mangrove. Within the Māngere Inlet, there are extensive areas of feeding habitat for wading birds along this coastline

In the medium and long term, assets including along the armoured northern shoreline, part of the Waikaraka Cemetery, and a strip of land along the armoured eastern inlet shoreline (KiwiRail) are within the predicted ASCIE. Although there is incomplete information in relation to the condition of the sea walls (as identified in the risk assessment), it is a low-risk environment within the sheltered tidal inlet with low wave-energy.

Coastal inundation is a risk to low-lying land along the Māngere Inlet north shoreline, particularly with sea-level rise in the long term. In the short term during a 1% AEP event, parts of the Waikaraka Cemetery and the Miami Parade Reserve, are predicted to be inundated, as well as Anns Creek and smaller creeks. With the effect of sea-level rise over the medium term, a markedly larger area, approximately 40 ha, is potentially susceptible to inundation. Generally, coastal inundation will be limited by the elevation of land along the shoreline, with inland areas susceptible to inundation due to waterway connections to the sea.

Cultural context

The entire area has been a place of intensive settlement since the first peoples of Te Ika a Maui. Its frontage to Te Manukanuka o Hoturoa made it a hub for trade and travel throughout the region, as well as guaranteeing its residence the bountiful kai ika and kai moana of the harbour.

Further to the above, while specific cultural values and outcomes for this unit stretch will be shared and developed through ongoing involvement with iwi in respective work programmes, guiding objectives and outcomes which have informed the development of adaptation strategies have been identified in Section 3.4.

Please refer to section 3.4.4 Te Ahiwaru cultural context and supporting Cultural Statement. Further engagement should be undertaken to inform implementation of this SAP.

Social and policy context

This unit covers a highly industrial area with limited direct residents. The Manukau Foreshore East Walkway provides a shared path connection between Penrose and Onehunga. Community feedback received during the consultation period identified the value of this walkway connection and aspirations for the health and restoration of the inlet.

Stretch 24: Southdown | Anns Creek

Stretch description

This stretch extends from Portage Road in the south around to the Southdown Pahoehoe lava flows, at the edge of the reclaimed coastal edge.

Council-owned infrastructure, land, and assets	Current management approach/ risks
• Anns Creek Reserve – stormwater pond. • Southdown Reserve – paths, boardwalk, stormwater pond. • Manukau Foreshore East Cycleway (part) - shared path.	• Seawall around coastal edge of Manukau Foreshore East cycleway. • Risk of coastal inundation to the Manukau Foreshore East cycleway. • Closed fill subject to Closed Landfill Asset Management Plan (CLAMP).

Adaptation strategies

Stretch	Short term	Medium term	Long term
24: Southdown | Anns Creek	LI	LI	LI

Guidance notes for Implementation

- *Limited intervention* identified in relation to the maintenance/repair/replacement of the existing portion of coastal armouring to protect the closed landfill assets and the Manukau Foreshore East cycleway over all timeframes. Noting that intervention may not protect in relation to inundation over time.
- *Limited intervention* provides for the ecological, cultural and social values to be maintained in relation to the management of the coastal edge in proximity to Anns Creek.
- *Nature-based solutions* and the landward relocation of assets should be preferred in this aspect of the stretch to suitably respond to these identified values.
- Coastal restoration and riparian infill planting for maintenance of habitats important to native fauna, and associated predator control. Ecological outcomes and restoration should be undertaken with reference to the *Ngaa Hau o Maangere Ngahere* planting guide.

Stretch 25: Te Papapa

Stretch description

This stretch includes the shoreline from the prominent edge of the reclamation / landfill to the western boundary of Waikaraka Cemetery.

Council-owned infrastructure, land, and assets	Current management approach/ risks
• Manukau Foreshore East Cycleway (part) - shared path. • Waikaraka Park – sports fields, parking, clubrooms, community buildings, speedway track, grandstand, and cemetery. • Miami Parade Reserve – path network. • Wastewater pumpstation. • Closed landfills. • Waikaraka Park (Industrial area). • Miami Parade, Captain Springs Road and Alfred Street.	• Seawall along extent of coastal edge of Manukau Foreshore East cycleway. • Low-lying areas subject to flooding including parts of coastal path, Wairaka Park and Maimi Parade Reserve. • Risk of coastal inundation in the short term impacting small sections of the coastal path, sections of Wairaka Park, including the cemetery, and almost the entirety of Miami Parade Reserve. • In the medium to longer term, this may impact almost all of Wairaka Park with the exception of the undeveloped area, all of the coastal path and areas of the adjacent streets. • Closed fill subject to Closed Landfill Asset Management Plan (CLAMP)

Adaptation strategies

Stretch	Short term	Medium term	Long term
25: Te Papapa	HTL	HTL	HTL

Guidance notes for Implementation

- *Hold the line* over all timeframes for this stretch reflects the historic modification of the shoreline (and harbour) and the need to respond to the nature of land uses located within this area. The reclamation and closed landfills are subject to ***active management***. The increasing inundation risk and issues with sea-level rise will present future challenges for the management of land use and coastal connections within this stretch. The consideration of opportunities to reduce risk to other assets should be explored further alongside ecological opportunities to address historic foreshore change.
- Note: This unit and Unit 9 have been subject to historic and speculative major infrastructure projects which have the potential to substantively modify the shoreline in this area. Adaptation strategies will require review and revisions if such projects are pursued.

Onehunga

Manukau Harbour East: Unit 9

N

Mt Albert Rd

Mt Smart Rd

Manukau Rd

Onehunga Mall

Princes St

Neilson St

Tidal gates

Onehunga Bay Reserve

Onehunga Village

Te Hopua a Rangi / Gloucester Park

Onehunga Lagoon

Taumanu Reserve

Onehunga reclaimed beaches

Bird roosting

Taumanu Reserve Bridge

Aotea Sea Scouts Hall

Onehunga Wharf

Industrial port and marine activities

Eke Panuku

Manukau Foreshore Walkway

Māngere Bridge

Ngā Hau Māngere Bridge

Southwestern Motorway

State Highway 20

Aotea Sea Scouts Hall

L Clarke, Shoreline Adaptation Plan community engagement, Aotea Sea Scouts, 2023

Aerial view of Onehunga, 1930s

Auckland Council Libraries

- Unit boundary
- Sand/Beach
- Informal recreation park
- Sport & active recreation area
- Stormwater pond
- Walking tracks
- Playground
- Closed landfill
- Community buildings (including leased)
- Beach
- Shared use path
- Boat ramp
- Bird roosting
- Jetty/wharf
- Water activites
- Auckland Council owned land
- Watercare asset
- Auckland Transport

0 500m 1km

Unit 9: Onehunga

Unit 9 extends from Alfred Street at the west side of Waikaraka Cemetery around Onehunga Wharf through to the western side of Taumanu Reserve and up SH20 to the Queenstown Road overbridge. It includes Onehunga Lagoon with Arthur and Church Streets as the northern boundary.

