Tupua Horo Nuku.

Ngau Matau & Sorrento Bay - Design Protocols

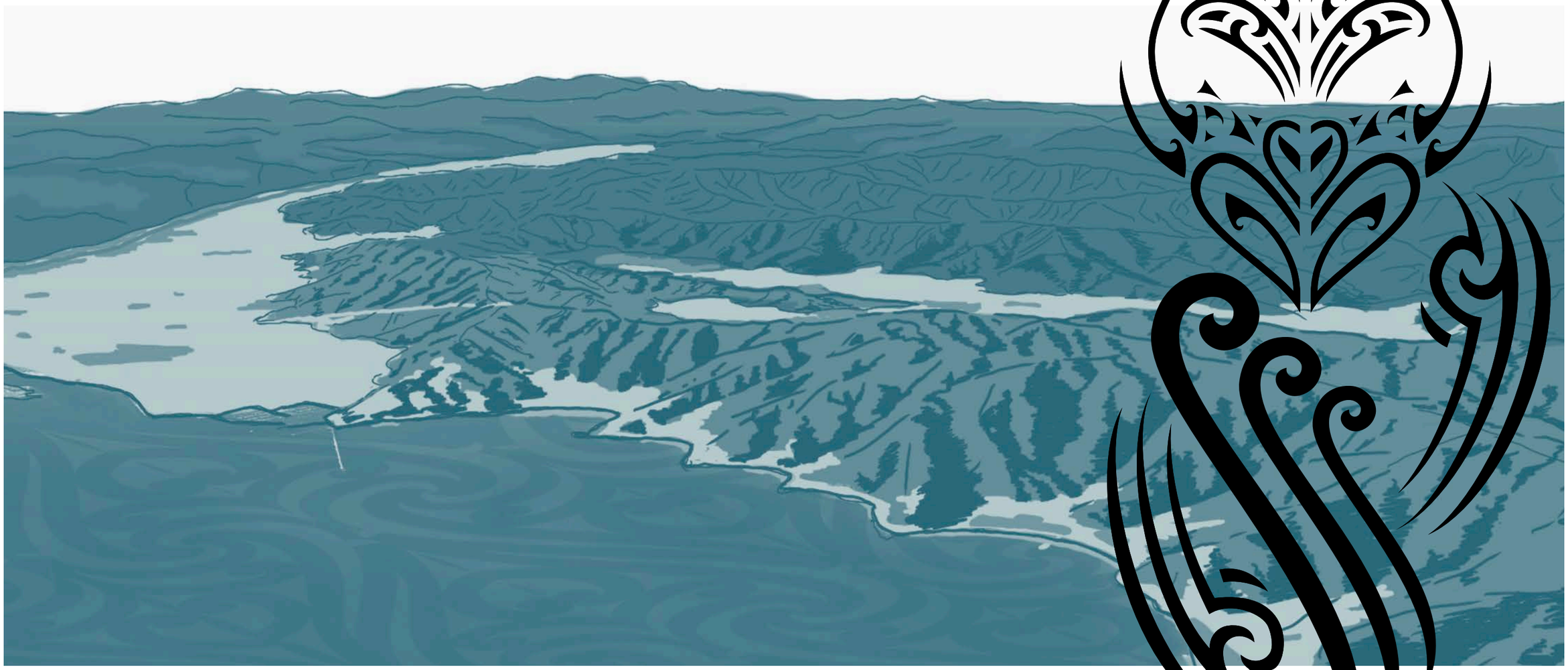
Eastern Bays Shared Path

NKP-TAT-THN-PLN-LS-LS-000005.

17 November
2023

Te Ara Tupua Alliance
Shifting gear to connect past, present and future

HUTT CITY
TE AWA KAIRANGI



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Authors

Prepared by, **Te Ara Tupua Alliance**
Mana Whenua Advisors: **Mana Whenua Steering Group**
Cultural Expression Artist: **Len Hetet**
BSUDP Production and Review: **Te Ara Tupua Alliance**

Graphics, photographs and maps by **Te Ara Tupua Alliance** unless otherwise stated

Cultural Expression Artwork: **Len Hetet**
Tupua, Ngāke - Cover Image
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Contents

Tupua Horo Nuku
Eastern Bays

The Eastern Bay area encapsulates many wahi tapu from Te kongutu o Te Awa Kairangi to Te Waha o te Ikanui. Its beginnings emanate out of the power and mana of Tupua-horo-nuku (evolving mass of solid matter), known as the tupua, Ngake.

Instructed by the mountain clan people who were summoned to the head of the fish, gathering on Pukeatua where they were gifted the appropriate incantations to prise open the mouth of the great catch of Māui-tikitiki-a-Taranga to enable it to breathe again, where they summoned from the great depths of Rua Tupua and Rua Tawhito of the fresh water lake who brought forth Tupua-horo-nuku and Tupua-horo-rangi.

Tupua-horo-nuku, Tupua-horo-rangi
Tai kukume mai takiwā ia mouri e runga
Kia horo wawe mouri e raro koi ikaroa[1]

The narrative of the eastern bay speaks of and highlights "te ihi, te wehi me te mana nui o Tupua-horo-nuku."

Te Awa Kairangi, formed out of the raging whip lashing tail of Ngake as he wound himself up into a frenzy, generating and amassing energy and power, splitting the land mass immediately behind him lacerating Papatūānuku, imbuing "te ara mouri" inland to the Tararua and Remutaka. Whilst at the same time hurling himself towards the barriers hearing the pounding and thunderous waves smashing in the distant. Smashing his way out from his land lock imprisonment to freedom unto Hinemoana and Tangaroa. In his destructive escape came forth the islands of the harbour later to be named by Kupe the pacific navigator, and as centuries passed the peopling of Te Wai-manga arrived gifting new names later to be suppressed through imperialistic and colonial methodologies which are still impacting on us since their arrival in 1769.

Tēnei te ara kei runga
Tēnei te ara ō Ranginui e tū nei
Tēnei te ara o Papatūānuku e takoto nei...[2]

Ripiripia te ika nui
Haehaea te ika roa
Ka hora, ka hora te kai ki a Tamanuiterā
Ka hora, ka hora te kai ki a Tāwhiri-mātea...[3]

Immediately following the severing, Hine-wai-tootaa and Hine-kōrako went about their duties caressing and gently healing Papatūānuku. Calling upon their sister Hine-wairere they asked her if she could follow the scarification marks of Papatūānuku until she was fully covered to sooth her skin to ease the pain. To this day they still nurture and care for her.

Te Awa Kairangi like many rivers began its life through the kuia Hine-wai-tota, Hine-kōrako and Hine- wairere, being the ancestress of condensation, lunar droplets and water flow gathering on the many peaks on both sides of the river. Fed by melting snow, ice and rainwater running off the land, the collective of droplets follows cracks and crevices within the landscape formed out of the raging whip lashing of the tail of Ngake (seismic activity) in his attempt to escape to freedom from his land lock lake imprisonment.

The many small tributaries joining together growing larger forming the collective mass of Te Awakairangi, flowing every second of the day. The following whakatauaaki encapsulates who the people of Te Ātiawa are and our responsibility for the water and the whenua.

Te Ātiawa tupua rau, he auripo i te manga iti, he auripo i te manga nui rānei, he kaitiaki ki te whenua [4]

Te Ātiawa of many phenomena's, where there is a ripple in a small tributary or great river, there is a guardian and protector on the land.

Over time the continuous flow of Te Awa Kairangi has shaped the landscape moving and wearing away rock, carving out a network of valleys eventually reaching the lower grounds, widening and reaching the point where the fresh water meets the salt water.

Whakapakarukaru puare te waha o te ika roa
Te hononga o ngā wai e rua...[5]

The Eastern Bay commences at the meeting of the waters.

1 He karakia nō te kainga
2 He karakia nō te kainga
3 He karakia nō te kainga
4 Nā Kura Moeahu whakahī
5 He karakia nō te kainga

Tupua Horo Nuku
The Pathway

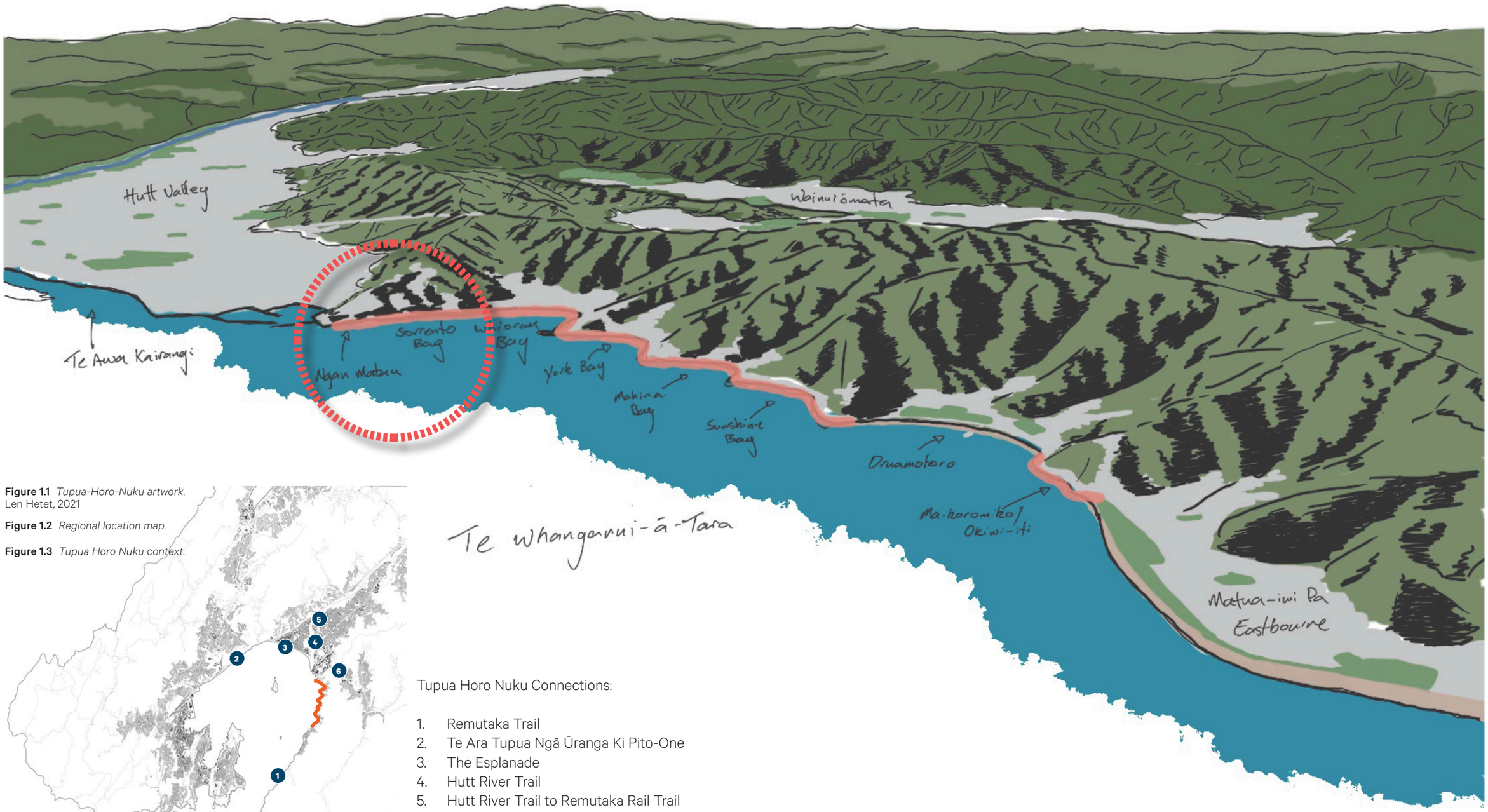


Figure 1.1 *Tupua-Horo-Nuku artwork.* Len Hetet, 2021

Figure 1.2 *Regional location map.*

Figure 1.3 *Tupua Horo Nuku context.*

Tupua Horo Nuku Connections:

1. Remutaka Trail
2. Te Ara Tupua Ngā Ūranga Ki Pito-One
3. The Esplanade
4. Hutt River Trail
5. Hutt River Trail to Remutaka Rail Trail
6. Te Hikoi Ararewa (Wainuiomata Hill Shared Path)

Introduction

Purpose & Objectives

The purpose of the Bay Specific Urban Design Plan (BSUDP) is to provide bay specific detailed design for the project responding to local landscape character, identity and land use, in the broader context of the Landscape and Urban Design Plan (LUDP).

Consent conditions for the Eastern Bays Shared Path (Tupua Horo Nuku) guide the content of the BSUDP and the preceding LUDP. The conditions outline the purpose of the management plans, the contents of the plans, expert inputs, stakeholders to be consulted, the approval and certification process and how to manage disputes. Community aspirations, engineering constraints with urban design and landscape layers are applied to achieve a unique bay specific design, integrated with the Eastern Bays Shared Pathway.

Relevant Consent Conditions

LV.5 The LUDP shall include the final BSUDPs for each bay within the Project area. The final BSUDPs shall address detailed design within the particular bay for the benefit of pedestrians, cyclists and others using the local road network as well as the specific urban design, landscape, ecology and recreational amenity matters (including those listed in Condition LV.7) as relevant to the particular bay.

The final BSUDPs may be prepared later and added to the LUDP on a staged basis if the Construction Works are staged bay by bay and individually certified under Condition LV.6.

LV.6 The BSUDPs shall be prepared by the Consent Holder in two stages for each bay:

(a) Stage 1: A draft design protocol that sets out the priorities for the bay design in terms of engineering, safety and access and mobility requirements as well as ecology, natural character, landscape, urban design and recreational amenity elements and issues. The draft design protocol shall provide visual representations of best practice on comparable coastal Shared Path projects to demonstrate the level of design to be targeted. The protocol shall be provided to the relevant Resident Association for the affected bay (if any). The East Harbour Environment Association and the Eastbourne Community Board for comments (if any) within 15 working days from receipt.

Any comments received, and the Consents Holder's response and reasons if they are not accepted, are to be provided to the Manager, Environmental Regulation, and Team Leader, Resource Consents alongside the draft design protocol, within 20 working days from receipt of the comments.

(b) Stage 2: The final BSUDPs are to be certified either on their own (in accordance with Condition GC.5) or, if included in the initial LUDP, when the LUPD is certified under Condition LV.1.

LV.7 The BSUDPs shall include specific landscape and urban design details for:

(a) Seawall structures, including transition zones between seawall types and transitions between natural or rocky areas and seawall structures;
(b) Beach access including steps, ramps and associated handrails where required, so that people wishing to access the beach can do see safely;
(c) Safety barriers and railing and screening barriers between important habitat for Shoreline Foragers and the Shared Path;
(d) The treatment of stormwater structures at the coastal interface;
(e) Little Penguin and Shoreline Forager related structures including penguin passage elements, ramps, nests, boxes and wooden poles for roosting;
(f) Planting treatment;
(g) The treatment of existing trees and existing landscape and natural features;
(h) The design and area of space available for recreational amenity activities;
(i) The design and orientation of features, spaces and access points;
(j) Refuge and seating opportunities, including size and arrangement of space to allow for stopping and gathering at frequent intervals distributed along the route;
(k) Signage ensuring their consistency along the Shared Path, including branding and reduction of visual clutter;
(l) Storyboards;
(m) Surface treatments;
(n) Any other relevant matter for that bay necessary to achieve the purposes of the LUDP in condition LV.2.

Structure

In satisfying Conditions LV.5 - LV.7 of the Resource Consent the Draft Design Protocol process informing the BSUDPs is:

- Illustrate bay locations and describe the landscape context.
- Ascertain draft priorities for each bay. Priorities include issues involving: safety, access and mobility; engineering; ecology; natural character; landscape; urban design; and recreational and amenity elements.
- Show visual representations of best practice through precedent examples of comparable Shared Path projects.
- Outline landscape and urban design approaches and principles for each bay to set the scene for design plans and details.
- Develop an illustrative schematic plan for each bay.

Consultation

Consultation

In accordance with Condition LV.6 the Draft Design protocol for Ngau Matau & Sorrento Bay is required to be provided to the relevant Resident Association for the affected bay, the East Harbour Environmental Association, and the Eastbourne Community Board for comments. A record of the consultation and comments received, together with an indication on responses will be outlined at Stage 2 submission.

Compliance Matrix

Consent Condition	Response
LV 5.	
The LUDP shall include the final BSUDPs for each bay within the Project area. The final BSUDPs shall address detailed design within the particular bay for the benefit of pedestrians, cyclists and others using the local road network as well as the specific urban design, landscape, ecology and recreational amenity matters (including those listed in Condition LV.7) as relevant to the particular bay. The final BSUDPs may be prepared later and added to the LUDP on a staged basis if the Construction Works are staged bay by bay and individually certified under Condition LV.6.	The final Ngau Matau & Sorrento Bay BSUDP will be individually certified and attached to the LUDP on completion.
LV 6	
The BSUDPs shall be prepared by the Consent Holder in two stages for each bay:	
(a) Stage 1: A draft design protocol that sets out the priorities for the bay design in terms of engineering, safety and access and mobility requirements as well as ecology, natural character, landscape, urban design and recreational amenity elements and issues. The draft design protocol shall provide visual representations of best practice on comparable coastal Shared Path projects to demonstrate the level of design to be targeted. The protocol shall be provided to the relevant Resident Association for the affected bay (if any) The East Harbour Environment Association and the Eastbourne Community Board for comments (if any) within 15 working days from receipt. Any comments received, and the Consents Holder's response and reasons if they are not accepted, are to be provided to the Manager, Environmental Regulation, and Team Leader, Resource Consents alongside the draft design protocol, within 20 working days from receipt of the comments.	This draft design protocol sets out relevant priorities for engineering, safety and access and mobility requirements as well as ecology, natural character, landscape, urban design and recreational amenity elements and issues as outlined over subsequent pages. This draft design protocol will be issued to all relevant parties.
(b) Stage 2: The final BSUDPs are to be certified either on their own (in accordance with Condition GC.5) or, if included in the initial LUDP, when the LUDP is certified under Condition LV.1.	Final Ngau Matau & Sorrento Bay BSUDP to be developed and certified following completion of LV6(a).

Consent Condition.	Response	Page ref
LV 7.		
The BSUDPs shall include specific landscape and urban design details for:		
(a) Seawall structures, including transition zones between seawall types and transitions between natural or rocky areas and seawall structures;	In general, colonised rock will be placed below mean high water springs (MWHS) and non-colonised rock will be placed above MHWS at the seawall transitions (if appropriate). The placement of rock will occur under the guidance of the Project Ecologist and Project Landscape Architect as required.	12-15, 18
(b) Beach access including steps, ramps and associated handrails where required, so that people wishing to access the beach can do so safely;	Mini steps with handrails have been located along the extent of Sorrento Bay as well as an accessible ramp to access the beach. The construction of additional ramps and access points beyond that shown would increase the amount of reclamation and occupation of the coastal marine area.	12-15, 19

Consent Condition	Response	Page ref
(c) Safety barriers and railing;	There are no balustrades proposed within Ngau Matau & Sorrento Bay.	Pg 19
(d) The treatment of stormwater structures at the coastal interface;	Stormwater outlets will be in-situ sections between pre-cast wall units. The outlet will sit within the curved seawall via a concrete housing which visually integrates the pipe to the seawall.	Pg 19
(e) Little Penguin and Shore Forager related structures including penguin passage elements, ramps, and wooden poles for roosting;	Where rock revetment is repaired a small fence is proposed to stop penguins from accessing the path and road.	Pg 21
(f) Planting treatment;	Planting areas are located around refuge points and headlands to soften and enhance features. Plant species will be chosen from the Plant Palette within the LUDP that has been developed with the Project Ecologists.	Pg 22
(g) The treatment of existing trees and existing landscape and natural features;	Some trees will need to be removed to accommodate the path and alignment of the bird screening fence.	Pg 12-15, 22
(h) The design and area of space available for recreational amenity activities;	The BSUDP has provided the design and area of space available for recreational and amenity values in accordance with Condition LV.7(h). We consider that our design provides the best solution in the circumstances as it falls within the consented footprint, does not increase the overall CMA reclamation, and provides a useable pathway.	Pg 12-15, 24-25
(i) The design and orientation of features, spaces and access points;	Refuge spaces are located to balance user needs, community preference, utilise retained existing trees for their character and amenity benefits, avoid encroachment on beaches as well as fit within CMA consented footprint. We note that creating further refuge spaces and access points would likely increase the area of the coastal marine area occupied and/or reclaimed, which is not authorised by the resource consents.	Pg 12-15, 24-25
(j) Refuge and seating opportunities, including size and arrangement of space to allow for stopping and gathering at frequent intervals distributed along the route;	In Ngau Matau & Sorrento Bay we are utilising the headlands and existing pull over spaces. This helps avoid encroachment into the CMA.	Pg 12-15, 24-25
(k) Signage ensuring their consistency along the Shared Path, including branding and reduction of visual clutter;	Signage will be designed so it is integrated into landscape elements to reduce visual clutter along the Shared Path. This approach is consistent across all bays.	Pg 24-25
(l) Storyboards;	The Alliance is taking a culturally led approach and therefore Mouri markers are used as the main interpretation method for the pathway in Ngau Matau & Sorrento Bay. Consideration of ecological and other local history as a second layer to be shared will be made through the detailed design process.	Pg 26
(m) Surface treatments;	A robust palette of materials is used to ensure visual cohesiveness and quality. Predominantly asphalt with sections of concrete. Concrete will also be used for areas where cultural graphics will be applied to the path.	Pg 26
(n) Consideration of a minimum 3m path width for York Bay only (for a 90 m length south of the existing bus stop; and	N/A	
(o) Any other relevant matter for that bay necessary to achieve the purposes of the LUDP in condition LV.2.	The Bird Protection Plan has outlined a number of measures that have been incorporated into the design including barriers, screening, pest control, and planting considerations	Pg 22-23, 27

01. Urban Design Plan

Ngau Matau & Sorrento Bay Urban Design Plan

LV.6 (a)

Features of Ngau Matau & Sorrento Bay:

Sorrento Bay is the first bay along Tupua Horo Nuku and sits between Ngau Matau (Point Howard) and the northern headland of Whiorau Bay (Lowry Bay). The Bay is fairly typical of the surrounding area, with a rocky edge and steep escarpment directly behind Marine Drive.

