

WAIHĪ BEACH AND BOWENTOWN COASTLINE

DUNE REPAIR USING SAND PUSH UPS:

APPLICATION AND ASSESSMENT OF ENVIRONMENTAL EFFECTS



Prepared for Western Bay of Plenty District Council:

Prepared by:

Jim Dahm, Eco Nomos Ltd

April 2025

Contents

1	Introduction.....	4
2	Issues and Purpose	5
2.1	Issues	5
2.2	Purpose and benefits of push-ups.....	8
2.3	Other alternatives.....	12
3	Details of Proposed Activity	13
3.1	Construction	13
3.1.1	Sand source.....	13
3.1.2	Maximum average volumes per unit length.....	13
3.1.3	Longshore extent and total volumes	14
3.2	Planting.....	16
3.3	General details of the work	16
4	Consultation	18
5	Environmental Effects	19
5.1	Coastal processes	19
5.2	Coastal ecology.....	20
5.3	Water quality	21
5.4	Public access and safety	21
5.5	Natural character.....	22
5.6	Cultural values	23
5.7	Noise	23
6	Monitoring.....	23
7	Relevant Policy	24
7.1	Regional plans.....	24

Integrated Resource Management	24
Natural Heritage	24
Water Quality	25
Iwi Resource Management	25
Historic Heritage.	25
Coastal Hazards	25
Recreation	26
Activities in the Coastal Marine Area	26
7.2 District policy	26
References	28

Western Bay of Plenty District Council (WBoPDC) is seeking resource consent to:

- Conduct dune repair/reinstatement along the length of Waihi Beach and Bowentown using sand pushed up from the adjacent beach
- Use of vehicles in the Coastal Marine Area (CMA) and above MHWS connected with the above activity

The proposed dune repair is a form of soft protection and is a Controlled Activity under Rule DD 9 of the Bay of Plenty Regional Coastal Environment Plan.

The resource consents are sought to facilitate dune repair and dune restoration along the entire length of the beach and to enable greater reliance on natural dune protection to avoid the need for additional sea walls (see Section 2 for further details).

The consents are sought to enable dune repair anywhere along the full (approximately 8.8 km) length of the beach – as shown in Figure 1. The activity is likely to be most required in areas where there are public assets (e.g. car parks, accessways and high biodiversity areas) close to the sea. However, on rare occasions, there may be a need to undertake the activity at other locations, so consent is sought for the entire length of the beach.



Figure 1: Area for which the consent for dune repair is sought.

The Council does hold an existing resource consent for the activity over a short length of the beach, designed to protect and restore a dune within the end effects zone of a Council-built seawall. (BoPRC Consent No. 62912). However, erosion following Cyclone Gabrielle indicated that the current consent does not adequately provide for the extent of dune repair required in this area after severe erosion. Private homeowners also hold a resource consent for the activity to protect private land and dwellings over a short length fronting Broadway Road (BoPRC Resource Consent RM21-0666-AP). The resource consent sought by the Council is not intended to replace the landowner's consent as the Council does not propose to take over dune repair to protect private property in this area. However, it does wish to include the area within the scope of the consents

sought as there is also public infrastructure (e.g. roads, parking, accessways) which may require periodic dune repair.

Specific details of the proposed activity and the resource consent sought are provided in Sections 2 and 3.

The activities for which consent is sought have been widely and successfully used in dune repair and dune restoration along the Bay of Plenty and eastern Coromandel coasts for over 20 years with only minor and temporary effects which are generally no longer evident within 2-3 days of completion of the work (see Section 5). This reflects the fact that the activity is simply designed to reinstate natural dune protection quickly and does not involve using any hard structures. The approach also has considerable environmental benefits as it avoids hard protection structures in many situations where they would otherwise be required. Hard structures typically have significant and ongoing adverse effects on the beach's natural and human use values. It can also be challenging to get the beneficiaries of these structures to remove them, even when only approved as temporary measures and consent has lapsed. Accordingly, having an environmentally friendly alternative that avoids the need for hard engineering structures and associated difficulties is a major benefit.

Consent is sought for 33 years, the maximum period that can be granted for activities in the CMA. As discussed in Section 2.2, the need for this environmentally friendly approach and its practicality are likely to remain relevant for at least this period and probably much longer.

2 ISSUES AND PURPOSE

2.1 ISSUES

Waihi Beach and Bowentown are subject to periods of severe storm erosion, which can significantly erode the frontal dune, threaten nearshore private and public assets, and disrupt public access (Figure 2). Erosion can also adversely impact other values, including biodiversity and cultural values and sites within the dunes (e.g. urupa, middens).

Previous studies indicate that, at present, erosion and related issues are primarily associated with dynamic shoreline fluctuations rather than permanent long-term erosion (Eco Nomos, 2003; Tonkin and Taylor, 2015). However, permanent erosion is likely to increase in significance with projected future sea level rise (Tonkin and Taylor, 2015).

Historically, threats to nearshore development have primarily been managed by placing shoreline armouring to protect the beachfront assets—significant engineered structures now front The Loop and parts of Shaw Road (e.g. Figure 3). However, while providing effective property protection, these structures can severely affect the beach's natural and human use values (Figure 3). They can also aggravate erosion on adjacent unprotected properties (e.g. see bottom photo in Figure 2). These adverse effects are likely to become increasingly severe in the long term, with the projected

rise of sea levels and the accompanying aggravation of erosion. These deficiencies are significantly at odds with national and regional policy and, increasingly, such structures are no longer being consented to as long-term solutions to erosion hazards unless infrastructure of regional or national importance is at risk. While short-term consents have sometimes also been issued for sea walls as interim property protection measures, they are very costly. These interim measures have also generally been unable to avoid significant adverse environmental effects. Experience elsewhere also indicates that it is challenging to get an agreement to remove such structures once installed, even if explicitly constructed and consented to as only interim structures.

Over the last few decades, considerable effort has been devoted to developing and implementing alternative solutions that maintain and protect the popular beaches of the Bay of Plenty and eastern Coromandel while providing increased protection for nearshore assets. These measures include:

- Setbacks and associated development controls used to identify existing and potential future hazard areas and ensure development in these areas is appropriately located to avoid, reduce and/or mitigate erosion risk. They also improve future adaptive capacity (e.g. through relocatability requirements).
- Community-based dune restoration (Coastcare programme) to restore and enhance the natural values of dunes, including the natural protection they provide from coastal hazards

However, there are limitations to these measures. The setbacks and associated controls do not provide hazard mitigation for existing at-risk dwellings constructed before these measures were introduced; they only apply to new dwellings and renovations constructed since the measures were adopted. Similarly, the width of the remnant dune buffer between existing properties and the sea is often insufficient in many places to allow complete reliance on natural dune protection without human intervention.