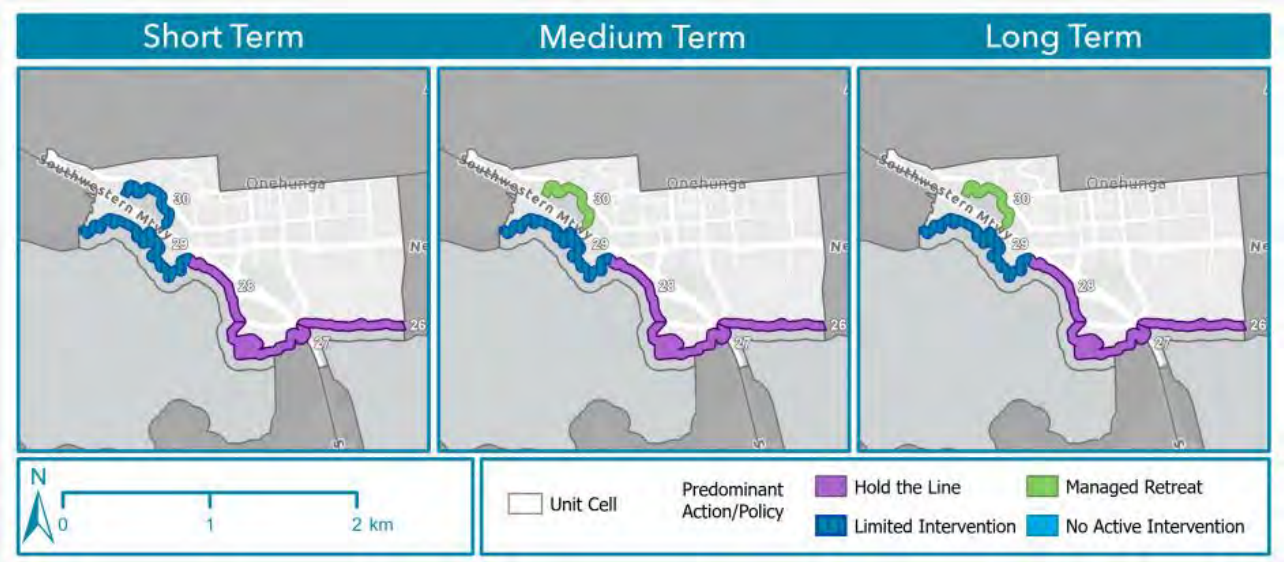

Figure 5-18: Adaptation strategies for coastal stretches within Unit 9 Onehunga

Adaptation summary stretches 26 to 30

Stretch	Short term	Medium term	Long term
26: Onehunga East of SH20 bridge	HTL	HTL	HTL
27: Onehunga Wharf	HTL	HTL	HTL
28: Onehunga foreshore	HTL	HTL	HTL
29: Taumanu	LI	LI	LI
30: Onehunga Bay	LI	MR	MR

Council-owned infrastructure, land, and assets

This unit is within the Mangakiekie-Tāmaki Local Board area. Land use is a mix of residential, commercial and light and heavy industry. It includes part of Onehunga town centre.

Taumanu Reserve is a relatively recent development undertaken by NZTA that restored access to the Onehunga Foreshore. This connection had been lost when SH20 was built across the bay in the 1970s. The reserve is developed on a reclamation and includes a series of sand and gravel beaches contained within rock breakwater headlands. It has boat-launching facilities and a network of tracks. There are bridges over SH20 providing walking and cycling connection to Onehunga Bay Reserve and the Onehunga Lagoon, which provides play and skate areas, and fitness equipment. Tidal gates beneath the SH20 motorway control ingress of seawater and tidal flushing of Onehunga Lagoon to

enhance the recreational amenity of Onehunga Bay Reserve. These were renewed in 2023 and operate on a timed system.

The Manukau Cruising Club is located just to the southeast of Taumanu Reserve and the Aotea Sea Scouts building stands on piles in the coastal marine area off Orpheus Drive.

Te Hopua a Rangi crater was once a tidal basin that was filled in the 1930s to form Gloucester Park sports ground. This was severed by the development of SH20 but still provides for sport on the northern park area. The Manukau Foreshore East Cycleway provides a shared path at the eastern side of the unit connecting to Penrose, Onehunga and Māngere.

The motorway, Port of Onehunga and Transpower transmission powerlines are significant visible regional infrastructure assets along this shoreline. There are also key underground services in this area, including wastewater, stormwater, water, and gas transmission pipelines.

Table 5-10: Unit 9 Council-owned land & assets metrics and associated risk scores (short, medium, long terms)

Council-owned land			**Council Community facilities**			**Transport infrastructure**			**Water infrastructure**		
Park and reserve land (34.5ha) Buildings, wharves (16 No.)			Park amenity structures, carparks, accessways, buildings (1.7 ha)			AT roads (15.6 km) Bridges (477.8 m^2)			Water pipes (69.2 km)		
Short	Medium	Long	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Coastal erosion susceptibility											
Low	Low	Low	None	None	None	Moderate	Moderate	Moderate	Low	Low	Low
Coastal inundation											
Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	High	High	Very High	Moderate	Moderate	High
Key											
None		**Low**		**Moderate**		**High**		**Very High**			

Environmental context: Coastal setting, hazardscape and ecological setting

The Onehunga Bay shoreline has been substantially modified by reclamation and coastal armouring, from the Port of Onehunga to Taumanu Reserve, with the former coastal cliff over 200 m landwards of the present-day shoreline. The land generally sits at 4 – 5 m elevation, with local high spots such as the rim of Te Hopua a Rangi volcano being in the order of 10 m elevation.

Te Hopua a Rangi crater was once a tidal basin, that was filled in the 1930s to form Gloucester Park sports ground. In the 1970s, reclamation for the formation of SH20 (Southwestern Motorway) and Orpheus Drive bisected Onehunga Bay, leaving a tidal lagoon (Onehunga Bay Reserve) landwards of the motorway, but connected to the sea via pipes under and through the motorway reclamation.

Taumanu Reserve, built on reclamation, comprises a series of sand and gravel beaches contained within rock breakwater headlands, and a mix of recreational open space, coastal planting and raised mound landforms with a pedestrian overbridge that connects over the motorway to the grass reserve adjacent to Onehunga Bay lagoon.

