ORC NOTIFICATION RECOMMENDATION REPORT

ID Ref: A1333786
Application No: RM19.441
Prepared for: Staff Consents Panel
Prepared by: Hilary Lennox
Date: 04/05/2020

Subject: **Application RM19.441 by Port Otago Ltd for various coastal permits for the purpose of beach rehabilitation at Te Rauone Beach, Dunedin**

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1. Purpose

To report and make recommendations under sections 95A-G of the Resource Management Act 1991 (the Act) on the notification decision for the above application.

2. Background Information

Applicant: Port Otago Ltd

Applicant's Agent: GHD Group

Site address or location: Te Rauone Beach, 935 Harington Point, Dunedin

Legal description(s) of the site: Lot 1 DP6468, Lot 2 DP375006, Lot 2 DP18598

Record of title number and owner: Crown Land and Dunedin City Council

Map reference(s): Northern Extent NZTM2000 1423283 4926531
Southern Extent NZTM2000 1422750 4925877

Consent(s) sought:

RM19.441.01 Coastal Permit to occupy of the Common Marine and Coastal Area with three rock groyne structures and appurtenant structures (20 year term);

RM19.441.02 Coastal Permit to disturb the foreshore and seabed for the purpose of groyne construction and on-going beach renourishment (20 year term);

RM19.441.03 Coastal Permit to deposit sand into the CMA for beach renourishment purposes (20 year term);

RM19.441.04 Coastal Permit to discharge water and sand into the CMA for rock groyne and beach renourishment purposes (20 year term);

RM19.441.05 Coastal Permit to erect three rock groyne structures and appurtenant structures in the CMA (2 year term).

Purpose: Beach rehabilitation

Current consents: None

Term sought: 20 years for the occupation and renourishment consents, shorter for the construction consent.

The following documents, submitted by the applicant, have been considered for the purpose of this report:

- Te Rauone Beach – Rock Groynes and Sand Renourishment Resource Consent Application, GHD, December 2019
- Te Rauone Beach – Rock Groynes and Sand Renourishment Resource Consent Application, GHD (revised), April 2020

- Te Rauone Beach Management Scheme: Detailed Design Report, Beca Ltd, November 2019 (Appendix B to AEE)
- Ecological Impact Assessment for Te Rauone Beach Management Scheme, Ryder Environmental Ltd, November 2019 (Appendix E to AEE)
- Te Rauone Beach Management Scheme - Assessment of Effect on Coastal Processes, Beca Ltd, November 2019 (Appendix F to AEE)
- Section 92 response, GHD, April 2020

Key information from these documents has been abstracted and paraphrased below.

3. Description of Activity

3.1 Purpose

The applicant is seeking to construct three rock groynes and deposit sand to rehabilitate Te Rauone Beach, which has been subject to significant erosion over the past century. The northern end of the beach is retreating landward and the southern end of the beach has built seaward. This seems to be associated with changes to the harbour entrance in the 19th century and resulting changes in sand supply and wave climate, with the rate of retreat at the northern end of the beach increasing over the past 5 years due to a number of trees, which previously helped to hold the sand in place, being lost to the tide.

This proposal is a solution that has been developed over a 10+ year period with involvement from the Te Rauone Beach Coast Care Committee (TRBCCC) as well as professional engineering advice from Beca, Dr Martin Single and the applicant. TRBCCC is a community group formed from residents living along the coast who were concerned by the loss of the beach and amenity. The aim of the committee is to represent the community in a unified manner, to facilitate project and fund-raising requirements and to ensure the completion of the Te Rauone Beach rehabilitation project. Their vision statement includes:

> *"To re-instate a safe and accessible beach amenity that can be utilised and enjoyed by all members of our diverse community"*

The applicant has been working closely with TRBCCC to realise the project since 2008. TRBCCC have been active in holding community meetings which have been inclusive and have involved residents of Te Rauone Beach, iwi representatives, the Mayor of Dunedin, elected officials, the wider public, Otago Community Trust, Department of Conservation and the Otago Regional Council.