These limitations mean that after major erosion events, high-value nearshore assets (private and public) are often at high risk from any additional erosion without appropriate intervention (Figure 2), frequently giving rise to an urgent need to secure these assets.

Other measures may also play a role in any medium-long-term adaptive management strategy at this site (e.g. managed retreat, buy-outs, beach nourishment). However, these measures are generally complicated and expensive (typically \$millions) options.

In the interim, dune reinstatement by push-ups provides the most cost-effective and appropriate mitigation. The objective of this consent is to enable prompt and appropriate use of push-ups when required.



Figure 2: Examples of dune erosion issues at Waihi Beach (all above sites were later successfully managed using dune repair).



Figure 3: Seawall on Waihi Beach showing the absence of beach at high tide

2.2 PURPOSE AND BENEFITS OF PUSH-UPS

The essential purpose of push-ups is to facilitate more rapid repair of a frontal dune following a period of wave and/or wind erosion. i.e. To rapidly reinstate natural dune protection and associated erosion mitigation benefits.

On coasts like this, where the major erosion component is associated with dynamic shoreline fluctuations (i.e. rather than a permanent trend for retreat), natural dune repair processes will also repair dunes following erosion (see Figure 4). Natural dune repair processes involve a windblown transfer of sand from the beach to the dune, with this sand trapped by the key native dune-building species (i.e. spinifex and pingao), gradually repairing the eroded dune (Figure 4). However, these natural repair processes are very slow and can take some years to fully reinstate severely eroded dunes, even without further storms and erosion. In addition, during decadal periods of erosion, further storm erosion can occur before natural dune recovery has occurred. In the interim, nearshore assets remain exposed to a higher risk from erosion (or, in some situations, coastal inundation) due to the depleted dune protection. Accordingly, it is not always possible to wait for natural dune repair.

The proposed activity involves pushing up sand from the beach to restore natural dune dimensions, mimicking natural dune repair in that it involves the transfer of sand from the beach to the dune. However, by undertaking the dune repair with machinery, the dune repair can be completed very quickly, as soon as natural beach conditions allow – which is often within only a few weeks of an erosion event. This activity enables the natural protection the dune provides to be quickly reinstated following erosion, avoiding the need for other more environmentally damaging interim measures such as sea walls. It is also much cheaper than sea walls, typically 1-2% of the cost.

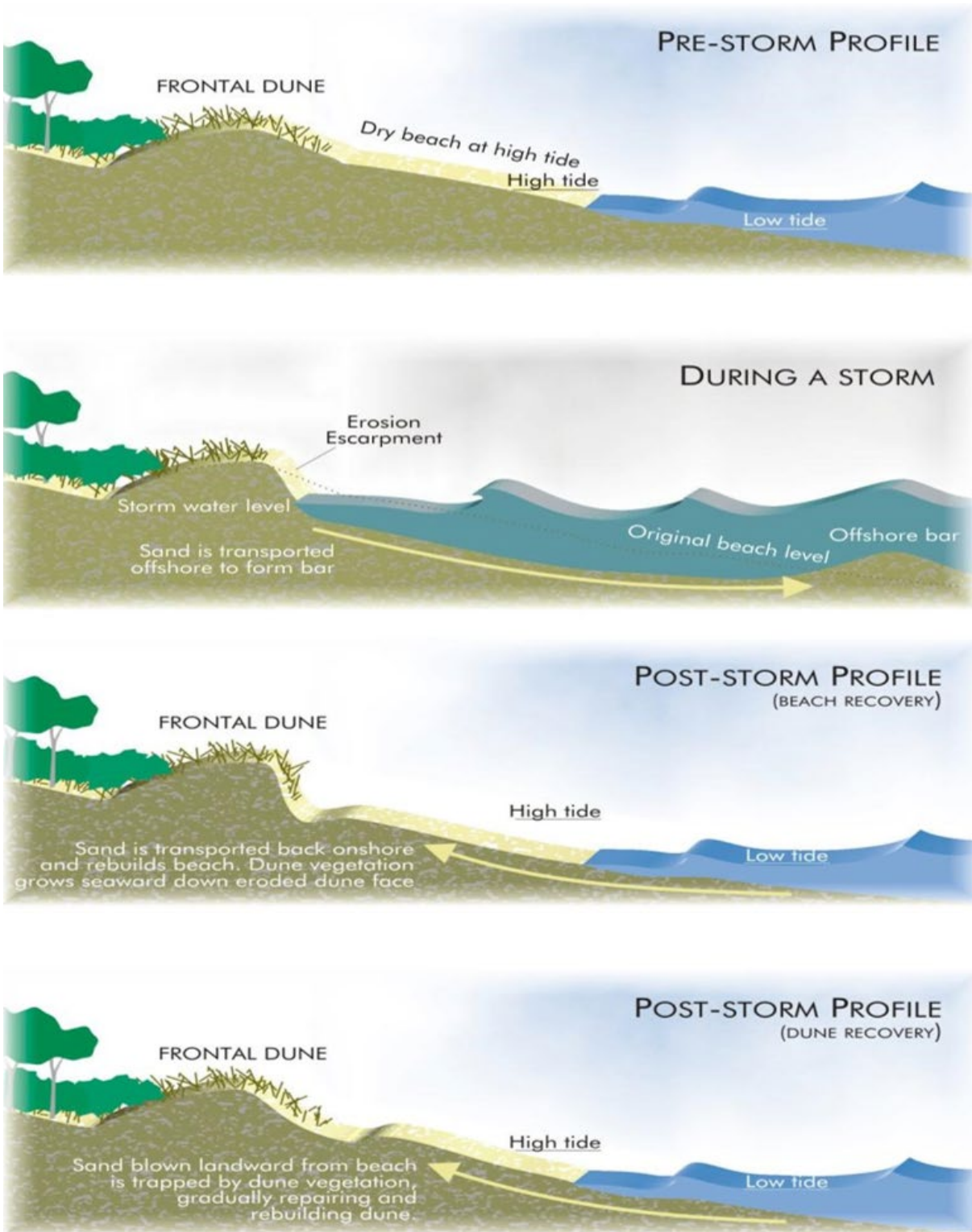


Figure 4: Sketch providing a simplified illustration of natural beach and dune erosion and recovery

As the reinstated dune serves as a sacrificial erosion buffer, it must be reinstated from time to time. The frequency of reinstatement varies from site to site and with other factors, such as climatic periods. For example, the southern half of Whangapoua Beach in the eastern Coromandel was eroded severely on occasions in the 1970s, experienced no significant (i.e. asset threatening) dune erosion in the period from 1979 to 2007, but has required at least three major and 2-3 lesser and more localised dune repair projects in the period from 2008-2024. Similarly, parts of Pukehina Beach have required dune significant dune repair on at least four occasions since 2003 (particularly since 2018). Other sites, like the southern end of Tairua Ocean Beach, have only required one major dune repair exercise over the last 25 years.