The regional assessment of the areas susceptible to coastal instability and erosion did not assess this significantly modified environment. This reflects that specialist engineering assessment of the

structures here is required. Some site-specific preliminary assessments of coastal hazard risk, have been developed to inform future planning processes. In the short term, coastal inundation is predicted to impact low-lying land around Onehunga Bay lagoon and the sports grounds at Gloucester Park, along with some other discrete areas of land between these locations. Notably, potentially part of the southwestern motorway is predicted to be inundated adjacent to Gloucester Park. In the medium-term, inundation may impact parts of Taumanu Reserve, a markedly larger area adjacent to Onehunga lagoon and Gloucester Park, including practically all of SH20 in this area.

There is a greater risk from coastal inundation compared to coastal erosion susceptibility across this unit. Coastal inundation risk to Auckland Council transport infrastructure increases from high to very high in the long term. Of significance are culture and heritage assets that remain high across all three timeframes. Indicative closed landfills are identified in and around Gloucester Park and north of the Manukau Foreshore Walkway. The Onehunga Wharf is not included in the risk assessment.

Cultural context

Situated along the north-eastern foreshore of the Maanukau Harbour is Onehunga, which traditionally applies to the flat land extending to the east of Onehunga Beach toward Selwyn Street, and to the papakaainga (village) and cultivations formerly located at the southern end of the beach. Two meanings have been suggested for the name Onehunga. Firstly 'One– hunga,' so named because of the area's 'light coloured and friable volcanic soil' that was highly regarded over many generations for cultivation. A second suggestion is 'Oo-nehunga,' 'the place of burial.' This refers to burials within lava caves in the area, although most of these features lie on the lava flows to the east.[16]

Onehunga Beach provided an important canoe landing place in former times, and the associated Onehunga papakaainga was one of the largest settlements in the district. It was renowned for its kuumara cultivations which were maintained until the early 1840s. Due to its strategic location on the north-eastern shore of the Maanukau Harbour, its proximity to Maungakiekie, Te Pane o Mataoho and Te Motu ā Hiaroa and the traditional waka portages to the Waitemataa Harbour via the Tāmaki River and Ootaahuhu (Te Too Waka) which was the traditional portage route between the Tāmaki River and Maanukau Harbour and was first used by Hoturoa on the Tainui canoe, which was 'the most frequently-used canoe portage in pre-European New Zealand'.[17]

The Onehunga Wharf area is of extremely high spiritual, ancestral, traditional, cultural, customary and historical significance to Ngaati Te Ata Waiohua as it was occupied as a village and cultivation area for many generations by our Waiohua ancestors. The close proximity to the Maanukau Harbour would have provided abundant resources such as fish, shellfish, and sea birds, while on land its freshwater springs and rich volcanic soils provided ideal conditions for the cultivation of crops such as kuumara.[18]

16 Graeme Murdoch, Onehunga Heritage Survey: A Preliminary Summary of Māori Ancestral Relationships (prepared for Auckland Council, 30 June 2013.)

17 Stone, R.C.J. 2001. From Tamaki-Makau-Rau to Auckland. Auckland: University of Auckland Press.

18 McEwan, Ann. 2011. Proposed Onehunga Foreshore Reclamation Project: Cultural Impact Assessment, Ngāti Te Ata, Te Ākitai and Ngāti Tamaoho (Te Waiohua), Heritage Consultancy Services. November 2011.

In war and in peace, waka were dragged overland not far from Onehunga, even after the arrival of Europeans. Northern Ngaapuhi war parties led by Hongi Hika, for example, used the Onehunga portage in 1823 on their way south to the Waikato.[19]

Te Hoopua-aa-Rangi is of immense spiritual, cultural and historical significance which is one of the collective features known as, 'Ngaa Tapuwae oo Mataoho,' 'the sacred footprints of Mataoho,' the deity associated with volcanic activity in Tāmaki. The Te Hoopua-aa-Rangi explosion crater was breached on its western side by tidal action over several thousand years and became a tidal basin. It was used for generations as a canoe anchorage associated with the Onehunga papakaainga which extended to its north-western edge.[20]

Further to the above, while specific cultural values and outcomes for this unit stretch will be shared and developed through ongoing involvement with iwi in respective work programmes, guiding objectives and outcomes which have informed the development of adaptation strategies have been identified in Section 3.4.

Please refer to section 3.4.4 Te Ahiwaru cultural context and supporting Cultural Statement. Further engagement should be undertaken to inform implementation of this SAP.

Social and policy context

This unit received a variety of feedback during the consultation process. People valued Taumanu reserve for its landscaping and separation from the adjacent motorway noise. Onehunga Lagoon was also highly valued as a community space. These spaces are used for walking, dog walking, swimming and waka ama. The connectivity between the reserves and wider coastal walkways were also mentioned.

There was concern after the 2023 weather events of risks of future coastal inundation and the possible infiltration of sea water into historic and valuable aquifers in the area. There were also concerns about water quality and mangroves inhibiting the ability to swim in the area.

There is a very limited area of this unit subject to planning changes including an uplift to zoning density. A large portion of the unit sits within an area identified for the Auckland Light Rail Corridor. Currently, work on this has been deferred.

19 Native Land Court, Chief Judge Fenton's Important Judgments: Delivered in the Compensation Court and Native Land Court, 1866-1879 (Auckland, 1879).

20 Graeme Murdoch, Onehunga Heritage Survey: A Preliminary Summary of Māori Ancestral Relationships (prepared for Auckland Council, 30 June 2013.)

Stretch 26: Onehunga East of SH20 bridge

Stretch description

This stretch includes the shoreline from Alfred Street at the edge of Waikaraka Cemetery to the SH20 bridge.

Council-owned infrastructure, land, and assets	Current management approach/ risks
• Manukau Foreshore West Walkway / Cycleway (part) - shared path including boardwalk. • Onehunga Harbour Road and Victoria Street. • Bycroft Reserve – stormwater pond. • Rowe Reserve – community buildings, parking.	• Rock revetment around part of coastal edge and mangroves. • Western section of foreshore path subject to flooding and coastal inundation in the short term impacting boardwalk section of the coastal path. • Closed fill subject to Closed Landfill Asset Management Plan (CLAMP).

Adaptation strategies

Stretch	Short term	Medium term	Long term
26: Onehunga East of SH20 bridge	HTL	HTL	HTL

Guidance notes for Implementation

- *Hold the line* identified in response to the closed landfill assets and land use and to support key access along the foreshore. This reflects the management of the coastal edge in relation to erosion and instability hazards. There will be an increasing inundation risk to the shared path and inland in relation to roading and stormwater assets which may necessitate adaptive measures, design and relocation of assets in some instances.
- The opportunity to incorporate marine ecological enhancements when considering hard protection and engineered solutions could include pre-cast habitat units with existing structures or with future upgrades, armouring units, seawall panels and tiles for hard rock revetment shoreline.