In 2016, a key objective to improve the amenity of the beach was developed:

"Provide a beach amenity with a high tide beach of at least 5m"

The purpose of the groynes is to maintain the sand imported as part of the beach renourishment and protect the beach from further ongoing coastal erosion. The applicant has made a joint application to both ORC and DCC for various consents associated with the proposal. The stretch of beach affected will be no more than 270 - 300 m in length.

Concurrently, DCC are intending to upgrade the Te Rauone Beach Reserve, which is located landward of the proposed works. The reserve is likely to include carparks and accessways, playground and picnic areas, boardwalks, maintenance vehicle track, dune building and planting. However, it must be notd that the reserve upgrade does not form part of this application.

3.2 Design

The groynes will extend 70 – 80 m from the existing shoreline and have a base of around 17.5 m wide, widening to 23.5 m at the head of each groyne. The top of each groyne will be

4 m wide, widening to 6 m at the head of each groyne. The batter slope of each groyne will be 1.75 m to 1 m, altering to 2.5 m to 1 m at the head of each groyne.

The groyne crest level at the landward end will be 0.5 m above the renourished beach profile to provide containment of the imported material. The crest level at the seaward end of the groynes will be set at mean sea level (MSL) to reduce the visual impact of the groynes.

The landward 45 - 50 m of the groyne structures will include a core of smaller rock with a Dn50 of approximately 0.2m. The rock is sized as an underlayer, so that it does not migrate through the armour layer. The seaward section of the rock structures will comprise armour rock without the underlayer, to aid constructability and reduce costs.

A heavy duty geotextile such as BIDIM A64 will be placed below and through the groynes to reduce migration of sand through them (either from the renourished beach or from the underlying native sand).

The seaward section of the southern groyne will comprise armour rock, with geotextile placed below the groyne only. This is to allow movement of sand through the structure to feed the southern beach and assist in mitigating downcoast effects.