Over the last 20 years, push-ups have successfully managed severe erosion problems on both the Bay of Plenty and eastern Coromandel coasts, including work at Waihi Beach (Figure 2 and Figure 5). In many (probably most) of these cases, interim hard engineering works, or other costly solutions (e.g. landward relocation of houses) would otherwise likely have been required.

It is envisaged the method will be used for a variety of hazard mitigation purposes at Waihi Beach, including:

- Protection of nearshore public assets (e.g. car parks) and cultural sites
- Reinstatement of beach accessways following dune erosion
- Assisting with Coastcare and other dune restoration
- Reinstatement of dunes damaged by wind erosion and/or human damage – such as the recent dune repair at Albacore Avenue
- Protect high-value biodiversity and cultural sites in dunes exposed to wave or wind erosion.

While not the primary reason for the consent, there may also be some cases where the work is used to reinstate erosion dunes to protect private property; where Council deems this appropriate and in accordance with their Coastal Erosion Responses Policy or existing resource consent requirements (e.g. to manage end effects from rock walls managed by Council) and where appropriate funding agreements are reached with relevant landowners.

Beach conditions will limit the scope of dune repair practicable at any location and time at the time of the works. If a wide high tide dry beach has recovered by the time of the works, the dune can often be reinstated close to maximum measured natural dune dimensions. With lesser beach recovery, lesser dune reinstatement is required. The scale of reinstatement is practicable and appropriate for any given situation and requires suitable expert input in the design of works.



Figure 5: Example of dune repair using push-up - Broadway Road, Waihi Beach

As shoreline movements on this coast are dominated by dynamic shoreline fluctuations (i.e. rather than any long-term trends for permanent shoreline advance or retreat), push-ups are likely to remain a valuable hazard mitigation technique for many decades, probably beyond 100 years for areas where the shoreline is backed by undeveloped dunes or existing development is well set back. In developed areas with a limited width of dune buffer between the beach and development, the approach's effectiveness will decrease over time as permanent shoreline retreat becomes increasingly significant with projected future sea level rise. However, with existing sea level rise projections (MfE, 2024) and the additional space provided over time by setbacks and associated controls, push-ups are likely to remain a valuable technique for at least 50-60 years and possibly longer (dependent on factors such as future sea level rise scenarios and accompanying erosion). Accordingly, consent is sought for the maximum consent duration of 35 years prescribed for activities within the coastal marine area (CMA).

2.3 OTHER ALTERNATIVES

Currently, sea walls have tended to be the main alternative used to manage immediate erosion risk to nearshore assets – on both the eastern Coromandel and Bay of Plenty coasts. While there are other potential alternatives (e.g. landward relocation of threatened houses, buy-outs, beach nourishment), these are very difficult and expensive options and presently tend not to be adopted as interim measures where there are viable alternatives. However, landward replacement of existing at-risk dwellings is being affected over time through existing setbacks and associated controls.

On high-value beaches, sea walls have significant adverse environmental effects – including loss of beach width (e.g. elimination of high tide beach) and impacts on both natural and landscape/visual character (e.g. Figure 3) as well as localised aggravation of erosion on adjacent unprotected areas (see bottom photo in Figure 2). With projected future sea-level rise, existing erosion is likely to be considerably aggravated (Tonkin and Taylor, 2015), which will significantly exacerbate the beach loss and other impacts of existing sea walls if they remain. For example, the closure slopes adopted by Tonkin and Taylor (2015) (see Table 1-1 in their Appendix D) suggest that permanent erosion of at least 40-50m (and potentially much more) is likely to occur at Waihi Beach for every 1m of future sea-level rise. With current national guidelines (MfE, 2022 & 2024), the sea-level rise scenarios most frequently used for coastal hazard assessment and planning (i.e. SSP3-7.0M and SSP5-8.5M) both project sea-level rise of at least 1m over the next 100 years.

Accordingly, existing national and regional policies tend to disfavour the use of sea walls strongly. Where consents are granted for sea walls on high-value beaches, they tend to be granted as interim measures only with limited consenting periods, as with the existing sea walls fronting Shaw Road and The Loop.

As interim measures, push-ups have significant advantages over engineered rock seawalls as:

- They avoid the significant ongoing adverse effects associated with sea walls, with any adverse effects of push-ups being both minor and temporary (see Section 5)

- A major push-up to protect any given area typically costs less than 1 the cost of a sea wall to protect the same area.
- Resource consenting difficulties are much less
- The required interim protection can be implemented far more quickly (i.e. usually within a few weeks or months as opposed to several years, if ever, with more challenging to consent options such as sea walls)

In addition, push-ups complement existing risk-reduction measures (e.g., setbacks and associated controls) that often do not provide adequate protection in the short term. The dune repair work essentially buys time for these longer-term measures to have effect, avoiding the need for more complex, environmentally damaging and expensive options.

3 DETAILS OF PROPOSED ACTIVITY

3.1 CONSTRUCTION

3.1.1 SAND SOURCE

Sand for the dune repair will be drawn from the beach directly seaward of and/or adjacent to the repaired dune, pushed up from below high tide to the dune. This ensures that natural processes quickly repair the beach. Based on experience at Waihi Beach (and other Bay of Plenty and eastern Coromandel beaches), the beach area where the sand is drawn from typically fully recovers within 2-3 days.

The sand is drawn from above mid-tide elevations, where no shellfish beds occur. Checks will also be conducted prior to each operation to ensure there are no juvenile shellfish in the sands to be disturbed.

Sand will not be drawn from areas at or near low tide where shellfish beds might occur, even though most shellfish beds at Waihi Beach are below low tide elevations. When beach conditions are suitable for push-ups, adequate sand occurs in areas further landward.

3.1.2 MAXIMUM AVERAGE VOLUMES PER UNIT LENGTH

The scale of dune repair required will vary according to the scale of erosion and beach conditions at the time of the works.