Stretch 27: Onehunga Wharf

Stretch description

This stretch includes the shoreline of the Onehunga Wharf and associated marine and port facilities within this coastal stretch.

Council-owned infrastructure, land, and assets	Current management approach/ risks
• Onehunga Wharf – managed by Eke Panuku. • Section of Onehunga Harbour Road.	• Seawalls or rock revetment around the wharf site. • Risk of coastal inundation in the medium term likely to impact the entire port area and part of the adjacent road. • No coastal instability or erosion data available.

Adaptation strategies

Stretch	Short term	Medium term	Long term
27: Onehunga Wharf	HTL	HTL	HTL

Guidance notes for Implementation

- When implementing ***hold the line,*** further engagement with Eke Panuku and Mana whenua will be required to ensure alignment with master planning processes. Nature-based coastal regeneration options are being actively considered.
- More broadly, this stretch includes the need to respond to multiple social, cultural and ecological outcomes and values and a consideration of industrial port and marine activities, key roading, walking and cycle connections. Access to the harbour and future use of the wharf area are subject to Eke Panuku planning processes in partnership with mana whenua.

Stretch 28: Onehunga foreshore

Stretch description

The stretch originates to the north of the Onehunga wharf stretch and culminates beyond the Manukau Cruising Club buildings south of the Taumana reclamation.

Council-owned infrastructure, land, and assets	Current management approach/ risks
• Gloucester Park North and Gloucester Park South (sports fields and parking). • Closed landfill. • Not Auckland Council owned: Aotea Sea Scouts building, Manukau Cruising Club building with parking. • Orpheus Drive and Onehunga Harbour Board Road on-ramp to SH20.	• Seawalls or rock revetment bound the coastal edge of Orpheus Drive. • Gloucester Park(s) subject to flooding. • Risk of coastal inundation to Gloucester Parks and the sea scouts and cruising club buildings in the short term and this extending to the parking and road assets in the medium to longer term. • Closed fill subject to Closed Landfill Asset Management Plan (CLAMP).

Adaptation strategies

Stretch	Short term	Medium term	Long term
28: Onehunga foreshore	HTL	HTL	HTL

Guidance notes for Implementation

- *Hold the line* is selected across all timeframes to reflect the historic modification of the shoreline and location of roading infrastructure (Auckland Council-owned Orpheus drive and Waka Kotahi NZTA assets). This generally narrow coastal edge provides access between Taumanu and the Onehunga wharf area and has been identified by asset owners and the community as an essential coastal connection.
- *Hold the line* is the pathway identified in relation to the management of erosion risk. However, risks from inundation will increase over time and may impact private assets and the level of service and scope of use associated with Orpheus drive over themed to long term.

Stretch 29: Taumanu

Stretch description

This stetch includes the Taumanu Reserve and reclamation located to the west of Orpheus drive and the State highway. The stretch (and unit) culminates at the commencement of the boardwalk access to the Waikōwhai walkway.

Council-owned infrastructure, land, and assets	Current management approach/ risks
• Taumanu Reserve – parking, boat ramp, paths, toilets, park furniture, beach replenishment. • Orphus Drive, SH20, Queenstown Road off-ramp. • Pedestrian bridges over SH20.	• Groynes and wide artificial beach areas. • Risk of coastal inundation to beach areas in the short term and this extending to all of the reserve, roads and SH20 in the medium to longer term. • No coastal instability or erosion data available.

Adaptation strategies

Stretch	Short term	Medium term	Long term
29: Taumanu	LI	LI	LI

Guidance notes for Implementation

- *Limited intervention* is identified over all timeframes for the Taumanu reclamation. The series of constructed headlands and beaches along the perimeter of Taumanu Reserve require ongoing monitoring and occasional sand transfer to maintain an effective beach buffer. *Limited intervention* provides for the maintenance of the beach sediment supply at artificial beaches along Taumanu Reserve to continue to provide habitat for coastal birds.
- Note: Inundation hazard management in response to increasing inundation hazards will be required in conjunction with NZTA, as owner/operator of key infrastructure along this shoreline.
- *Community values:* Significant community value and ecological benefits have been identified in relation to the assets and land within this coastal stretch.

Stretch 30: Onehunga Bay

Stretch description

This stretch includes Onehunga Bay Reserve and the lagoon, going from Beacroft Avenue in the southeast to the Queenstown Road on-ramp to SH20 in the west.

Council-owned infrastructure, land, and assets	Current management approach/ risks
• Onehunga Bay Reserve (including parking paths, toilets and changing facilities, play areas). • Homes Reserve. • Beachcroft Avenue, Church Street. • Non Auckland Council-owned land: NZTA landholdings including stormwater ponds and Queenstown Road on-ramp.	• Onehunga Bay Reserve has received beach replenishment. • Tidal gates and a seawall around lagoon provide for the management of tidal flows (retention of these follow) for recreational purposes. • Closed landfill assets identified within the wider stretch area (reclamation/historic modification) are subject to the Closed Landfill Asset Management Plan (CLAMP). • Large areas of the Onehunga Bay Reserve are identified as subject to flooding. • The risk of coastal inundation to wider lagoon, paths, toilets and play areas in the short term and this may extend to all of the Onehunga Bay Reserve and the lower area of Homes Reserve, a large section of Beachcroft Road, some of Church Street and the NZTA land in the medium to longer term.

Adaptation strategies

Stretch	Short term	Medium term	Long term
30: Onehunga Bay	LI	MR	MR

Guidance notes for Implementation

- *Limited intervention* is identified in the short term to maintain the tidal gate system for recreational use of the lagoon (noting: this system does not have a hazard management purpose). This strategy also enables the landward relocation of assets to accommodate increased inundation risk (catchment and sea) as assets are renewed.
- *Managed retreat* in the mid to long term is reflective of the need to consider the ongoing viability of land uses within the reserve area in response to risk from coastal inundation and catchment flooding. The reserve and lagoon have been identified as having significant community use. As such, the ability to review the strategies selected for this stretch will be important to reflect the wider land use change and changing needs of the community and the ability to meet the values and requirements within the immediate area.
- This stretch contains ~1 km of wastewater transmission assets which are part of a connected network. This wastewater connection serves conveys flows to the Māngere WWTP. Some localised design measures, which enable these assets to remain in their current alignment may be required for critical assets within the Onehunga Bay and wider Unit 9 areas.