As a popular swimming and recreation destination because of its sheltered sandy beaches, Sorrento Bay has car parking further towards Ngau Matau. The Bay in its current state provides a sheltered sandy beach, toilet facilities, and a small informal ramp for the likes of kayaks and dinghys. The Bay is partially protected from a northerly swell by offshore rocky reefs. The Bay currently has limited landscape design features such as seating, picnic benches, bins and informational signage.

Almost all housing along the Bay is elevated in the escapement with access to those houses from Howard Drive and a number of private walkways with small garages located directly off Marine Drive. Ngau Matau contains the entry to Centre Ports Seaview Terminal, which includes a long wharf that extends south of Sorrento Bay. Because of this Ngau Matau is a mixture of public and private land sitting on reclaimed land with most of the area being dedicated to traffic and parking. A significant landscape feature in this area is the headland remnant that was likely once part of the main escarpment prior to Marine Drive being formed. This large rocky hill provides a significant threshold into the Eastern Bays and has associated planting, rest areas, mature trees, and likely wind protection.

There are a handful of pohutukawa trees on the coastal side of Marine Drive that are primarily clustered close to each headland. Aside from these trees the edge is predominately hard with little planting. The Bay's southern headland contains a historic boat shed which is a notable landscape feature for the area and signals the change between Sorrento Bay and Lowry Bay. The southern headland is rocky in nature and contains significant habitat for birds as outlined in the Bird Protection Plan for the area.

Ngau Matau headland, before being called Point Howard, had the traditional name with the meaning of ‘bite the fishhook’. It is still a significant fishing spot today as it was for Māori in much earlier times.

Natural character:

In respect of natural character, this was discussed in detail during the resource consent process. The following discussion provides a summary of the impact of the Project on natural character, as well as highlights how different design features of the Project take natural character into account.

The resource consent application assessed the natural character of the Eastern Bays at a wider scale as having a moderate abiotic, biotic and experiential natural character. The Project was considered to have low effects on the wider Eastern Bays coastal landscape.

The impact of the Project at a local level on natural character was considered to depend largely on the final detailing and texture on the curved seawall faces, the material used for beach nourishment, the design response to the local landform where the walls finish at rocky outcrops, and design treatments in the more exposed, untamed areas outside of the beaches. Visual impact was considered to diminish over time because of weathering and as they become familiar features reducing to low adverse effects over time.

Within Ngau Matau & Sorrento Bay (and elsewhere) the Project is in general accordance with the consented approach and retains natural features such as rocky outcrops and beaches keeping the untamed character here intact. The new design occupies existing beaches. However, beach nourishment with appropriate imported sands and fine gravels is expected to maintain the balance of natural character.

Ecological detailing is included on the curved seawall faces consistent with the consent design addressing loss of local natural character relating to perception and experience of the structure, as well as providing habitat opportunity where the wall texture is below high tide level. Marine growth will colonise these areas and it is expected the structure will weather into place. Large boulders from site will be used to ameliorate transitions between seawall types and to cover footing concrete where it occurs. Culvert outfalls penetrate the recurve wall in two locations and require boxing in with a simple exposed aggregate concrete support flush with the recurve and are experienced as part of the greater patterned wall.

Ramps and steps are also finished with exposed pebble aggregate consistent in texture with the beach fine gravels which help to detune the engineered nature of these structures along with fit to landscape and natural character.

Ngau Matau & Sorrento Bay General Arrangement Plan
Part 1 of 2

LV.6 (a) LV.7 (g) (h) (i) (j)

Legend.

- Bus stop
- Parking
- Location of Mini steps

Seawalls & Path

- Timber kickrail
- Single curved seawall with bench
- Double curved seawall with bench
- Double curved seawall with Balustrade
- Beach Nourishment Area
- Shared Path
- Concrete Shared Path pavement
- Vehicle crossing

Ecology and Landscape

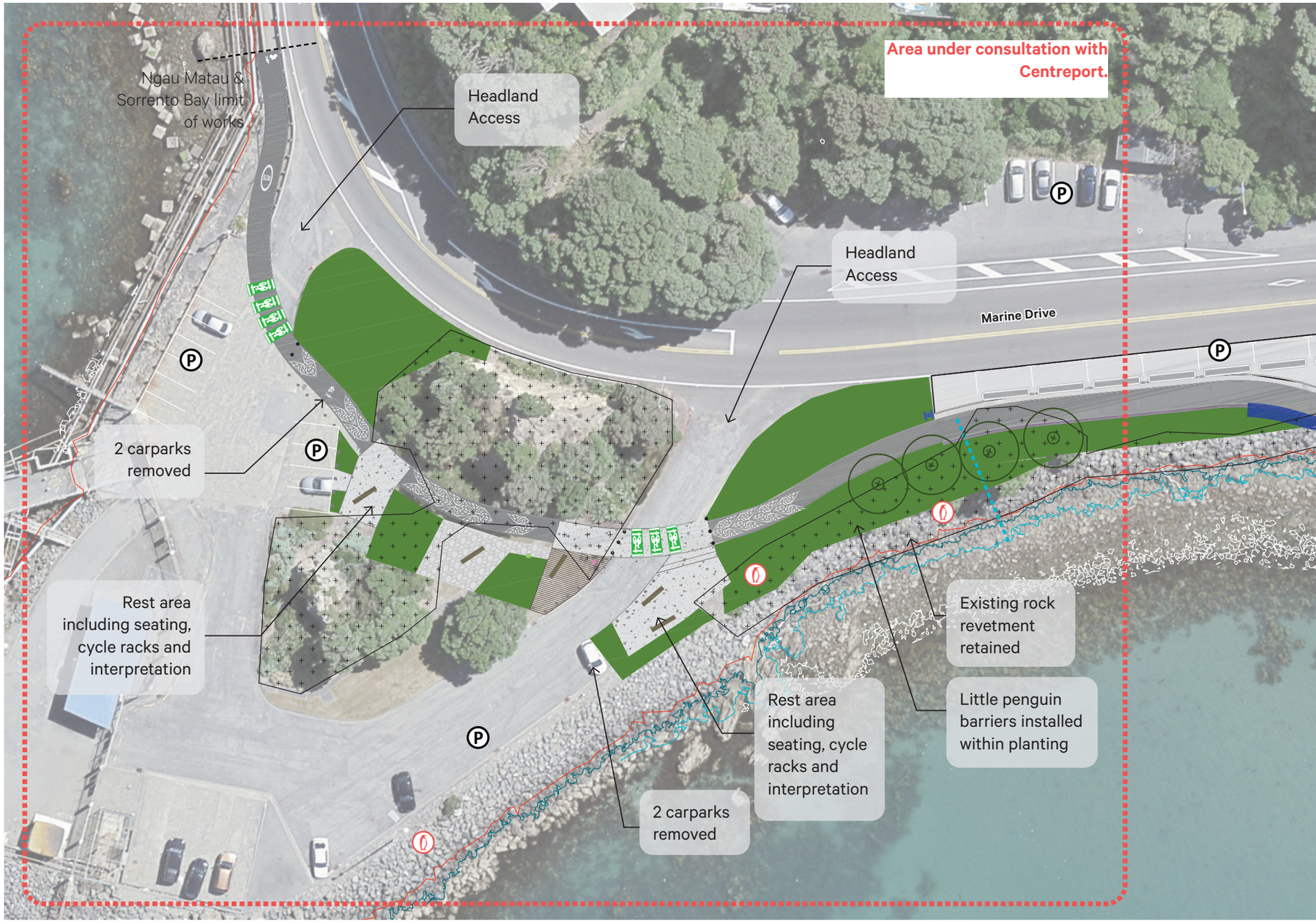
- Known Penguin nesting areas
- Lizard habitat
- Planting - new or additional
- Extent of beach nourishment
- Indicative high tide level resulting from beach nourishment
- Stream Culvert
- Fish passage- Stream outlet
- Indicative location of Ecological Enhancement Units (such as tide pools, Vertipools, and Small drilled rock pools)
- Tree Retained
- Tree Removed

Tides Existing

- Mean High Water Springs (MHWS)
- High Tide
- Mid Tide
- Low Tide

Wall Type Sections.