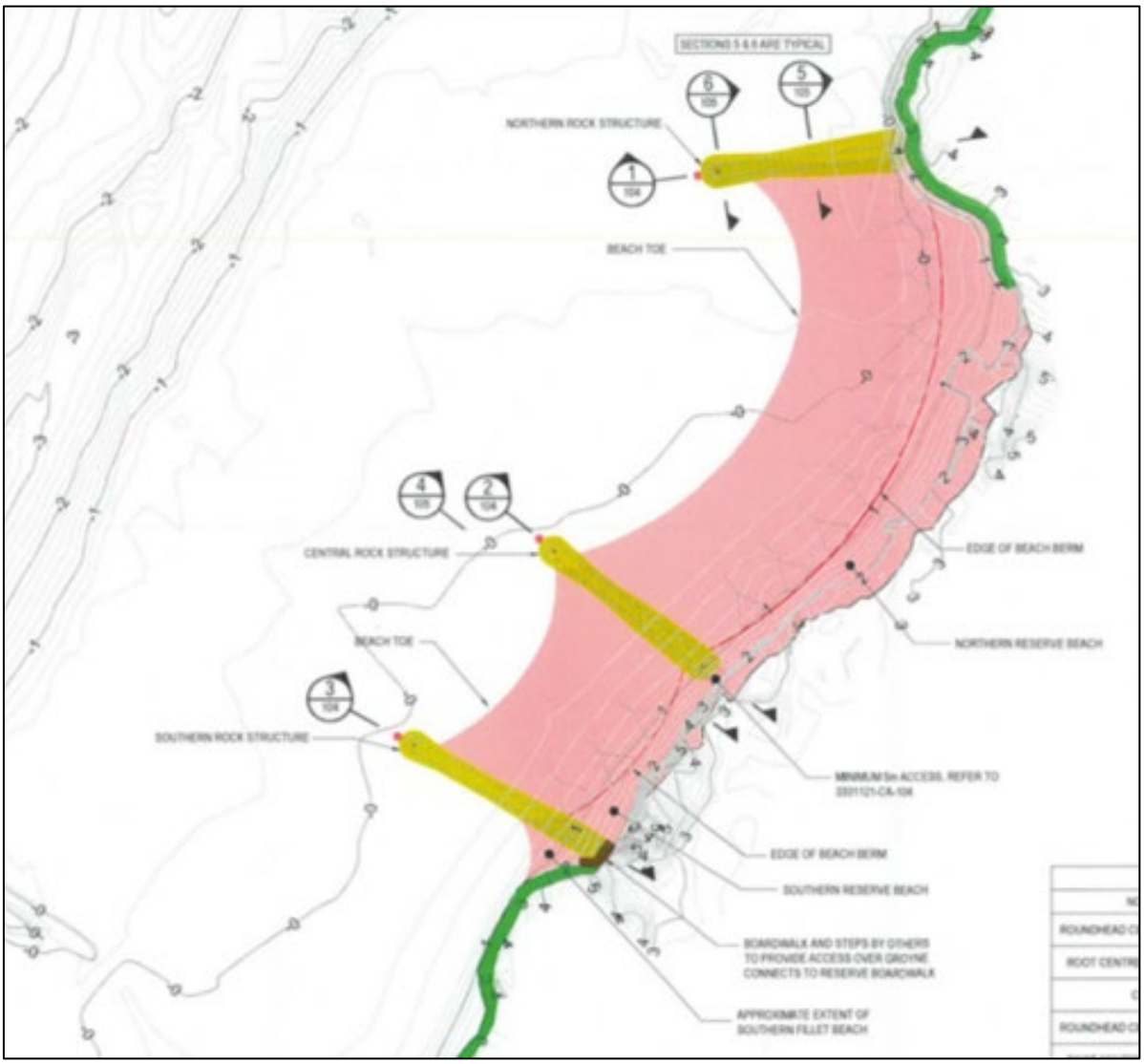

Figure 1: Schematic showing the proposed groynes and beach renourishment (Source: Application)

It is proposed that the northern groyne will connect to an existing, unconsented sea wall located at the northern end of the beach. The applicant has stated that the sea wall appeared to be in fair to good condition during visual, non-intrusive observations of the structure between April 2017 and February 2020. From personal communication with the local community it is understood that:

- The sea wall was progressively constructed from around 1990 onwards.
- Boards and tractor tyres were initially placed on the foreshore. The boards were subsequently removed and large rock (approx. 1 m diameter) was placed along the foreshore. Smaller rock (typically up to approximately 0.5 m diameter) was placed towards the top of the sea wall. This older section of the sea wall has been stable with minimal maintenance required over the past 30 years.
- Local resident reports and comparison of recent site photographs indicate that the older section of revetment has remained stable and has been effective in limiting the retreat of the foreshore at this location.
- The south-eastern section typically uses smaller rock. It has been topped up and extended approximately every 5 years. The most recent extension appears to have been in early 2015.
- The sea wall largely consists of rock from local quarries, with some recycled concrete that varies in size and shape. It appears that rock size and availability, and placement of an approx. 1:2 slope, have been the primary considerations for top up materials and methods.
- The sea wall was constructed by an experienced marine works contractor rather than being formally engineered.
- The crest of the revetment varies between approximately 3.5m Coastal Datum (CD) and 4.7m CD (1.5m to 2.7m above MHWS).

As with many legacy coastal structures, the design of the existing sea wall reflects the nature of its development, which is outlined above and is less regular (in terms of rock size, revetment slope and material) than it would be if it was formally designed and constructed today.

The proposed works will involve the reconstruction of part of the sea wall as necessary to provide a sound structure to connect the groyne onto. This localised section of the sea wall will, in turn, become part of the consented groyne structure.

The central and southern groynes will be free-standing. The central groyne will have a walk-through access at its landward end to allow people to walk between the two beaches at low tide. A boardwalk will be developed around the landward end of the southern groyne to provide for better access to the beach at the southern end. This is being constructed as part of this application.