6.0 Conclusion

The Manukau Harbour East Shoreline Adaptation Plan (SAP) which extends along approximately 90 km of coast, sets the long-term strategic direction for the management of shoreline from the Puhinui Reserve in Wiri, to Taumanu Reserve in Onehunga Bay and includes the shoreline of the Māngere Inlet, Te Motu ā Hiaroa (Puketutu island), the Onehunga Port, Māngere Watercare wastewater treatment facility and walkway network; and Ambury Regional park. The area includes a mix of land uses with residential, rural, industrial and commercial uses, alongside significant infrastructure, such as the Auckland Airport and the State Highway network. The area has extensive areas of parkland (Puhinui reserve), regionally unique ecosystems and locations, landscapes and sites of significant cultural value.

Access to and along the coast is highly valued and prioritised by the communities and iwi. Opportunity to restore and improve both the natural environment and amenity values is being actively pursued by iwi and community alike. The development of this SAP has identified some overarching aspirations to improve environmental outcomes, protect cultural heritage and ensure greater resilience of coastal assets to future natural hazard events. This is reflected both at a stretch scale (throughout section 5.0) and through the advice to asset owners (section 5.1).

Overall, the majority of the coastline within the SAP area can be managed through ***limited intervention*** continuing to maintain existing management strategies to support Auckland Council-owned land and assets at the coast. There are a notable number of stretches within the Manukau East SAP where '***hold the line***' is the preferred strategy. This is reflective of the highly modified shoreline and the location of significant (Auckland Council-owned) infrastructure as well as the need to manage past land use decisions, and reflective community values and uses. In the longer-term, ***managed retreat*** is identified in several areas. Primarily where space is constrained, there will be a need to ensure that highly valued community activities are suitably located away from hazard areas to ensure they remain safe and functional. ***Managed retreat*** does not signal abandonment of 'at risk' areas but identifies a process to reduce maintenance and renewal costs by moving Auckland Council assets out of exposed areas to accommodate natural coastal processes and build a more resilient shoreline. At a unit specific level, the following strategies are applied:

- ***Hold the line*** is utilised within Unit 3 (Ihumātao / Watercare waterfront), Unit 6 (Māngere Bridge and Kiwi esplanade) and Units 8 (Māngere Inlet North) and 9 (Onehunga) to maintain significant infrastructure and support an engineered (restored) coastline. This includes areas of closed landfill, significant coastal walkways, coastal access points and ecological value. This selection of strategies is considered to also align with the identified community objectives (see Table 2-1 above) related to coastal connections, use and access. Maintaining and continuing to upgrade existing defences is most commonly in response to coastal erosion. Coastal inundation is identified as increasing in frequency and magnitude with anticipated sea-level rise; this may result in a need to realign and re-consider the design and function of some coastal areas and accessways.
- ***Limited intervention*** is applied as a 'placeholder' for areas of co-managed reserve land (Unit 2, Pūkaki Lagoon and Unit 4 Te Motu ā Hiaroa) to signal a need to maintain and make safe existing assets and interventions while co-management and governance entities lead master planning and determine future decisions relevant to these areas. The causeway to

Te Motu ā Hiaroa (Puketutu island) located within Unit 3, is identified for ***managed retreat*** in the long term, due to increasing inundation risks. The adaptation strategy for the causeway is identified as being subject to potential revisions following the progression of plans and aspirations for Puketutu island. This need for future consideration and engagement aligns with community objectives, responding to the need to preserve cultural heritage while providing for a range of traditional and contemporary coastal uses.

Managed retreat is identified in the long mid to long term for low-lying areas along the southern shoreline of Māngere Bridge (Kiwi esplanade) the southern Māngere inlet, Onehunga Bay lagoon, Puhinui reserve and the causeway to Te Motu ā Hiaroa | Puketutu island where coastal inundation with sea-level rise and catchment flooding risks require the need to strategically plan to reduce maintenance and renewal costs by moving Auckland Council assets out of exposed areas to accommodate natural coastal processes, build a more resilient shoreline and support ecological and cultural outcomes. Proactive planning for useable, resilient safe coastal areas is supported by the identified community objectives. It is noted that catchments in the Manukau Harbour East SAP area are subject to the Making Space for Water programme, and may require future update to reflect the development of that programme.

Implementation of this SAP is a live and developing process which will require continued collaboration across multiple Auckland Council departments and Auckland Council-controlled organisations and entities. This will be undertaken alongside ongoing engagement with iwi to ensure that iwi have a partnership/co-management role in the project design, development, and implementation phases.

The SAP area reports are currently anticipated to be reviewed on a ten-yearly cycle. This will enable updated information to become available and be appropriately considered. Review may also be requested by iwi or required because of a specific trigger or signal being met which requires an accelerated need for change (this is discussed at section 1.4). It is noted that adaptation planning will more generally need to respond to national and regional legislative and policy changes and transition to the use of signals, triggers, and thresholds in place of static timeframes (refer to section 1.4).

Table 6-1: Summary of adaptation strategies by stretch for Manukau Harbour East area

Unit		Stretches	Adaptation strategies		
			Short term	Medium term	Long term
Unit 1	Puhinui	Stretch 1: Puhinui Reserve/ Colin Dale	LI	MR	MR
		Stretch 2: AIAL Landholdings South	NAI	NAI	NAI
Unit 2	Waokauri/ Pūkaki	Stretch 3: Waokauri	LI	LI	LI
		Stretch 4: Pūkaki Lagoon	LI	LI	LI
		Stretch 5: Pūkaki Road	NAI	NAI	NAI
		Stretch 6: Peninsula Point	LI	LI	LI