- Single curved seawall with bench and kickrail
- Double curved seawall with bench and kickrail
- Double curved seawall with Balustrade



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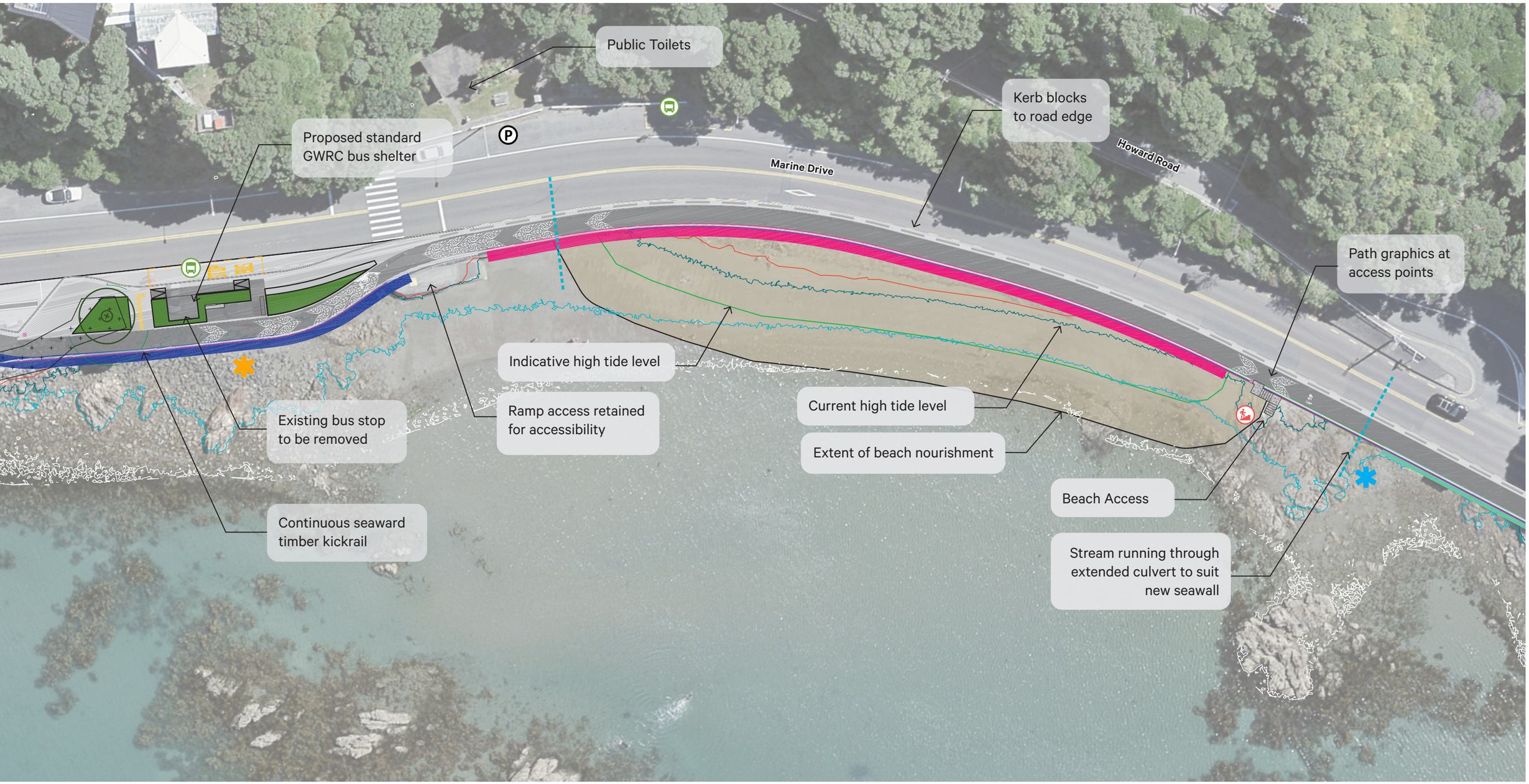


Ngau Matau & Sorrento Bay General Arrangement Plan
Part 2 of 2

LV.6 (a) LV.7 (g) (h) (i) (j)

Legend.

- Bus stop
- Parking
- Location of Mini steps

Seawalls & Path

- Timber kickrail
- Single curved seawall with bench
- Double curved seawall with bench
- Double curved seawall with Balustrade
- Shared Path
- Concrete Shared Path pavement

Ecology and Landscape

- Known Penguin nesting areas
- Bird Protection Screen
- Little Penguin nesting habitat
- Planting - new or additional
- Stream Culvert
- Fish passage- Stream outlet
- Indicative location of Ecological Enhancement Units (such as tide pools, Vertipools, and Small drilled rock pools)
- Tree Retained
- Tree Removed

Tides Existing

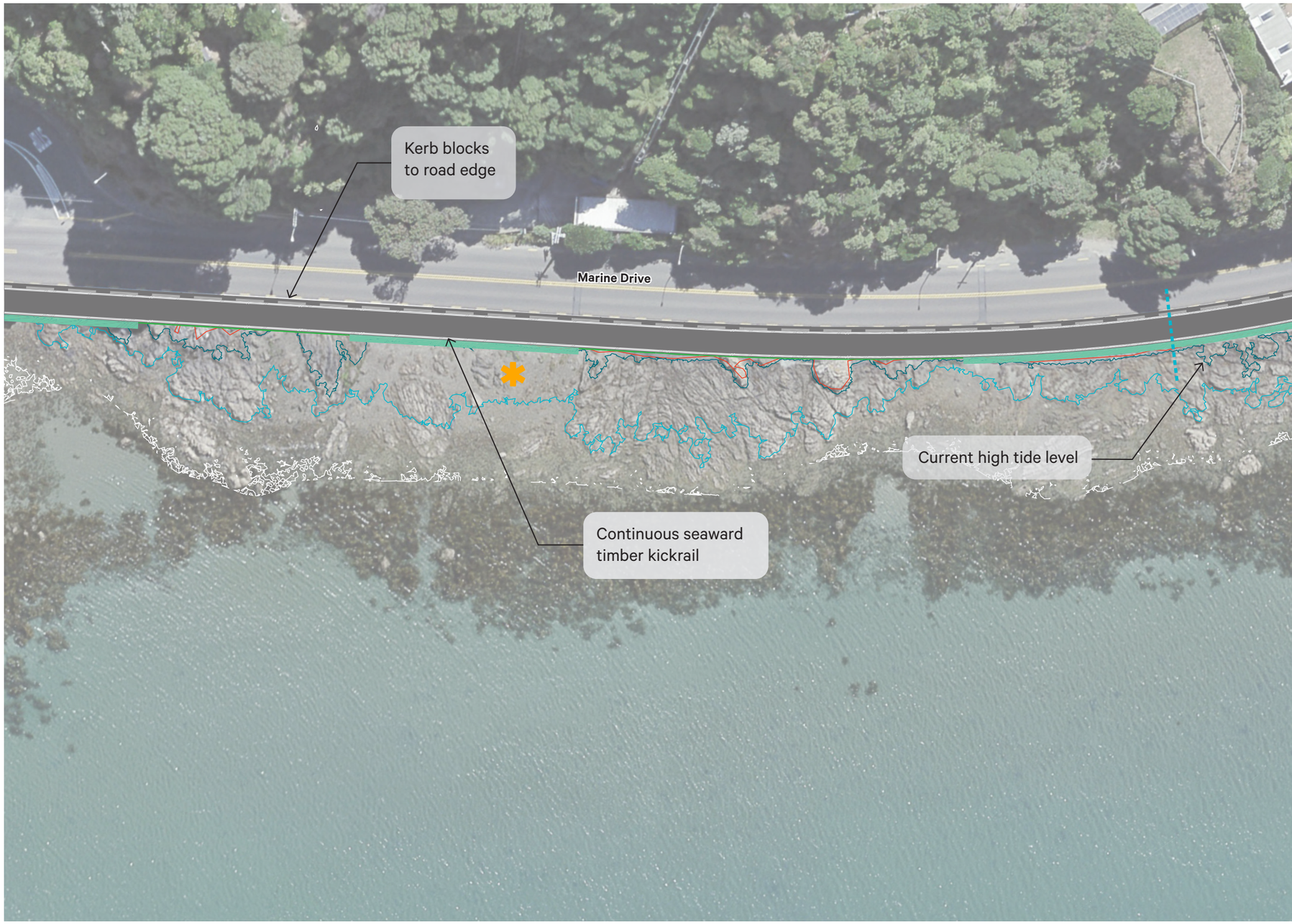
- Mean High Water Springs (MHWS)
- High Tide
- Mid Tide
- Low Tide

Wall Type Sections.

Single curved seawall with bench and kickrail

Double curved seawall with bench and kickrail

Double curved seawall with Balustrade



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Beach Access

Kerb blocks to road edge

Marine Drive

Existing trees retained

Path graphics at access points

Marine Drive

Path graphics at access points

Trees removed

Effective path width of 1.5m

Ngau Matau & Sorrento Bay limit of works

Area under review by Hutt City Council.

Fishing area retained

informal parking and refuge area removed

fishing access is removed from this area

1.8-1.2m high Bird Protection Screening

Historic Boat Shed

Beach Access

Site Photos

Figure 1.4 *Informal rest area to be removed*

Figure 1.5 *Sorrento Bay at low tide. Source: Mel Williams, 2022*

Figure 1.6 *Existing picnic table near Ngau Matau.*

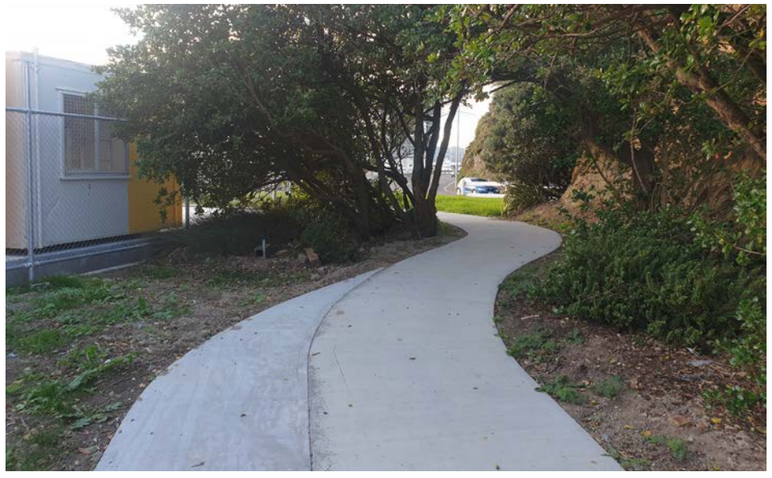


Figure 1.7 *Existing concrete path through Ngau Matau*

Figure 1.8 *Northern entry into Centreport*

Approach and Principles

Rugged Coastal Environment	— Reflect the wild coastal character and narrow edge through minimal disturbance and intervention at the coastal edge. — Retain any rocky outcrops. — Sympathetic transitions between seawalls and natural coastal edges. — Retain fishing access at southern end.
Less is more	— Features added minimise obstruction to views and beach access.
Maintain integrity of rock outcrops	— Rock outcrops are remnants of the existing coastal edge. — Retain the natural form of each outcrop. — Where modification is taking place integrate transition from the outcrop to the structure in a natural way. — Retain as much of the existing natural colonized rock as possible during seawall construction. — In addition, reuse the natural colonized rock removed during construction at the base of the seawalls. — Use natural colonized rock at seawall transitions, particularly those where the concrete seawall ties back into the natural rocky beach, to integrate the seawall and eliminate hard concrete edges.
Retain natural coastal planting	— Retain two existing pohutukawa trees in Bird Protection Area. — Retain existing trees by Ngau Matau. — Retain and improve planting to headland areas.
Details and elements	
Consistency	— Features and elements are consistent across the project.
Simple robust forms	— Elements such as seating, wheel stops, and steps are formed with simple block/rectangular shapes not to detract from the wild coastal character, yet be simple and accessible to use.
Existing structures and elements	— Existing bus shelter to be replaced by a standard GWRC shelter.
	— Boat shed to be retained.