The objective will generally be to reinstate sufficient dune width to ensure an adequate buffer against (at least) 1-2 severe erosion events. Beach profile monitoring data indicates that dune erosion at Waihi can be significant – the top edge of an eroded dune scarp potentially extending up to 15-30m landward from the most accreted dune toe. However, erosion of this scale only tends to occur over a series of erosion events, with lesser erosion during individual storms.

The maximum average volume required to be pushed up to effect the desired dune repair will vary, up to 15-20 m³/m. Most commonly, the average volumes needed are likely to be in the range of 8-

12 m³/m. Accordingly, consent is sought for push-ups with an average maximum volume of 20 m³/m along the length of the works, though on most occasions lesser push-ups are likely to be required.

The only locations where average volumes in excess of 20 m³/m may be required are dune areas adjacent to stream entrances where longshore migration of stream entrances during flood and storm wave conditions can cause significant dune erosion. Currently, the stream entrances on Waihi Beach are reasonably well controlled by geotextile and/or rock protection works, so this risk is regarded as low. Nonetheless, to allow for the potential failure of these works during extreme storms and the need to undertake urgent repair, it is recommended that the consent allow for the 20 m³/m to be exceeded in areas close to stream entrances, subject to appropriate justification, rather than increasing the allowable unit volume to cover these localised (and unlikely) issues. In theory, it could be possible to conduct such works under urgency if ever required, with retrospective consent obtained. However, this would add unnecessary difficulty for work with only minimal and temporary adverse effects, which work may need to be conducted urgently.

The other significant limitation on push-up dune repair is the width of the high tide dry beach available when the works are undertaken. Apart from emergencies (discussed further below), there is no point in dune repair extending beyond the seaward edge of the available high tide beach. Otherwise, the dune will likely erode quite quickly back to more natural positions, even during relatively moderate wave events that would not usually cause dune erosion. Accordingly, the works will generally only be conducted when there is a suitable dry beach width under spring high tide conditions (as observed under low wave conditions). The primary reason for this is cost-effectiveness, as only limited dune repair is possible when there is a limited high tide beach width.

However, while most work is not likely to be undertaken when there is only a limited (say <3-5m) high tide dry beach width, there will be exceptions. For example, if nearshore assets are close to the eroded shoreline, it can sometimes be necessary to do some work to lessen the risk, even if the beach width is inadequate for the full desired dune repair. Similarly, if there is clear evidence that the beach is in recovery mode (e.g., onshore migrating bars are evident on the beach face), In that case, it can sometimes be useful to commence work before the high tide beach itself has recovered (e.g. to avoid peak use periods, dotterel breeding, etc). Such action has been required at some other sites in the past and is a reasonable precaution given the proximity of development to the sea in many areas of Waihi Beach.

The decision on beach width requirements is therefore best made by a specialist practitioner according to the prevailing circumstances. It is neither necessary nor appropriate to place beach width constraints in consent conditions as this can unnecessarily complicate or delay urgent repair work.

3.1.3 LONGSHORE EXTENT AND TOTAL VOLUMES

It is envisaged that the most common use of the approach will be in northern areas where nearshore development (e.g. public assets, private property and dwellings) is located close to the coast (i.e. the area from island View Reserve to the northern end of the beach). However, from time to time, there may also be a need elsewhere for various purposes (e.g. reinstatement of beach accessways, dune restoration, protection of cultural sites and repair of dunes damaged by human activities or by wind and wave erosion). Accordingly, consent is sought for the full length of the Waihi Beach to Bowentown coastline.

The total volume involved in any dune repair exercise will vary, depending on the scope and longshore extent of the required works. This will vary according to factors such as longshore extent of the erosion damage, the purpose of the works and beach conditions at the time of the works. Unfortunately, the maximum longshore extent of works cannot be reasonably predicted.

Accordingly, total volumes are best limited by the maximum average unit rate of 20 m³/m rather than imposing an arbitrary total volume. There is no risk in this approach as the works have only minor and temporary effects (see Section 5), and there is also no point in any party undertaking works that are not required. In addition, the consent requires a short report prepared by a suitable expert for any proposed push-up work over 1000 m³, which includes detailing and outlining the justification for the scale of the proposed works.

The larger push-up volumes (i.e. 15-20 m³/m) will typically only be required over limited lengths (e.g. where erosion is exacerbated by streams, sea walls, rip-heads, or other factors) or after rare and severe erosion or multiple erosion events.

The maximum total volume to be pushed up in any given situation will vary markedly according to the longshore extent and scale of erosion (i.e. the area where action is required) and by the width of high tide beach available (a key limiting factor). Push-ups will not reinstate dunes wider than those that have existed naturally as there is no point in such work – natural processes would simply erode the dune back to positions quite rapidly. Assessment of the maximum appropriate dune reinstatement for any given circumstances is generally a reasonably straight-forward matter for a suitably experienced coastal scientist or engineer.

The sand for the dune repair will generally always be drawn from the beach directly seaward of the area being protected and up to 50m on either side, as this is the most cost-effective approach and minimises machine use on the beach. The only situation in which sand might have to be drawn from further afield would be if shellfish occurred in the sands directly seaward of the site, preventing their use. That has not been required to date in any dune repair work along the Bay of Plenty and eastern Coromandel coasts. Sand from a stream source was used in an early (2003) dune repair exercise in a limited area of Pukehina Beach, but it is not the best practice and is not proposed for any work under this consent on Waihi Beach.

The number of times a push-up may be required in any given year is impossible to reliably predict as this depends totally on natural conditions (e.g. how many storms occur, the scale of the erosion damage, the rate of beach recovery, etc). However, there have been examples in the past when more than one severe storm has occurred in a year (e.g. 3 events in relatively quick succession in 1996/97). Similarly, dune repair may need to be spread over 3-4 repair episodes depending on the beach recovery rate. For example, three separate repair episodes have been required at Pukehina to date since Cyclone Gabrielle, and a fourth over a limited length. This requirement reflected a combination of urgency and slow beach recovery. Accordingly, it is not appropriate to limit the number of dune repair events in any given year as this could seriously impact urgent work, which is particularly not appropriate given the effects of the activity are minor and temporary (see Section 5). In addition, there is no good reason for Council to do more push-up work than is required. A report is also required for all works apart from minor repairs (i.e. all works >1000 m³).

3.2 PLANTING

Native sand trapping vegetation (spinifex and pīngao) is critical to natural dune function, including natural dune building and repair and minimising wind erosion. As such, it is always desirable to ensure a reasonable cover of these species is present to revegetate the reinstated dune.