Unit		Stretches	Adaptation strategies		
			Short term	Medium term	Long term
Unit 3	Ihumātao/ Watercare waterfront	Stretch 7: Naylor Road South and AIAL landholdings	LI	LI	LI
		Stretch 8: Renton and Ihumatao Roads	LI	LI	LI
		Stretch 9: Te Puna Wai a Hape Watercare waterfront	HTL	HTL	HTL
		Stretch 10: Te Ara Tahuna / Puketutu Island Causeway	HTL	HTL	MR
		Stretch 11: Māngere Watercare Wastewater Treatment Plant	HTL	HTL	HTL
		Stretch 12: Māngere lagoon	LI	LI	LI
Unit 4	Te Motu ā Hiaroa / Puketutu Island	Stretch 13: Te Motu ā Hiaroa	LI	LI	LI
Unit 5	Whakarongo/Ngaa Hau o Maangere | Ambury	Stretch 14: Ambury South	LI	LI	LI
		Stretch 15: Watercare section (Ambury)	LI	LI	LI
		Stretch 16: Ambury North	LI	LI	LI
Unit 6	Māngere Bridge / Kiwi esplanade	Stretch 17: Manukau Yacht Club	HTL	HTL	HTL
		Stretch 18: Māngere Boating club	HTL	LI	MR
		Stretch 19: Māngere Bridge	HTL	LI	MR
Unit 7	Māngere inlet south	Stretch 20: Te Ararata & Mahunga	LI	LI	MR
		Stretch 21: Norana & Favona	LI	LI	LI
		Stretch 22: Harania Creek	LI	MR	MR
		Stretch 23: Otahuhu	LI	LI	LI
Unit 8	Māngere inlet north	Stretch 24: Southdown | Anns Creek	LI	LI	LI
		Stretch 25: Te Papapa	HTL	HTL	HTL
Unit 9	Onehunga	Stretch 26: Onehunga East of SH20 Bridge	HTL	HTL	HTL
		Stretch 27: Onehunga Wharf	HTL	HTL	HTL
		Stretch 28: Onehunga Foreshore	HTL	HTL	HTL
		Stretch 29: Taumanu	LI	LI	LI
		Stretch 30: Onehunga Bay	LI	MR	MR

7.0 References

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Attachments

Attachment A1 Te Ao Māori Frameworks for the Shoreline Adaptation Plans

Attachment A1.1 Te Ao Maori

Te tiro ā Māori ki tōna ake ao, a Māori world view, 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 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'* (from Ranginui to Papatūānuku, from Papatūānuku to Ranginui), which underpins the holistic world view for many iwi / hapū of Tāmaki Makaurau, and how the traditional concept of kaitiakitanga is approached. Understanding inter-relationships and interconnectedness is a fundamental part of addressing the impacts of climate change and sea-level rise.

As an adaptation workstream within Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan, the SAP programme considers te ao Māori by giving effect to the Kia Ora Tāmaki Makaurau and Te Ora ō Tāmaki Makaurau frameworks, underpinned by the principles of te Tiriti o Waitangi, and recognising and providing for te ao Māori concepts. This is explained further at Section 3.0.

Attachment A1.2 Principles for Partnership for the development of the SAPs

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
  - Any necessary mitigation and management of any impacts and effects on cultural values and associations.
- Prioritising 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
- Supporting 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 mātaitai 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 within each SAP needs to be undertaken alongside local iwi. This must be provided for through further engagement.

Attachment A1.3 Ngā hapū me ngā iwi o Tāmaki Makaurau

The hapū and iwi of Tāmaki Makaurau, hold important values as kaitiaki (guardians, protectors). 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 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.

The cultural values, associations, objectives, and outcomes communicated by each iwi involved in the development of each SAP will help to inform the selection of adaptation strategies within each. Such cultural values and outcomes are anticipated to be developed through ongoing involvement of iwi throughout the development of all 20 SAP area plans and their implementation. Guiding

frameworks, principles for engagement and regional principles for SAP plan development which have informed the development of the SAP programme to date are set out below and build on these regional principles, identifying those of local iwi who have been involved in the development of this plan.

Attachment A1.4 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 Te Ora Tāmaki Makaurau and supports the concept of Te Tātai. The Te Ora framework incorporates kaupapa Māori and mātauranga-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). When considered together, dimensions within the Te Ora framework (Taiao - environment, Whenua -land, Tāngata - people) 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.

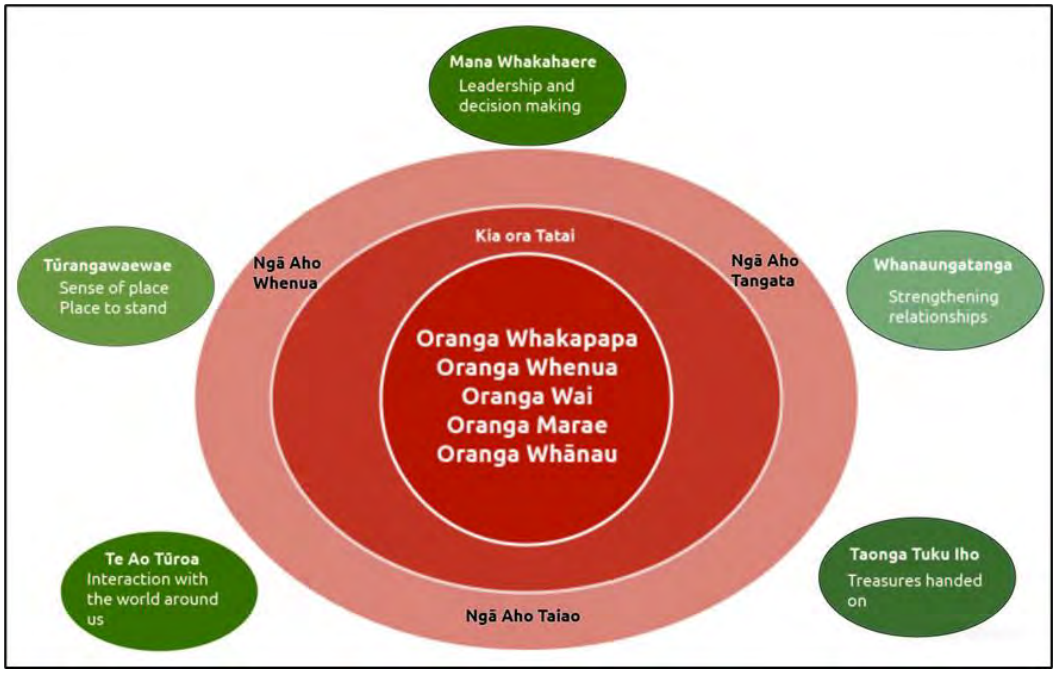


Figure 7-1: Graphic of Te Ora ō Tāmaki Makaurau Wellbeing Framework

Attachment A1.5 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:

- Taiao - Environment;
- Whakapapa – Ancestry; 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 Manukau North Tranche.

Attachment A1.6 Te Taiao (Environment)

Tangata Whenua of Manukau and Tamaki are coastal people, and the Manukau is intertwined at the heart of natural and cultural heritage and identity. The natural environment is a taonga, it is an integral source of nourishment through mahinga kai (food gathering) and spiritual and physical welfare. The goal is to ensure that the needs of present and future generations are provided for in a manner that goes beyond sustainability towards an approach that enhances the environment. The environment is protected, enhanced, and celebrated through an integrated approach, by natural means first and foremost and in partnership with tangata 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.