Following construction of the rock groyne components, the intermediate compartments formed will be filled with recovered by sand from the dredging channel. The total initial deposition is predicted to be 26,500 – 34,000 m^3, but this volume will be determined by an updated survey immediately prior to works commencing. Sand may be trucked to the site for the initial sand base (approx. 1,200 m^3) and then sourced from the Port Otago Harington Beach Bend claim area (dredged sand) as the sand from this source matches the grain size found naturally at Te Rauone. Sand will also be placed immediately south of the southern groyne, once it is built, to reduce downcoast effects.

The renourished beach profile will have a beach berm at 2.5 m CD, 0.5 m above MHWS, and has been set at this level to reduce the frequency at which the beach berm is subject to wave action. The renourished beach will be a minimum of 5 m wide at high tide and have a typical beach slope of 1:20 from the berm to the present seabed level, typically at 0.1 m CD to - 0.3 m CD.

The landward side of the beach will connect to the dune proposed in DCC's reserve upgrade concept. The planted dunes will provide protection to the reserve and an enhanced beach system with greater resilience to extreme erosion events, as well as capture of windblown sand. As previously noted, the reserve upgrade does not form part of this consent application. Pending implementation of the DCC reserve upgrade, the landward edge of the berm will be graded between the renourished beach and the in-situ ground. Community assistance will be sought with planting this area with native sand-binding species to provide a more resilient buffer against wave action and erosion.

The design of the beach layout uses 'crenulate bay theory'. The groynes provide 'control points' which refract incoming waves and anchor the renourished embayments. The beach shape is a function of the incident wave direction and the location of these 'control points'. The incident wave direction has been estimated from a wave energy analysis of the waves coming in through the harbour mouth and the wind waves coming from across the harbour. The length and orientation of the groynes is governed by the need to provide a minimum high tide beach berm width of 5 m.

Topographic and bathymetric surveys will need to be repeated prior to procurement and construction so that levels can be confirmed because the beach continues to changes since the consent application was prepared. Updated surveys and designs will need to be provided to ORC & DCC prior to construction. Sea level rise of 0.1m has been allowed for over the 20 year groyne design life. Sea level rise will need to be reconsidered around 2035, with design revisions built into end-of-life major maintenance / replacement plans. This is more cost effective than providing initially for a longer sea level rise horizon given that modelling and guidance will improve between now and then. Potentially in 30+ years' time or so, as predictions for sea level rise improves, consideration will need to be given to the long term viability of the scheme.

3.3 Construction

3.3.1 Site Establishment

A contractor's site, including site offices, plant, materials and staff parking will need to be established prior to works commencing. Accessways onto the beach will also be required. A location has not been identified yet but it is anticipated to be within the Te Rauone Beach Reserve, to be agreed upon with DCC. Any consents required from DCC for the site establishment will be sought separately.

The temporary accessways are expected to comprise a running course of clean AP65 aggregate (approximately 1500 m^2 area and 300 m^3 in-situ volume) placed over geogrid / geofabric, with minor grading of the sandy backshore at the beach accesses to provide a smooth transition between land and beach (up to 400 m^2 area and 300 m^3 in-situ volume of grading).

During the construction period, access to the beach and foreshore will be restricted from the general public using temporary site fencing and signage. This is necessary to ensure public safety and also the safety of the contractor and their staff.

Disestablishment, including removal of temporary accesses, site offices, plant and any surplus materials and reinstatement of the contractor's site area, will be completed at the end of construction.

3.3.2 Groyne Construction

Following site establishment, groyne construction will begin. Rock will likely be sourced from Logan Point Quarry and trucked to the site. Approximately 4,200 m^3 will be transported to the site, generating around 325 truck movements in total. Up to 11 round trips will be undertaken per day allowing for minimal stockpiling on site.

Groyne construction will first involve beach preparation using an excavator. The excavator will then be used to place the rocks brought to site. Heavy duty geotextiles will be placed underneath and through the groynes as explained above and the placement of rock will continue until the desired groyne size and shape is complete.

Land-based construction may be required to construct temporary bunds using imported material (e.g. sand) to allow access for the excavator. These will extend seaward next to the groyne under construction so that the excavator can track along the bund and reach the outer extent of the groynes.