However, as the push-up dune repair will, most commonly, simply reinstate a narrow sacrificial dune buffer, it is generally not wise to plant the push-up itself, as the plantings will be lost if there is a significant erosion event. It is better instead to have plantings further landward that can grow seaward over the reinstated dune.

In the situation where there is existing spinifex and/or pingao populations landward of the push-up, additional planting may not be required as these populations will send stolons seawards over the reinstated dune – usually providing complete cover of the dune within 1-2 years in the absence of further wave erosion.

In situations where there is no native dune building vegetation (spinifex and pingao) immediately landward of the reinstated dune, it is recommended that:

- i. In cases where public land lies immediately landward, dune restoration be undertaken with Coastcare to restore a suitable width of spinifex immediately landward of the push-up. If there is an inadequate dune width further landward, planting should be done in the most landward areas of the reinstated dune.
- ii. In cases where private land lies immediately landward, the Council has no control other than an advocacy role. In these cases, the Council will advocate for landowners to undertake appropriate planting on their private land as per i.

Where reasonably practicable and appropriate, any existing spinifex stolons hanging down the eroded dune face can be lifted before the push-up rather than buried. The stolons can then be laid on the reinstated dune face, speeding up the re-establishment of a spinifex cover.

It is also important to ensure that the spinifex zone remains free of exotic weeds, particularly exotic perennial grasses (e.g. lawn grasses) and garden plants (e.g. arctotis, gazanias, agapanthus, etc). This exotic vegetation can displace and reduce the effectiveness of the native sand-binding vegetation. While exotic species can help hold sand, they are ineffective at dune building and repair. Little to no additional dune repair will occur in areas without spinifex and pīngao being dominant. And the exotic species are also less effective at trapping windblown sand. Accordingly, the key advantages of the spinifex/pingao zone are lost if this zone is dominated or replaced by exotic species.

3.3 GENERAL DETAILS OF THE WORK

Other than minor dune repair (e.g., works involving <1000 m³), a suitably qualified and experienced coastal scientist or coastal engineer will design the works undertaken. A short report will also be prepared for each of these projects detailing the proposed works, including location, longshore extent, the sand volumes anticipated to be moved, proposed monitoring and how the various consent conditions will be met (including measures to avoid, remedy or mitigate any

adverse effects on indigenous flora, fauna, natural character, historic heritage sites or cultural values).

The work details will be circulated to BoPRC, relevant local iwi, DoC and WBoPDC reserves staff at least 5 working days in advance. When work is to be conducted during the shorebird breeding season, the relevant DoC and local shorebird monitoring staff will be consulted well in advance (at least 10 working days except for any rare emergency works) to identify appropriate limitations and controls on the work to avoid nesting birds or new chicks.

The dune reinstatement work will be undertaken by experienced contractors using an excavator/digger, a tracked bobcat and/or a bulldozer. The exact equipment used will depend on the scale of work required, the beach conditions at the time, and the contractor's availability. If debris needs to be removed from the beach (e.g. rocks or remnants of old structures etc), a tractor and trailer may also need to be used. However, removing such debris from the CMA is already permitted under the RCEP.

Any use of reserve areas for access and/or storage of machinery will be agreed with WBoPDC reserve staff to ensure damage is minimised and decide on any reinstatement required following completion of the works.

Vehicle access to and from the beach will also be agreed with reserve management staff from Western Bay of Plenty District Council. Most vehicle access will likely occur via existing vehicle access points (e.g. Three-Mile Creek, seaward end of Albacore Avenue). The nearest vehicle access will generally be used to minimise the distance machinery has to travel along the foreshore. In accessing the work areas, machinery and vehicles will be driven along the high tide mark, or as close to the high tide mark as possible.

Vehicle movements and that portion of the works within the coastal marine area will be undertaken in the dry (i.e. above sea level at the time of vehicle movement). The disturbance of the foreshore or seabed will be limited to the extent necessary to carry out the activity.

The contractors will be responsible for managing health and safety during any work, but WBoPDC will ensure appropriate practices are agreed upon before the work.

Public access along the beach will be maintained during any works with monitors to ensure public safety.

Any debris (e.g. remains of old seawalls, old fences) within the area of the works will be removed from the foreshore and seabed, and appropriately disposed off-site.

No refuelling activities or fuel storage will be conducted within the coastal marine area, or on the beach above MHWS. All plant, machinery, and equipment associated with the works will be removed from the foreshore and coastal marine area at the completion of the works.

The works will be conducted in a manner that complies with the noise levels set out in NZS 6803: 1999 "Acoustics - Construction Noise".

Unless emergency conditions apply, all work will generally be undertaken during weekdays and not weekends. Tides will be a significant factor in the timing of the works, as they require low tide conditions during the day. The work hours will be restricted to daylight hours, probably 7am to 5pm on most days. No work will be conducted on weekends or public holidays unless:

- An appropriately experienced coastal scientist or coastal engineer determines that urgency applies (e.g. imminent loss of nearshore infrastructure and development); and
- Such variation is agreed with BoPRC. This agreement may need to be arranged within 1-2 days on some rare occasions and possibly within hours in urgent circumstances.

The work will be undertaken in as short a timeframe as reasonably practical, and anticipated timeframes will be provided in the short summary report produced for each project >1000 m³. As a guide, based on past work, it should be reasonably practical to place 800 to 1000 cubic metres per working day (sometimes more). However, this depends on factors such as the nature and condition of the beach at the time of the work, the time of year, weather, wave and tidal conditions, public use and other constraints, and available machinery.

4 CONSULTATION

During the preparation of this application, the draft application was circulated in November 2024 to the following parties for comment:

- Relevant local iwi including Ngāti Ranginui (Destiny Leaf), Ngāti Te Wai (Riki Nelson), Ngāti Pukenga (Buddy Mikaere), Ngāti Te Rangi (Reon Tuanau, Piatarahi Bennett) and Ngāti Tara Tokanui (Dr Amelia Williams)
- Waihi Beach Surf Life-Saving Club (WBSLSC)
- Western Bay of Plenty District Council Reserves staff (WBoPDC)
- Bay of Plenty Regional Council (BoPRC)
- Department of Conservation (DoC)
- Waihi Beach Dot Watch

The only feedback received was from:

- Dr Amelia Williams (Ngāti Tara Tokanui) who noted “No problems with the application” and went on to suggest similar work might be useful at another site they are involved with.
- Ms Belinda Westerman from BoPRC who queried whether the Broadway Group consent (i.e. the consent held by several beachfront owners at Broadway Road) could also be incorporated or that group surrender their consent when this one is granted. In regard to this matter, it is noted that the Council do not propose to take over the private benefit push-up work undertaken by the Broadway Group but may from time to time have to do public benefit work in the area. Accordingly, it is considered best to not interfere with the existing Broadway Group consent.