Attachment A1.7 Whakapapa (Ancestry)

Wāhi tapu sites present physical links to whakapapa (ancestry) and enduring tikanga (cultural practices) fundamental to cultural identity. Historically, mana whenua have been stripped of much of their whenua, losing many wāhi tapu sites. It is essential that wāhi tapu are protected, celebrated, and enhanced through an integrated approach, by natural means, and in partnership with iwi mana whenua. Some wāhi tapu sites are not public knowledge and their locations are intentionally protected by iwi and hapu. Mana whenua need to be collaborated with as partners to identify and manage wāhi tapu sites. The celebration of mana whenua values includes the acknowledgement, respect, and recognition of cultural and spiritual values of tangata 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.

Attachment A1.8 Tāngata Hononga (Connection 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.

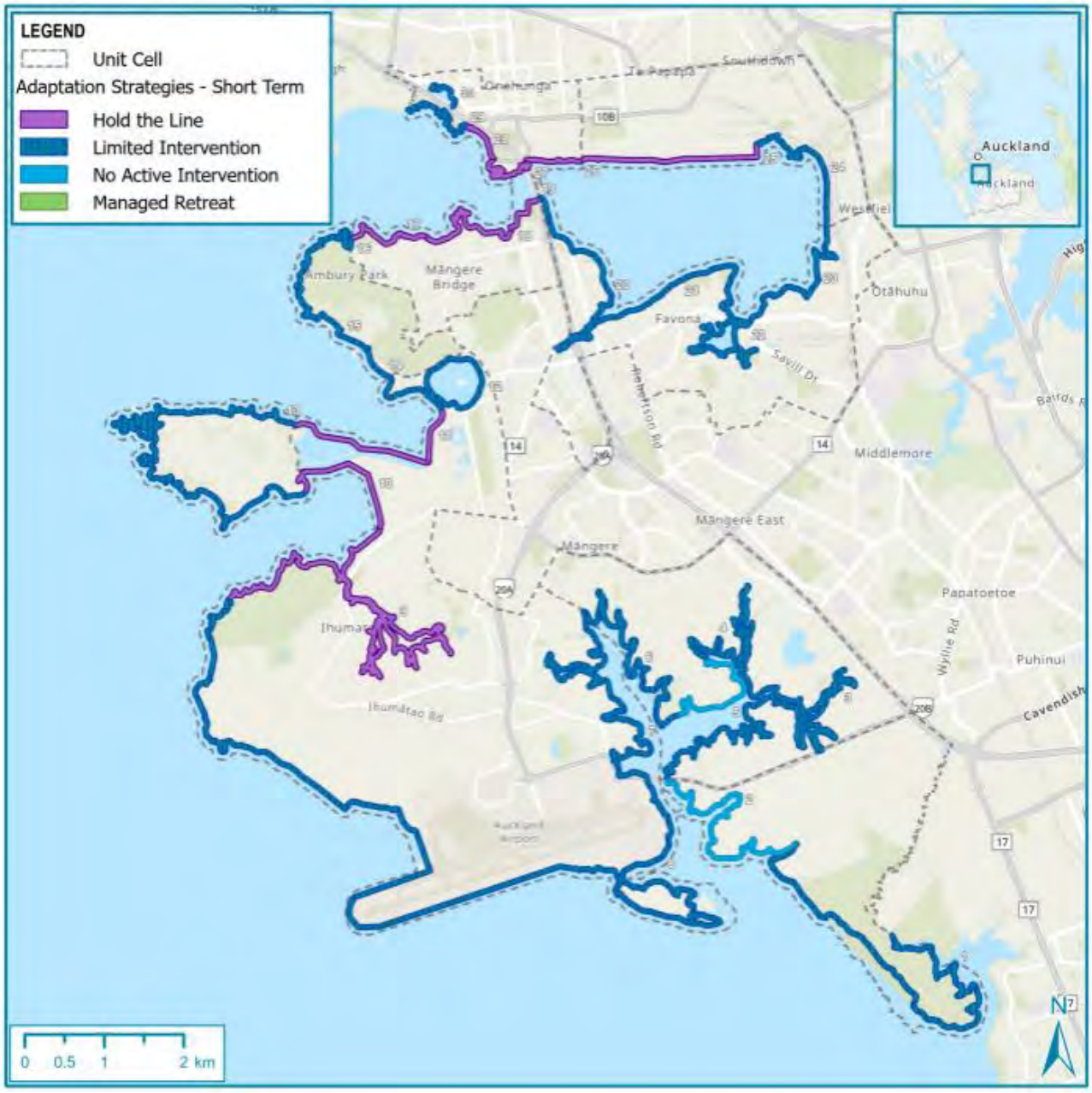
Attachment A1.9 Infrastructure and Environmental Services Mana Whenua Kaitaiki Forum regional guiding principles for Shoreline Adaptation Plans