Maintenance	— The selected materials and patterns are durable, designed with longevity in mind, and are able to be replicated. — Allow native plant species to self establish where conditions are appropriate. — Work with Hutt City Council to understand maintenance requirements. — Remove concrete blocks and building rubble, previously used for managing coastal erosion.
Bay specific narratives	— To be undertaken with mana whenua advisors and artists. Cultural expression to be integrated into the overall design in relevant areas.
Materials palette	— Hardwood timber - seating, linear barriers, wayfinding marker posts, where required. — Stainless steel - step hand rails, detailing into seating, cycle stands. — Textured concrete - seawall, vertipools, tidepools, mini steps. — Asphalt - Shared Path and stopping place north of the Day Bay Headland. — Natural colonized rock - seawall transition points and base of seawall. — Gravel around trees retained.
Plant communities	— Enhancement planting to headland areas.

Priorities for Ngau Matau & Sorrento Bay

Seawall Structures

LV 7. (a) - Seawall types and transitions

Vertical curved seawalls have been chosen for most of the project area including Sorrento Bay because they deflect wave over-topping most effectively and create a reduced footprint on the foreshore compared to other non-vertical seawalls. This design also offers the flexibility to adapt the design to accommodate sea level rise in the future. Seawalls are required to be rebuilt along the majority of the project area. They are designed to prevent coastal erosion and protect against storm surge and are therefore integral to protecting the Shared Path. The Design Features Report (Stantec, 2019) sets out engineering requirements for the project. The main points can be summarised as:

- The seawall design will help address sea level rise, such as protection to be added on top of the wall in future as required.
- Achieve consistency in the seawall profile throughout the corridor.
- The seawall is to be constructed from reinforced pre-cast concrete units. Construction methodology of the seawall will be determined by site conditions.
- Resilience of the road and underground services was considered in the design.
- Replacement and extensions to storm water pipes through the wall are to be like for like, and finish flush with the face of the seawall.
- Seawall transitions to be integrated to avoid abrupt ends/divisions. Transitions between seawall types, e.g. between single and double will be managed between access points (steps and ramps). Transitions between wall edges and the existing coastal edge, e.g. at headlands, will be softened/integrated with natural rock.
- Width of the Shared Path is to have a 2.5m effective width except for area past the boat shed which is currently design as 1.5m.
- The path surface is to be mixed asphalt and concrete with a 300mm wide concrete strip on the 'sea side' to define the coastal edge.
- The work is to be an improvement on existing conditions throughout the corridor.
- Fall from height safety will be addressed by either a 1.2m landing, where there is room or a balustrade where there is not.

Seawall types in Ngau Matau & Sorrento Bay

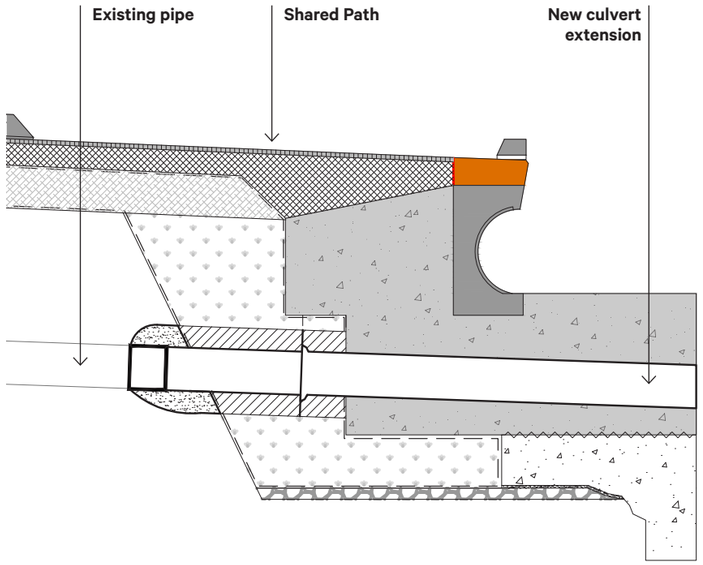


Figure 1.10 *Single curved seawall with bench (type C1L) and stormwater outfall penetration.*

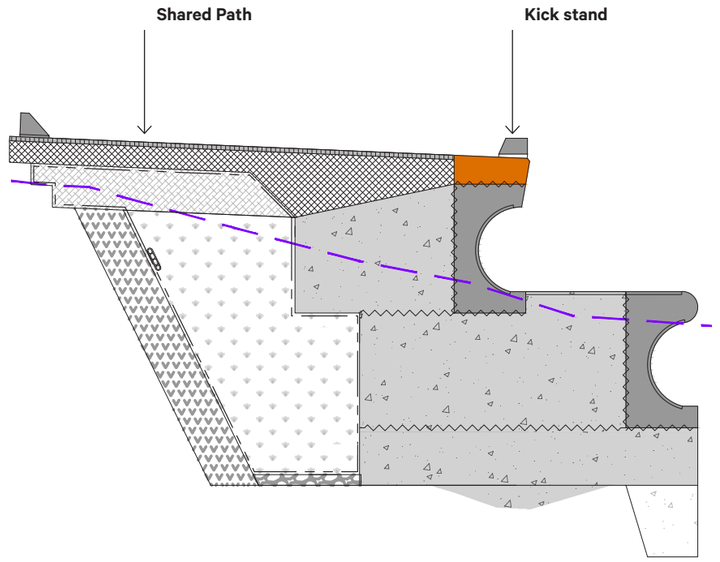


Figure 1.11 *Double curved seawall with bench (type C2L).*

Figure 1.9 *Example of existing colonised in situ rock that could be suitable to reuse in the construction of the revetments and transitional areas (stantec).*

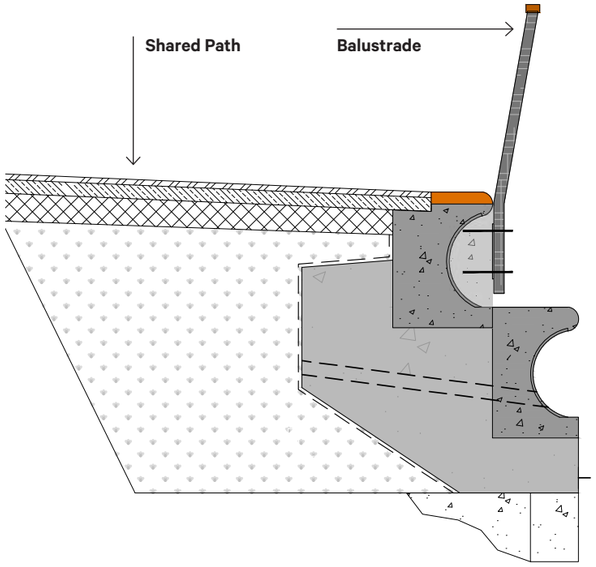


Figure 1.12 Double curved seawall with Balustrade.

Stormwater

LV 7. (d) Structures and coastal interface

Storm water outlets will be in-situ sections between pre-cast wall units and are designed to limit adverse effects on recreation.

Beach Access & Safety Barriers

LV 7. (b)(c) - Steps, Ramps & Handrails

An important aspect of the Shared Path is that public access to the beach is maintained and, at certain places, enhanced. Two forms of access are provided to the coastal marine area in Sorrento Bay, these include 'Mini Steps' and 'Ramps'.

Mini steps are proposed to provide additional access to the beach without encroaching unnecessarily onto the coastal marine area. Ramps are proposed to minimise encroachment onto the beach. The ramp shown in Sorrento Bay is existing.

The design priorities relating to beach access are:
- Should draw people to the coastal edge.
- Should be inviting and intentionally separate to the main path.
- Fit for purpose, using materials suitable for the marine context.
- Safety in design, considering ease of use, surface texture/grip and handrails.
- Steps to be sited in logical, accessible locations with visual links to and from the Shared Path to enable their use.
- Design to reflect a distinctly Tupua Horo Nuku aesthetic, fitting in with the surroundings while providing opportunity for unique, place based expression.
- Parallel design to seawall/coastline to reduce footprint on the beach and interference with coastal processes.
- Sight lines shall be maintained and unobscured as per CPTED (Crime Prevention Through Environmental Design) guidelines.
- Fall heights and barriers must comply with NZ Building Code D1 (Access Routes) and F4 (Safety from Falling).
- Provision for safe crossing places and desire lines shall be met as per the Pedestrian Planning and Design Guide (and the Pedestrian Network Guidance (Waka Kotahi, 2021) forthcoming).
- Consideration for the safety of sea birds and animals shall be informed by designed elements and interventions.
- Where stainless steel is used, some minor staining (tea bagging) is likely to occur.

Priorities for Ngau Matau & Sorrento Bay

0m 5m 10m 25m

Legend.