- Department of Conservation who advised the email and application had been referred to the Tauranga Community Ranger Team for consideration. However, no additional feedback was received.

The lack of other feedback likely reflects the level of comfort the parties have with the proposed consent – as all of these parties are familiar with the work and most have previously been consulted in regard to earlier push-up dune repair work on Waihi Beach (e.g. the work by WBoPDC fronting Shaw Road and The Loop; dune repair and the earlier resource consent application by beachfront owners at Broadway Road). Some of the parties (e.g. DoC, BoPRC, and WBoPDC and Ngati Pukenga) have also been consulted several times previously in regard to push-up work at Pukehina Beach.

5 ENVIRONMENTAL EFFECTS

5.1 COASTAL PROCESSES

The proposed work will have no significant adverse effects on coastal processes as:

- It imitates the natural dune-building process
- The volumes involved are insignificant relative to the astronomical volumes within the active beach system and the active sediment transport processes that prevail.

The movement of sand from the beach to the natural frontal dune involves no net loss of sand and shell from the active beach system – simply an exchange that also occurs with natural dune building processes.

Observations and monitoring associated with past works at Shaw Road, Pukehina Beach, and elsewhere (e.g. various beaches on the eastern Coromandel over the last 20 years) indicate that the beach rapidly recovers (typically within 2-3 days) following works and there is no evidence of any significant short- or long-term adverse effect on beach levels or coastal processes (e.g. Eco Nomos, 2011).

For example, monitoring of large-scale push-up work at Whangapoua in 2008 demonstrated that sediment transport under very low waves (<0.3 m) largely restored the beach to preceding natural conditions within 1-2 days and no visible effects were evident beyond 1-2 weeks (Eco Nomos, 2011). Similar recovery rates have been observed at all sites where the work has been conducted over the past 20 years, including large-scale projects.

The primary reason is that the sand volumes removed for the dune repair are insignificant relative to the rates of cross-shore and alongshore sediment transport that occur along the beach. Natural processes rapidly correct any localised reduction in beach levels due to the large amounts of sand sloshing alongshore and cross-shore under even the mildest of wave conditions.

The volumes of sand involved in the push-ups are also inconsequential in relation to the volumes of sand stored in the beach in this large beach system, so that wider effects are less than minor and not measurable. By way of illustration, the full beach system extends from Waihi to Bowentown and about 300-350m offshore (the seaward edge of the active beach system on this coast, closure depth as it is technically called, is typically about -5m below mean sea-level). The volumes in this beach system are vast; even just the top 10 cm of this active beach system contains about 300,000 cubic metres of sand, several times the volume of even the largest push-up likely.

The volume and extent of disturbance (typically limited to widths of 20-40m and depths of <1m) are extremely minor compared to the natural fluctuations in beach elevations which occur at the site, as evidenced in BoPRC beach profile monitoring data. In the nearshore areas in which the work will be conducted, beach levels can naturally fluctuate by up to 2-3m.

In addition, the sand volumes transferred to the dune mimic natural transfers that occur during natural dune repair and do not involve any net sediment loss for the beach system. The beach and the frontal dune are all part of the active beach system. Sand naturally exchanges between these areas on all natural beaches during periods of dune erosion and subsequent dune recovery. The aim of push-ups is simply to reinstate the eroded dune far more quickly than would otherwise occur, thereby enhancing the natural dune protection and avoiding the need for more expensive and more environmentally damaging alternatives such as sea walls.

The minimal impacts of the technique are reflected in the fact that it is widely used internationally and recognised as an environmentally soft approach with little to no adverse effects - provided shellfish or other fauna habitats are not directly affected and the work is properly designed and executed.

The push-ups are also not removing sand from the active beach system (i.e. it is not sand mining); it is simply a sand transfer to speed up the natural repair of the frontal dune (which is part of the active beach).

5.2 COASTAL ECOLOGY

Disturbance of the foreshore can potentially impact local fauna through habitat disturbance. The main potential issues at Waihi Beach relate to shellfish, shorebird (e.g. New Zealand dotterel) nesting, and to a lesser degree native lizards and katipō spiders in the existing dune.

Where practicable, works will be avoided from 15 December to 29 February each year, being peak periods for bird nesting and juvenile shellfish nursery and migration.

However, as severe erosion at this site can occur within the tropical cyclone season (i.e. November-April), there is potential for work to be required during the shorebird nesting season. On such occasions, the work will involve consultation with the relevant DoC staff and the local shorebird volunteers who work with DoC to ensure that work is appropriately managed to avoid any shorebird nests and young chicks.

Inspections of Waihi Beach and advice from locals indicate there are no shellfish beds within the upper beach face area disturbed by sand push-ups. This is to be expected given the frequent large scale bed level fluctuations that occur in this area and the lengthy period of exposure between

tides. Shellfish gathering areas at Waihi all occur at much lower elevations (i.e. near and below low tide) than the beach areas that will be disturbed. These lower beach areas where shellfish occur will not be affected.

However, during the design of any works, a field inspection will be undertaken by the coastal specialist along the length of the proposed work to ensure there are no juvenile shellfish nurseries (e.g. tuatua spat in tens of thousands per square metre) within the beach area that will be disturbed. Inspection will also be repeated prior to the start of the works. This inspection does not require a specialist ecologist as the juvenile shellfish are readily identifiable if present. It is unlikely that juvenile shellfish will occur in the area to be disturbed. However, if present they will be avoided.

5.3 WATER QUALITY

All the proposed sand push-up work at Waihi involves clean beach sands with no visible mud content, and the work will be conducted in the dry (i.e., when the beach face sediments are exposed and above water levels). Accordingly, beach scraping will not have any impact or change in water quality.

There is little potential for vehicle contaminants to discharge into the CMA during the proposed works. To avoid such impacts, machinery or equipment will be refuelled on grassed areas well outside of the CMA and foreshore.

5.4 PUBLIC ACCESS AND SAFETY

To ensure public safety and maintain public access, signs will be placed at the landward end of all public beach accessways within the works area and up to 200m in either direction before commencement of the works advising:

- The works being undertaken and their expected duration
- Name of the main site contractor
- Safety advice
- A contact telephone number for any public queries or concerns relating to the works

Public access will be possible along the beach throughout the works, but care will be required when walking or driving past the machines while they are working on the beach. Monitors will be provided who will be responsible for managing safe public access while the machines are working, and to ensure that the public stay a safe distance from the working machinery.