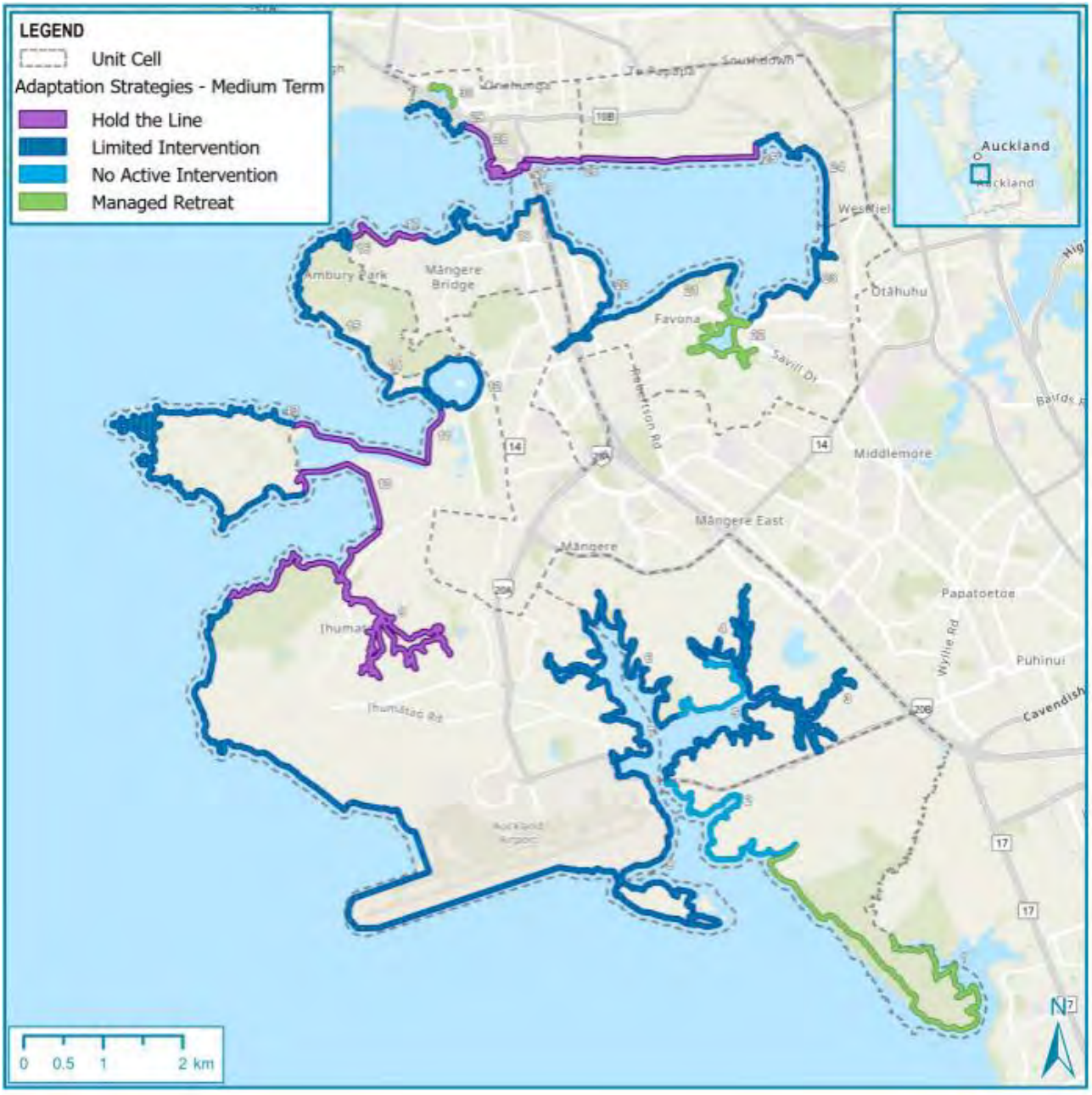
In the spirit of partnership, the Auckland Council I&ES Mana Whenua Kaitiaki Forum developed the following guidance principles for all SAPs:

- 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 work programme and its implementation.

Attachment B1 Adaptation Strategies by time scale




LEGEND
Unit Cell
Adaptation Strategies - Medium Term
Hold the Line
Limited Intervention
No Active Intervention
Managed Retreat
Auckland
Mängere Bridge
Favona
Otāhuhu
Middlemore
Mängere East
Mängere
Papatoetoe
Puhinui
Wymyss Rd
Savill Dr
Robertson Rd
Cavendish
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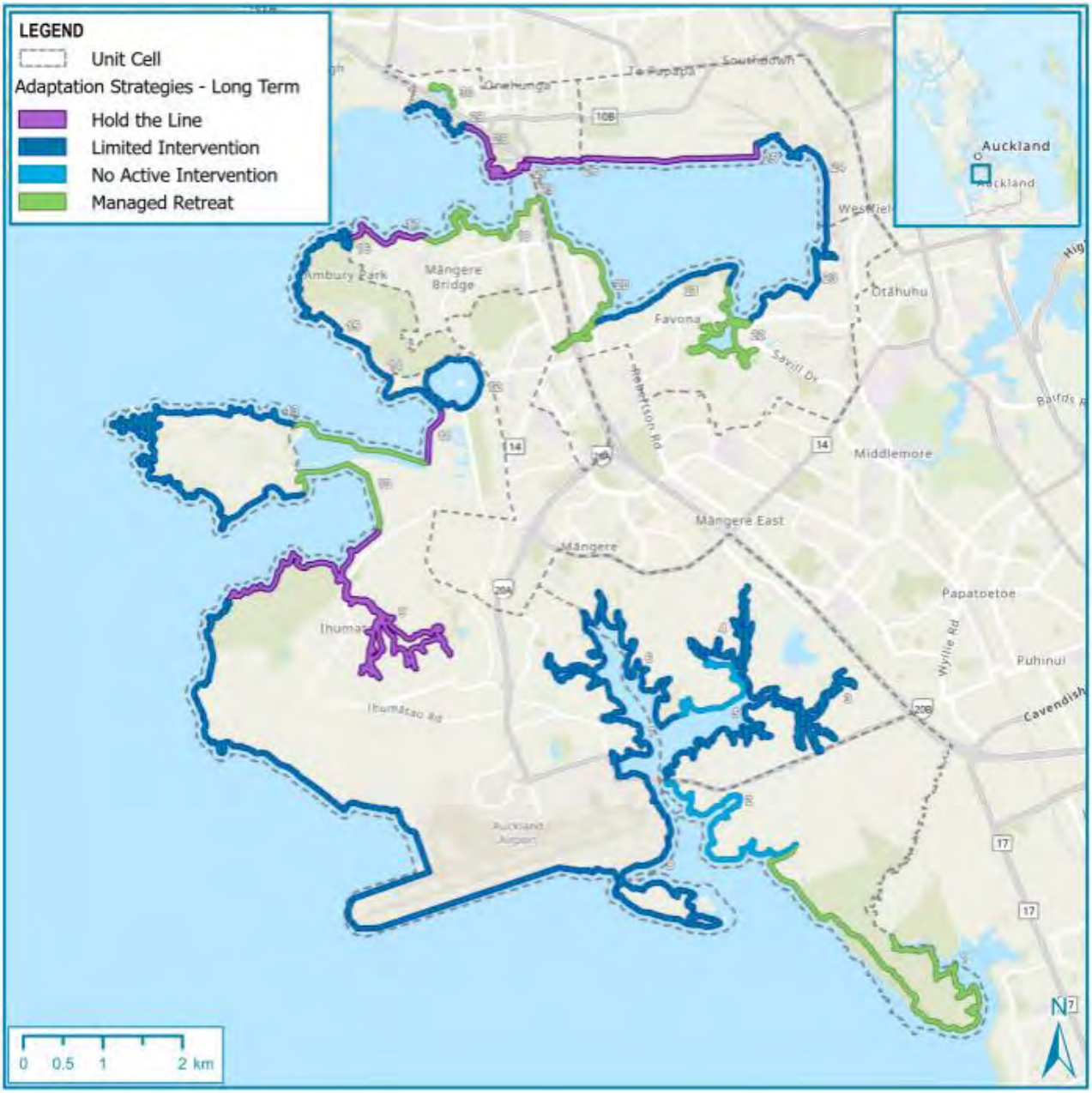
LEGEND
Unit Cell
Adaptation Strategies - Long Term
Hold the Line
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Auckland
Mängere Bridge
Favona
Ōtāhuhu
Middlemore
Mängere East
Mängere
Papatoetoe
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Wiri
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