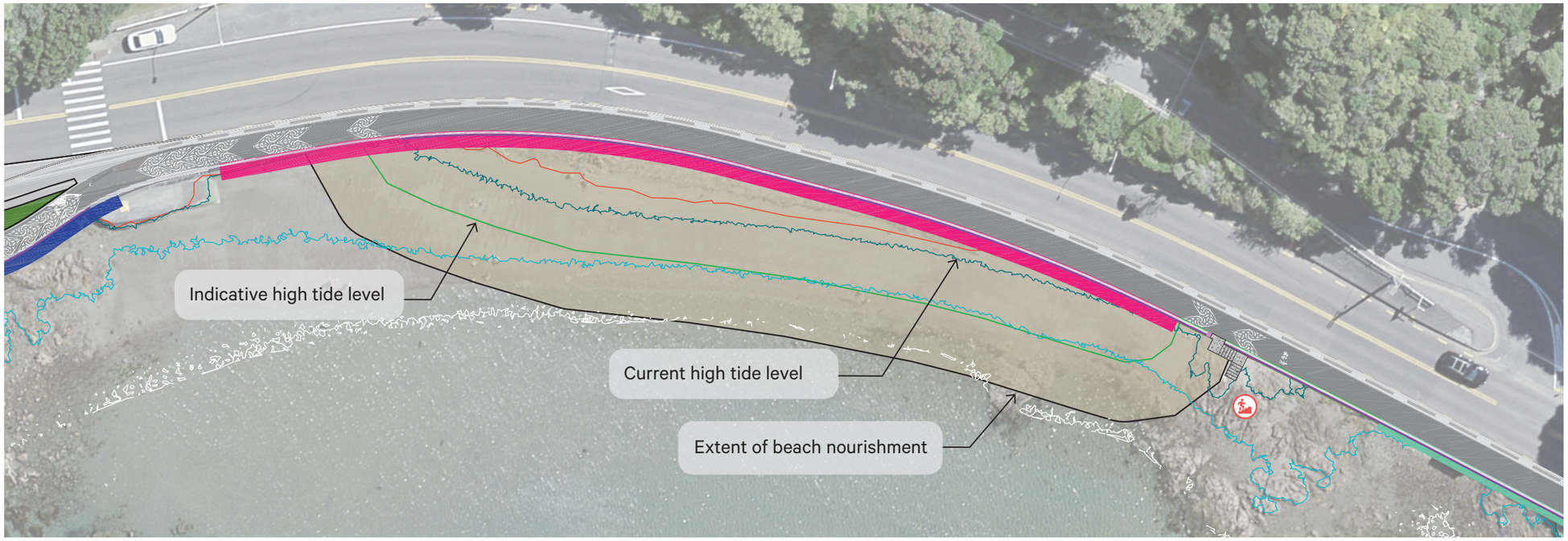
- Location of Mini steps
- Managed works zone for oystercatchers

Seawalls & Path

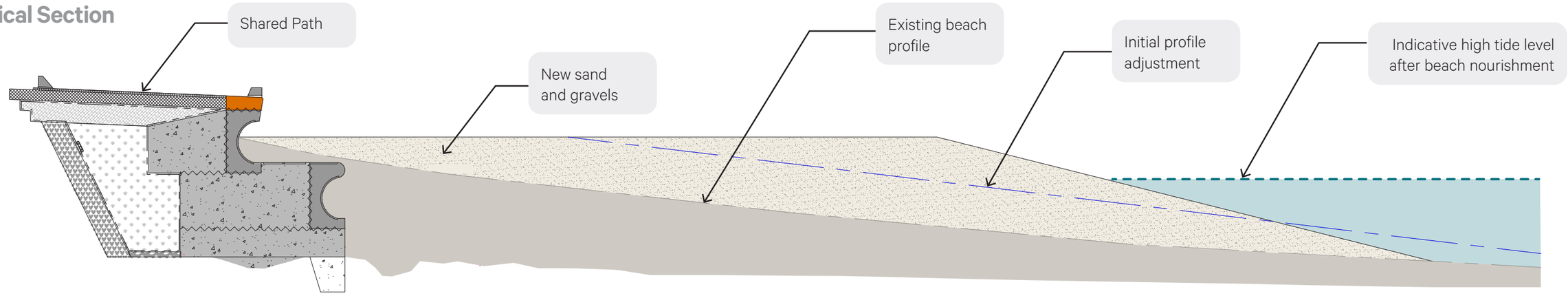
- Single curved seawall with bench
- Double curved seawall with bench
- Timber kickrail
- Pavement

Tides Existing

- Mean High Water Springs (MHWS)
- High Tide
- Mid Tide
- Low Tide



Typical Section



Beach Nourishment

LV 7. (o) - Other matters

The effects of Tupua Horo Nuku on recreation and loss of amenity value are mitigated by placing beach nourishment at Sorrento Bay. By addressing adverse effects on this beach with 'dry' high tide areas used for sitting and other 'dry' beach activities, the proposal will maintain coastal amenity and ensure effects are no more than minor. Losses in the width of beach – where nourishment is not proposed – and at rocky areas, are minimised by relying on a narrowed path where appropriate.

- Sand and gravel beach material brought onto site.
- 1:4 profile to crest of new beach.
- Approximately 10m max of beach depth. Depth varies as it ties into proposed seawalls.

Ecology

LV 7. (e) - Little penguins, rock pools, barriers

An ecology assessment of intertidal ecology was undertaken in 2016-2017 by EOS Ecology (McMurtrie & Brennan, 2019a). The assessment found that the existing intertidal environment is currently highly modified, with seawalls along the majority of the shoreline consisting primarily of angled concrete seawalls that support low species diversity and richness. Beach areas and fish passage issues have been summarized in the LUDP. Seabird protection is detailed in the Bird Protection Plan.

The main design aspects that will help to improve intertidal ecology and fish passage include:

- A texture applied to the curved seawalls - the curved vertical surface and horizontal flat steps and the vertical sides of access. points (steps and ramps - to provide habitat for intertidal biota and splash zone coastal species. The textures are described and shown in the LUDP, the Seawall Revetment Habitat Plan (SRHP).
- Ecological enhancements, such as tide pools, vertipools, and small drilled rock pools are applied to discrete locations along the coastal edge that are within the intertidal zone.
- Re-use of colonised rocky material in front of the new curved seawalls to suit condition EM.19 (c) of the SRHP.
- Providing for fish passage at stream culverts to ensure the current level of passage for fish species migrating into upstream freshwater habitats is maintained or improved.

The number and locations of ecological enhancements may change post-construction based on suitable areas for placement to achieve the best ecological outcomes. The main ecological limitation for placement of ecological enhancements is that they need to be within the intertidal zone.

Figure 1.13 *Texture applied to the curved seawalls*

Figure 1.14 *Texture applied to the curved seawalls*

Priorities for Ngau Matau & Sorrento Bay

Planting

LV 7. (f)(g) -Trees, planting, natural character

Planting
The planting design for Ngau Matau & Sorrento Bay gives consideration to the dynamic coastal environment, its ecology, the various user experiences along the route, and maintenance and operations factors. Plant species have been chosen from the Plant Palette in the LUDP, which has been developed with the Project Ecologists. This includes indigenous species, which are suited to this specific coastal environment, and will encourage species of birds, lizards and insects which currently (or could potentially) inhabit areas along the route.

Proposed planting is reflective of (and reinforces) the Ngau Matau & Sorrento Bay context; planting provides a variety of experiences, in response to the character, context, landscape and natural features along the route.

Natural Character
The overall adverse effects on natural character for Ngau Matau & Sorrento Bay are considered to be less than minor for the coastal landscape. The landscape and urban design approach and principles have been developed to mitigate effects of the project on natural character.

As outlined in the LUDP, it is expected that the effects on natural character from the Project, including the seawall and Shared Path, will lessen over time as they weather and become established. A list of mitigation measures related to natural character attributes is provided below. Further detail of mitigation of effects on natural character and integration with the natural landscape is provided with the description of design areas and elements in the Urban Design Outcomes Section of the LUDP.

Legibility – geomorphology:
— Retention of local rock for reuse at base of the seawalls.

Legibility – wayfinding and orientation:
— Reinforcement of the undulating coastline morphology by positioning the Shared Path along the coastal edge.
— Opportunities for local variation/reinforcement of local identity in the form of access points from the path to the foreshore.
— Improved access to headlands with strong natural character and natural features (such as trees, rocky outcrops and rock stacks).
— Provision of wayfinding markers, street furniture and signage to reinforce the bays and associated neighbourhoods.
— Provisions for cultural expression and naming to reinforce sense of place.

Visibility – public and private views:
— Consistent detailing along the coastal and road edges to reduce the visual impact.
— Appropriate/considered design of urban and landscape elements such as seating, bins, handrails, seaward side linear barriers, stormwater outlets, planting, signage and path markings to integrate them with the landscape.
— Incorporation of eco-mitigation surface textures consistently applied along the lower curve and ‘step’ of the wall to reduce the visual presence of the seawalls.
— Any safety balustrades to be designed as ‘transparent’ as possible to reduce visual appearance.

Picturesqueness:
— Path alignment responds to the local landform and land use patterns.
— Sensitive detailing of urban design and landscape elements, that respond to Mana Whenua, community identity and sense of place.
— Removal of existing unsightly structures and infrastructure along the project site and the replacement of an eroding road with a consistent structurally stable edge.

Bird Protection Plan

LV 7. (o) - Other Matters

The Bird Protection Plan (BPP) outlines a range of measures that Hutt City Council (the Consent Holder) will implement over the lifetime of the Tupua Horo Nuku project to avoid or minimise adverse impacts on avifauna within the project area, with a particular emphasis on little penguins and shoreline foragers such as variable oystercatchers. The measures contained within the BPP are designed to meet Consent Conditions EM.3 through to EM.9. For Ngau Matau & Sorrento Bay the Bird Protection Area will be established in accordance with the BPP required by the consent conditions.

Screening and barriers
The following features are proposed to be incorporated in Sorrento Bay:
— A 1.2-1.8m screening fence along Marine Drive, to prevent dogs wandering into the Tōrea Pango / Variable Oystercatcher nesting habitat.
— Associated warning signage on the Shared Path within Sorrento Bay, to reduce the risk of dogs and people venturing into the nesting habitat while allowing Tōrea Pango / Variable Oystercatcher unimpeded access.
— Interpretation panels informing the public of the presence of nesting Tōrea Pango / Variable Oystercatcher and providing information on key elements of the birds’ biology, life cycle and threats.
— Little penguin barriers to planted area in Ngau Matau.

Screening fence along Marine Drive shall be approximately 85m long and vary between 1.2-1.8m in height. It will be constructed from timber in keeping with the urban design theme where variable thickness palings are used to add variety and interest to the fence when viewed from the road and footpath.

Interpretation panels shall be installed at either end of the screening fence, providing information on the lifecycle and habitat requirements of Tōrea Pango / Variable Oystercatchers, the threats that they face and information on how Shared Path users can minimise their impact on the oystercatchers nesting in Ngau Matau & Sorrento Bay.

Smaller warning signs shall be affixed to the Shared Pathway side of the screening fence at approximately 50m intervals along the entire length of

the fence. These warning signs shall notify Shared Path users that the rocky foreshore beyond the fence provides nesting habitat for Tōrea Pango / Variable Oystercatchers, and request that Shared Path users do not venture onto the rocky foreshore between the months of August and February inclusive. The specific content of these signs will be developed in consultation with the Kororā / Little Penguin Interest Group and Mana Whenua and will include design elements contributed by local students participating in the public education campaign for avifauna described in the BPP.

Little penguin barriers are proposed in planted areas through Ngau Matau to help prevent little penguins from crossing the Shared Path and Marine Drive.

Pest control

The following features are proposed to be incorporated in Ngau Matau & Sorrento Bay:

— Predator traps designed to target key predators of Variable Oystercatchers, namely mustelids, hedgehogs and rats.