The push-up will repair the dune at all public accessways within the area of the works.

The work will generally positively affect public access and use as repair of the steep erosion scarps will facilitate beach access from public beach accessways and private properties. At Waihi Beach, there are beach accessways at various intervals. Past erosion events have sometimes compromised these accessways, closing them temporarily. The consent sought will enable rapid repair of these accessways in the future. Repairing high dune erosion scarps also minimises any danger to children playing in such areas.

On most occasions, work will also be designed and conducted to ensure that at least 3 m width of high tide beach is maintained after the placement. This will maintain public access along the beach at higher tide stages. The only occasions when this will not be practical are when emergency works must be conducted before a high-tide beach has adequately recovered. Experience with the latter situation at Whangapoua Beach in 2014 indicated that work under such conditions has no adverse effects on public access to and along the beach. This is because these situations only arise when the beach and dune are severely eroded, and any localised push-up has no significant additional adverse effect on access.

The timing of the works will be designed to avoid public holidays and peak use periods whenever practical. In rare situations, weekends may need to be worked outside of peak use or public holiday periods to facilitate more rapid completion of the works but will involve monitors to ensure public safety and minimal disruption of public access and beach use. For example, an emergency that requires urgent action. However, works will only take place in such periods if:

- An appropriately experienced coastal scientist or coastal engineer determines that urgency applies (e.g. imminent loss of nearshore infrastructure and development); and
- Such variation is agreed with BoPRC. This agreement may need to be arranged within 1-2 days on some rare occasions and possibly within hours in urgent circumstances. WBoPDC will consult with BoPRC as soon as any such need arises.

In over 20 years' experience with these works along the eastern Coromandel and (more recently) Bay of Plenty coasts, there have been no significant concerns or conflicts between sand push-ups and public beach use.

Overall, the work will generally positively impact access to and from the beach, and any adverse effects on access along the beach (above or below MHWS) will be less than minor and temporary.

5.5 NATURAL CHARACTER

The beach scraping operations will have only minor and temporary adverse effects on natural character and habitat – being limited to the disturbance of the foreshore and beach (above and below MHWS) involved in the movement and placement of sand by machinery.

The effects of the sand removal on coastal processes and beach morphology will only be minor and temporary – as discussed above. In the medium to longer term, the dune restoration work effected will enhance both natural character and landscape amenity values.

In addition, a key purpose of the work is to help avoid the need for hard engineering structures, thereby helping maintain and enhance natural character and both landscape and recreational amenity values above and below MHWS.

Overall, the proposed beach scraping is part of the work intended and required to protect and restore the natural character of the relevant beaches and dunes. Any adverse effects on natural character will be less than minor.

5.6 CULTURAL VALUES

The dune repair work will not require significant excavation of the dune, as the proposed works only involve pushing sand up from the beach to repair and reinstate badly eroded dunes. As such, the proposed work will not physically disturb any sites within the dunes. The consent will also enable push-ups to be undertaken to protect cultural sites exposed or damaged by wave or wind erosion.

Similarly, the beach areas from which sand is taken for dune repair are regularly disturbed by erosion to much greater depths than will occur during the push-ups. Accordingly, no cultural sites buried will be disturbed.

Very limited and shallow disturbance of the dune might occur where Coastcare dune restoration is integrated with the dune repair. However, such works are outside the scope of this resource consent application. Where Coastcare related dune excavation is conducted it will only be for the purposes of restoring appropriate dune vegetation (e.g. clearing existing exotic vegetation and any fill) and will only involve shallow excavation (i.e. as required to remove the vegetation and any historic fill or other human-placed debris).

It is also proposed that relevant local iwi be advised at least 10 working days before all future works undertaken under the consent sought. The only exception will be where urgent work must be undertaken to protect public or private assets. In such cases, local iwi will be informed as soon as practicable (and within 24 hours) of the Council being aware of this need.

5.7 NOISE

There is some machinery noise associated with the sand push-ups and dune repair. However, experience indicates that noise levels are not excessive and tend to be significantly mitigated by natural background noise (e.g. wave breaking, winds). Generally, the noise is only evident close to the machines.

However, to be precautionary and ensure noise from the activity does not cause a significant adverse environmental effect, it is recommended that a condition be included to ensure compliance with New Zealand noise standards for such works in the CMA.

6 MONITORING

As outlined above, the urgent works for which consent is sought are minor and any effects are temporary and will not be evident within 1-2 days.

Nonetheless, for all dune repair projects involving push-ups >1000 m³, photographic monitoring from fixed points will occur before and after the works, and again within 4 weeks of completion.

The photographic monitoring at each site will include:

- Views along the beach in both direction, showing beach condition before and after the works

- Views along the top of the dune in both directions, showing dune conditions before and after the works

The monitoring sites will be no further than 200m apart within the work area and will always include sites at both the eastern and western ends of the work.

The photographic monitoring will be forwarded to BoPRC once completed, with a short report including associated comments. The report will also note any issues that arose and the extent to which the works proceeded as anticipated in the short report provided before the works.

On significant projects involving either push-up volumes over 10,000 m³ or continuous dune repair over a shoreline length over 750 m, monitoring will also include representative cross-sections surveyed before the works and within a month of completion of the works.

These representative cross-sections will be located towards each end of the works (i.e. adjacent undisturbed areas) and a central location, with the sites reasonably evenly spaced over the length of the works.

The above-noted summary monitoring report will include this data and associated reporting.

7 RELEVANT POLICY

7.1 REGIONAL PLANS

The proposed activity is a Controlled Activity under the RECEP and has only minor and temporary effects, so a full planning analysis is not required. Moreover, the activity is very consistent with relevant objectives and policies of the Regional Coastal Environment Plan – the relevant regional plan for the proposed activity (located within the CMA). A brief overview of relevant objectives and policies is provided below.

INTEGRATED RESOURCE MANAGEMENT

The proposed activity is consistent with relevant objectives and policies concerning integrated management as it has a functional need to be located in the CMA and is appropriate in this location.

NATURAL HERITAGE

The proposed activity is consistent with and supports the relevant objectives (e.g. Objectives 2 and 4) and policies related to natural heritage.

Using a natural dune to buffer coastal hazards is consistent with Objective 3 as it safeguards the integrity, form, functioning and resilience of the coastal environment – as opposed to alternative structural interventions such as sea walls.

Using a natural dune to mitigate erosion rather than structural responses is also consistent with Objective 4 – as it prevents the further loss of the quality and extent of rare and threatened habitats in the coastal environment, including sand dunes.