DOC200 kill traps will be spaced at 50m intervals along the seaward side of the fence between the Shared Path and Sorrento Bay, and at 50m intervals around the perimeter of the Tōrea Pango / Variable Oystercatcher nesting habitat, as part of the Eastern Bays Shared Path Predator Management Strategy. These DOC200 traps will be installed, checked and maintained by Mainland Island Restoration Operation (MIRO) volunteers, as part of MIRO's wider Educating Residents about Trapping (ERAT) predator trapping programme. A more detailed description of the Eastern Bays Predator Management Strategy can be found in Section 7 of the BPP.

Planting Plan

Tōrea Pango / Variable Oystercatcher require unvegetated rock, sand or shingle substrates for nesting and tend to avoid heavily vegetated habitats. For this reason, there are no plans to create additional plantings on the existing rocky foreshore.

Figure 1.16 *Example design for the Whiorau Reserve BPA Kororā / Little Penguin warning signage.*

Figure 1.15 *Example of a predator trap*

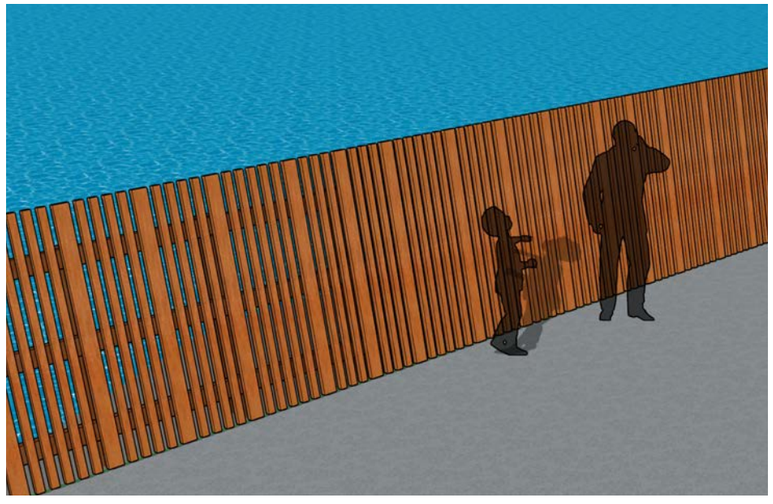


Figure 1.18 *Indicative bird screen*

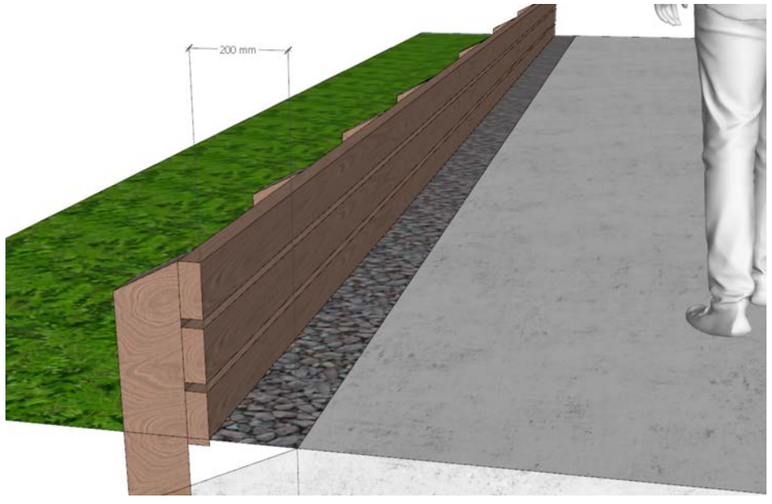


Figure 1.17 *Little penguin barrier design*

Priorities for Ngau Matau & Sorrento Bay

Urban Design

LV 7. (h)(i)(j)(k) - Open spaces, features and signage

The Design Features Report (DFR) (Stantec, 2019) established a set of design principles and outlined the engineering requirements for the project. This BSUDP has been developed in general accordance with these principles and requirements. The LUDP outlines the overarching principles, palettes, and narratives for detailed design. Principles for Ngau Matau & Sorrento Bay can be summarized as:

- Reflective of rugged coastal environment – materiality, robustness.
- Less is more – emphasise the natural setting and views.
- Maintain integrity of natural rock outcrops.
- Retain and enhance coastal vegetation where possible along coastal edge.
- Consistency across elements – a coordinated suite.
- Simple robust forms.
- Simple colour, surface texture, bespoke signage palettes.
- Maintenance considerations.
- Bay specific narratives expressed through cultural design.
- Sympathetic materials palette.

Open space and Recreational Amenity

Tupua Horo Nuku provides a connection to a continuous coastal edge experience along Ngau Matau & Sorrento Bay. The Project will enhance existing levels of recreation and amenity values with the Shared Path improving access for people walking and cycling along the coast and between bays. This enhanced access includes new beach access points providing access to the foreshore. The main priorities identified are:

- Creating a fit for purpose Shared Path that provides access to the coast and to the bays between Point Howard and Eastbourne for people walking, cycling, and using other small wheels.
- Provide access to the beach, water and headlands.
- Provide stopping and resting places.
- Maintain views to the coast.
- Retain fishing access.

Furniture and Features

The furniture palette for Ngau Matau & Sorrento Bay consists of interpretation signage and wayfinding, seating, bike racks and bins. The palette reflects the coastal setting of Tupua Horo Nuku and provides opportunities for cultural expression and narrative to some elements.

The design outcomes relating to furniture are:

- Use of standard Hutt City Council design elements where practical.
- A cohesive suite across multiple elements using robust materials suitable to the coastal environment.
- Appropriate in scale and number, avoiding visual clutter so as not to detract from their environment.
- Contribute positively to the character of Tupua Horo Nuku.
- Allow for opportunities to incorporate individual bay identities.

Formal seating is generally provided at places where stopping and gathering is encouraged and there is sufficient space. The proposed seats are made of timber which is a hard wearing material suitable for the coastal environment. There is a mixture of seating options including benches and seats with back rests and arms. The design is robust, with preference given to solid, chunky forms that are more in keeping with the coastal environment.

Bike racks are generally co-located with complimentary furniture and near bus stops and stopping location. They have been located appropriately to assist safe and easy movement along the path. A standard simple design with a narrow profile is proposed to reduce footprint.

Signage and Wayfinding

Where width allows, gathering spaces, beach access points and bus stops are appropriately separated from paths, to allow for slower and safer movement. Linemarking, symbols, and directional arrows are located at the approaches and alongside bus stops and beach access points to visually separate fast and slow movement to minimise conflict. These have been jointly expressed through cultural expression and symbols.

Traffic signage and markings will form part of the detailed design stage. The position of such signage should ensure minimal visual clutter and follow a clear design logic to the positioning, combination and layout of signs.

The design priorities relating to Signage & Wayfinding are:

- Give consideration to Hutt City Council cycleways and NZ Transport Agency standards and Great Harbour Way precedents.
- Ensure CPTED concerns inform the wayfinding design approach.
- Create a visual language for Tupua Horo Nuku which suits the needs of the project and is in line with Hutt City Council standards.
- Clearly communicate and link key destinations and named landmarks, as well as assist in legibility of the proposed path.
- Ensure the level, format and intensity of wayfinding signage varies along the path, according to need.
- Create a coherent graphic language using robust materials suited to the coastal environment.