WATER QUALITY

No objectives and policies of direct relevance to the present application. However, as noted above, the application has no adverse effects on water quality.

IWI RESOURCE MANAGEMENT

The application is only broadly related to the objectives and policies of this section. However, local iwi have a number of important sites in the local dunes and the resource consent will enable rapid dune repair to be undertaken by relevant parties if ever required.

HISTORIC HERITAGE.

No direct relevance to the single objective (19) in this section. However, if ever required, the activity could be used to help mitigate any erosion threat to cultural sites within the area of the proposed activity.

COASTAL HAZARDS

The proposed activity involves using a natural dune buffer to mitigate erosion and is entirely consistent with the various objectives and policies of this section of the RCEP. For example:

Objective 20: Coastal communities are aware of risks from natural hazards, and mitigation actions are in place to enhance the resilience of existing and future communities.

While only one part of ensuring resilience of the existing community, the proposed activity complements existing setbacks and development controls (see Section 2). The approach used to mitigate erosion in this area is also consistent with enhancing the resilience of existing and future communities since it is based on working with natural processes and thereby maintains the beach's natural and human use values – important to the local and beach user communities.

Objective 21: Development and activities in the coastal environment are managed to take account of the dynamic nature of coastal processes.

The proposed activity involves working with nature and is based on imitating the natural dynamic processes operating on the beach in this area, allowing for periodic dynamic erosion while mitigating the adverse effects of such erosion on adjacent properties by imitating natural dune repair processes.

Objective 22: Development is managed to recognise the future effects of climate change and maintain or enhance the natural biological and physical processes in the coastal environment.

The proposed activity complements existing setbacks and development controls (which promote gradual retreat to avoid and mitigate risk). It will ensure that the natural physical processes that occur can be maintained.

Objective 23: *Recognise and provide for the protection and enhancement of natural defences to coastal hazards*

The activity is particularly consistent with this objective – based entirely on using natural defences.

The proposed activity is also consistent with relevant policies, including Policies CH 1 and CH 6 (particularly).

RECREATION

The proposed activity is consistent with the single broad objective of this section of the RCEP (**Objective 24**) as it maintains the natural processes and morphology of the beach (central to the maintenance of public access and recreation). The activity will also be conducted to ensure public access to and along the coast is maintained even during periods when works are conducted – as discussed earlier.

ACTIVITIES IN THE COASTAL MARINE AREA

The proposed activity has only peripheral relevance to this section of the RCEP but is consistent with the objectives and policies that have some relevance, namely Objectives 26, 27, and 30 and associated policies.

- **Objective 26** – the sediment resources and the available space are used efficiently (and only briefly) to mitigate erosion while also maintaining public access
- **Objectives 27 and 30** – the activity has a functional need to be located within the CMA and is appropriate in this location as it provides for the mitigation of erosion hazards to adjacent beachfront properties while avoiding the adverse effects that would be associated with other alternatives used elsewhere on Waihi Beach to manage similar issues (i.e. sea walls).

7.2 DISTRICT POLICY

The WBoPDC has a Coastal Erosion Responses Policy (CERP), which outlines the Council's general approach to erosion mitigation. This Policy:

- Provides a framework for consistent decision-making by Council where Council-owned coastal land is affected by coastal erosion
- Enables Council to respond to coastal erosion of Council-owned coastal land in a way that:
 - (a) gives effect to the New Zealand Coastal Policy Statement.
 - (b) gives effect to the Bay of Plenty Regional Policy Statement.

- (c) takes account of the Bay of Plenty Regional Coastal Environment Plan; and
- (d) is affordable for the affected community both now and into the future.

The proposed activity for which this consent is sought is strongly consistent with this policy. For example, the general approach to erosion mitigation (outlined in Section 4 of the CERP) includes promoting soft engineering options (such as the activity proposed in this consent) over hard engineering solutions.

The proposed activity is also consistent with the criteria in the CERP for assessing coastal erosion responses (section 5 of the CERP) where coastal erosion is likely to affect a strategic asset. The criteria note that any decision by the Council to respond will only be made after consideration of the various criteria in section 5.3 of the policy, which include a wide range of environmental considerations (e.g. Sections 5.3b, c, d, e, i, and k). Where the proposed dune repair activity for which consent is sought is practicable and effective, it will comfortably meet these various criteria. Accordingly, it will enable the Council to better protect nearshore assets when appropriate or required.

Regarding council obligations (section 3.2 of the CERP), the policy notes that in most cases Council is not under any legal obligation to protect its own land or private property from erosion. Nor by providing limited protection to some private properties in the past, is the Council obliged to continue this approach or provide compensation if it changes its approach to erosion. If a policy change is introduced for a good reason, there is no case for compensation. Policy changes also frequently reflect changes in Central Government's and Regional Council's approaches to erosion or the emergence of new research.

Any policy change is likely to particularly affect hard engineering structures, which are costly to construct, have a finite lifespan, require ongoing maintenance, often have significant adverse environmental effects that will be further exacerbated by projected future sea level rise, are strongly discouraged by existing national, regional and local policy (including the NZCPS), and which will eventually need to be replaced with other more suitable approaches. The proposed activity will often provide an appropriate alternative for hard engineering structures, buying time for the transition to other (often more difficult and complex) longer-term options.

However, each situation will be assessed on its merits and the Council's general approach to erosion mitigation is set out in this Policy. There are some areas such as the existing rock revetment wall at Waihi Beach that have their own unique set of legal and consenting circumstances that will be relevant in determining the Council's response. Waihi Beach rock revetment wall is subject to a resource consent condition requiring Council to undertake comprehensive investigations to determine the best practicable option for the long-term management of the coastal hazard risk at Waihi Beach.

REFERENCES

Eco Nomos, 2003: Waihi and Pukehina Beaches: Assessment of Storm Cut Dune Erosion. Report prepared for Environment Bay of Plenty by Eco Nomos Ltd, October 2003.

Eco Nomos, 2011: Whangapoua Beach Scraping and Dune Repair 2008: Monitoring Report. Report prepared for Whangapoua Beach Ratepayers Association by Eco Nomos Ltd, December 2011.

Ministry for the Environment, 2022: Interim guidance on the use of new sea-level rise projections. Published in August 2022 by the Ministry for the Environment. Publication Number ME 1667.

Ministry for the Environment. 2024. Coastal hazards and climate change guidance. Wellington: Ministry for the Environment.

Tonkin & Taylor (2015) Coastal Protection Areas Re-assessment. Stage Two. Technical Report prepared for Western Bay of Plenty District Council, April 2015.