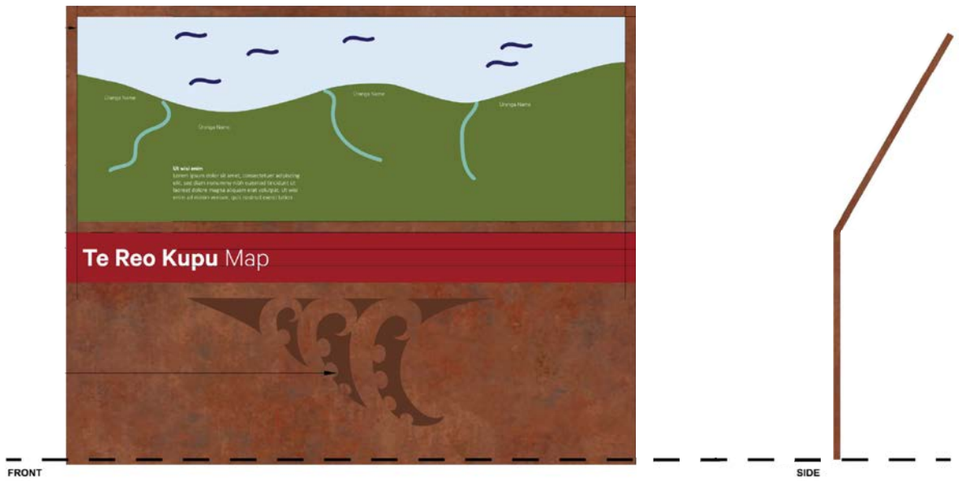


Figure 1.19 *Signage design for stopping places (example only).*

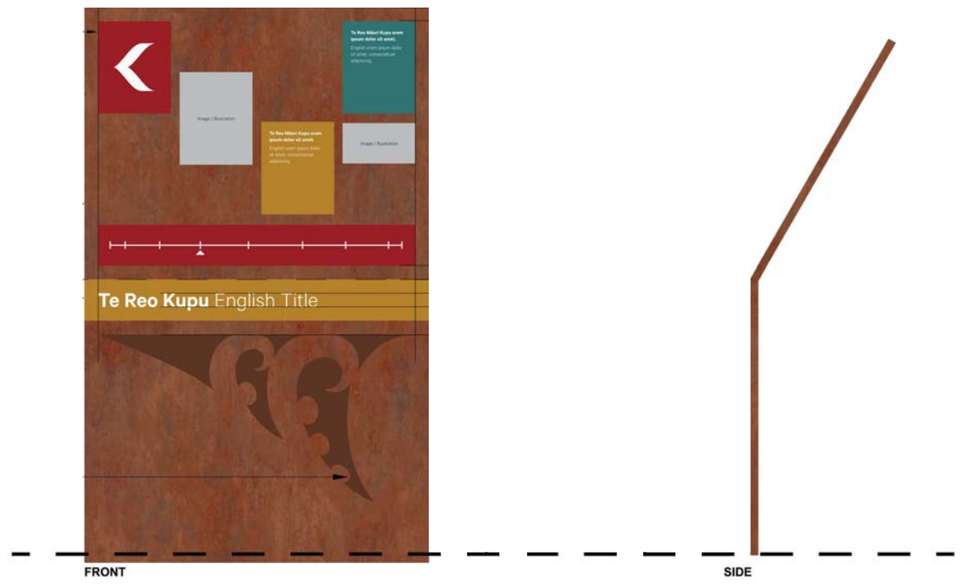


Figure 1.20 *Signage design for habitat areas (example only).*

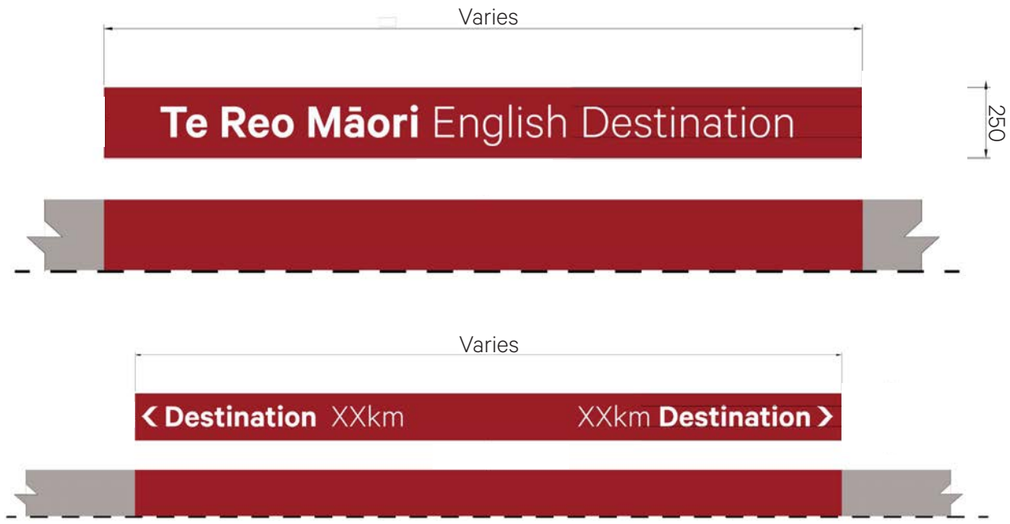


Figure 1.21 *Steel panel with named location applied to kickrail (example only).*

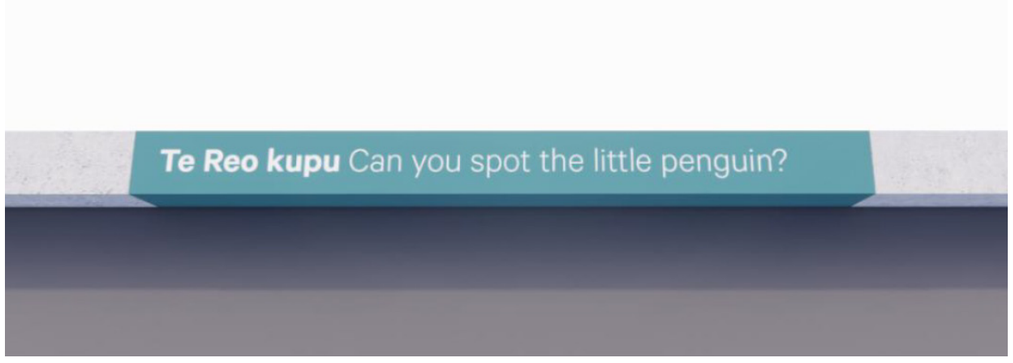


Figure 1.22 *Interpretative panel applied to kickrail (example only).*

Priorities for Ngau Matau & Sorrento Bay

Cultural Landscape

LV 7. (l)(m) - Storyboards and surface treatments

Celebration and interpretation of the cultural landscape is integral to the Project vision, design principles and design themes. The Cultural Narrative and Overlay for Tupua Horo Nuku sets out the principles and design response that will guide the cultural expression and create a foundation for the Project in partnership with Taranaki Whānui and Ngāti Toa and key project groups.

The Cultural Narrative and Overlay for the Project will be reflected in all parts of the urban and landscape design process from the overall form of the footprint, through a focus on kaitiakitanga and in the design of the seawall and other structures. This can also be realised though materials used, naming conventions, arrangement of gathering spaces, treatment of the stream crossings, signage, lighting, sculptural elements and artwork along with the consideration of options for future events, recreation and educational activities.

The following imagery illustrates specific Cultural Expression design elements by Len Hetet. These elements complement and form part of the integrated approach to cultural expression as in the vision for the Project and outcomes for all of the components; from the underlying form to specific details.

Patterns:
Te Āti Awa tupua rau, he auripo i te manga iti, he auripo i te manga nui raanei, he kaitiaki ki te whenua.

Te Āti Awa of many phenomenas, where there is a ripple in a small tributary or great river, there is a guardian and protector on the land.

— This speaks to the connection between the tidal movements and the creation of the eastern bays land mass by Tupua Horo Nuku – Ngake.

Mouri Marker:
— The Mouri Marker represents an area of significance to Mana Whenua. It will highlight the Māori and English names of the bays and allow for our cultural narratives of those bays to be told.

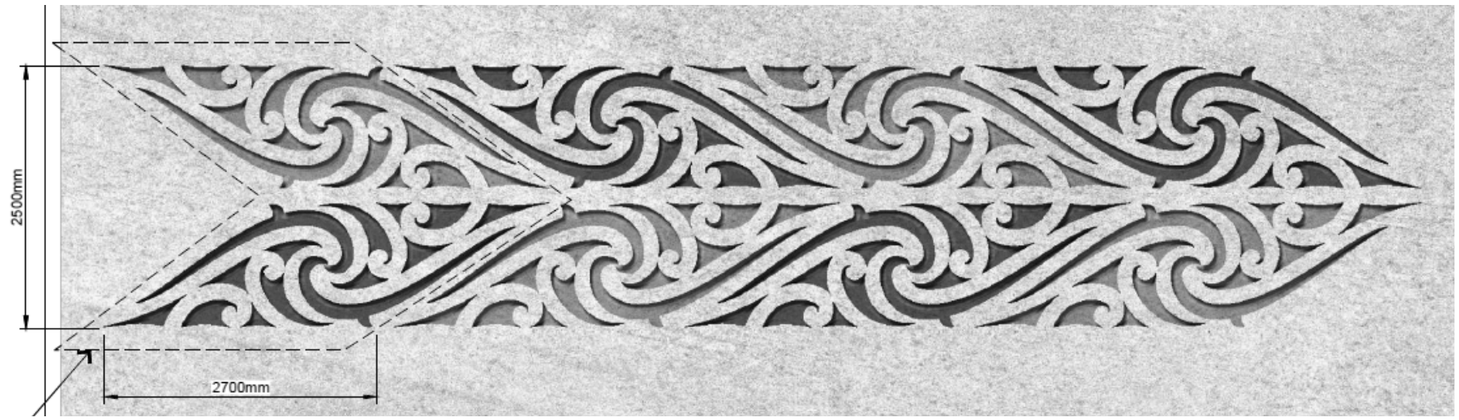


Figure 1.23 *Indicative lay out of cultural pattern to the path.*

Figure 1.24 *Mouri Marker post in timber, indicative sketch (artist supplied).*

Figure 1.25 *Indicative application of cultural pattern to the path.*

Other Matters

LV 7. (o) - Bus Stops & Shelters

As per the conditions bus shelters shall enhance safety and convenience, and minimise risk, for all users of the Shared Pathway and the road. Bus stops/ Shelters requiring replacement will, to the greatest extent practicable, be designed taking into account the following design principles:

(a) A preference that the Shared Path run behind the bus stop/ shelter;
(b) The bus stop / shelter will be raised (separated with a kerb from the traffic lane where possible);
(c) The bus stop / shelter will be designed in accordance with universal accessibility principles (such as, but not limited to, wheelchair friendly ramps and tactile pavers); and
(d) Bus stop / shelter design will be fit for purpose to appropriately protect public transport users from the coastal elements.

The Alliance is proposing to replace the existing bus stop shelter with a standard GWRC shelter. The benefits of replacing this shelter are:

— Create an accessible bus stop for those less mobile.
— Improve safety by having glass shelters that allow better visibility for path users.
— Provide a raised kerb/access point for bus shelters to ensure better safety for those boarding the bus.

A standard bus shelter is preferred by GWRC. These shelters were chosen as the design aligns well with the landscape and urban design principles with the potential for some modifications:

— Incorporate timber slats with a panel that can be painted and/or used as a community noticeboard.
— Painting of the roof fascia in a colour that matches the other urban design elements.
— Apply cultural expression onto glass or other materials.
— Potential to involve local schools in art creations.
— Modification to entrance point to avoid prevailing wind and splashback from passing vehicles when wet.

We cannot use the existing bus shelter in Sorrento Bay when creating accessible bus stops due to the depth of the shelter. Using the existing shelter would encroach on the Shared Path and also on the coastal marine area.

The design outcomes relating to bus shelters are:

— Fit for purpose, providing best possible shelter from wind, rain and seawater ingress during storm events.
— Bus stop location needs to be safe & convenient for users.
— Bus shelters and entrance points onto the bus should be accessible for wheelchairs.
— Bus shelters should be designed so there is enough space for wheelchairs to get into them.
— Design to reflect a distinctly Tupua Horo Nuku aesthetic, fitting in with their surroundings while providing opportunity for unique, place based expression.
— Coastal plantings next to bus stops to soften hardscape through the bay specific plans.

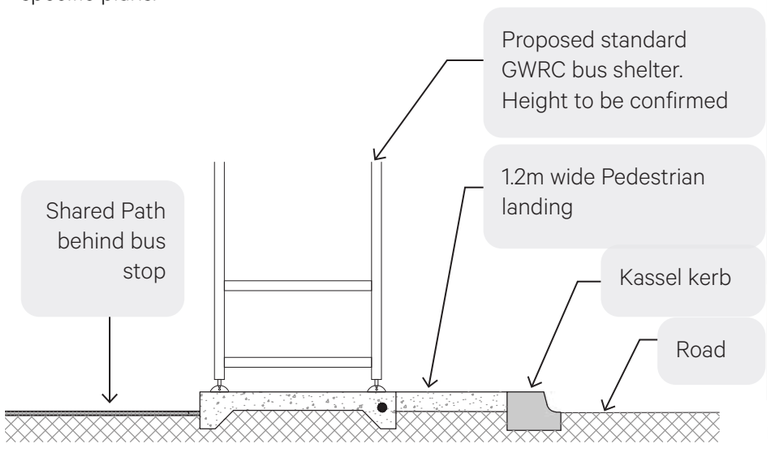


Figure 1.28 *Typical bus stop side elevation showing level changes*

Figure 1.26 *Sorrento Bay Bus Stop*

Figure 1.27 *Example of a standard bus shelter preferred by GWRC.*