As previously mentioned, the northern groyne will connect with the existing northern sea wall. It is anticipated that the connection works, including localised sea wall reconstruction, will be directed on site by a senior marine engineer. The works at the connection location, and extending approximately 5 m either side of the northern groyne, are expected to proceed generally as follows:

- Existing large rock elements will be removed from the mid/upper sea wall.
- The sea wall face will be shaped to a regular 1:2 slope with the addition of new underlayer rock.
- The landward end of the new groyne will be placed against the sea wall face.
- New armour rock and existing large rock will be placed on the groyne and sea wall at the connection to give an interlocked finish with a 1:2 slope, transitioning into the existing revetment on both sides of the groyne.

These works, including works 5 m on either wide of the northern groyne, will be covered by the consent sought, which means that this part of the sea wall will no longer be unconsented.

The majority of the work will be undertaken at low tide, however, there will be periods where works will be undertaken up to the mid tide point because the low tide window is too short and progress needs to be made to avoid lengthy construction effects. Groyne construction is expected to be undertaken 5 – 6 days/week and will take 6 – 8 months to complete.

The groynes have been designed based on a 20 year design life, which means that it should be at least 20 years before any major maintenance or renewal is required. However, regular routine groyne maintenance and beach renourishment will be required in the interim.

3.3.3 Sand Renourishment

Land Based

As previously mentioned, some land based renourishment may be required to provide a base. This will occur following construction of the northern and central groynes and involve approximately 1,200 m^3 of sand. The applicant will dredge and bring sand ashore at T&U Wharf in Fryatt Street under existing consents (2010.193, 2009.146, 2009.147). This will then be trucked to the site, equating to approximately 200 truck movements in total (around 8 movements per day). The sand will either be placed directly on the beach or deposited on land immediately adjacent and spread along the beach using machinery.

Sea Based

Sand dredged from Otago Harbour under the applicant's capital dredging consent will be used to renourish the beaches. As previously mentioned, sand from the Harington Bend port side claim will be used as the gain size is similar to that found on Te Rauone Beach and is naturally clean.

The backhoe dredge, Takutai, will be used as a platform to pump sand ashore. It will sit on its piles at the Harington Bend for 5 – 6 days/week. It will also have anchors deployed with marker buoys. A submersible dredge pump will be mounted on the boom side of Takutai and will move the pump much like it would for a digger bucket when in use. Onboard dredging software will be used to locate the pump within the dredge claim and define the

dredging depth. The sand production head fluidises the sand material on the sea floor with water jet assistance before pumping it to shore.

There are two possible methods for depositing the material on the beach depending on the profile of the beach at the time and the resulting level of containment which the sand requires. The first method is the Delta Model, which uses a flexible hose (500 m in length), buoyed and anchored, to pump a sand and seawater mix ashore. The discharge end of the hose will be fixed in place using waratahs. The water will run back into the harbour leaving a delta of sand on the beach. The discharge end will then be moved, secured and a new delta created. This will create a series of overlapping deltas on the beach which can then be smoothed out and final levels achieved using light wheeled diggers or small dozers such as bobcats. The second method is the Bund Model, which uses a flexible hose to pump sand into bunded settling areas on the beach. Excess water will run through an overflow back down the beach allowing the sand to settle. Bunds will be set up in a grid pattern with each section being filled sequentially. Machinery will then be used to achieve final levels.

Depending on the equipment sourced, it is estimated that it will pump at a rate of up to 300 m^3/hr, 8 hrs/day, which will transport approximately 2,400 m^3/day of the sand and seawater to the renourishment site. It is estimated that approximately 30% of the sand and seawater mix will be sand, allowing for the renourishment of approximately 800 m^3/day or 4,800 m^3/6-day week. Renourishment of 26,500 - 34,000 m^3 could take up to 10 – 12 weeks to complete. Factors that could prolong the duration include bad weather, equipment breakdowns, lower pump efficiencies (i.e. less that 30% sand in the slurry mix) and daylight hours.

3.4 Maintenance

An Outline Maintenance and Operation Plan was submitted with the application. A finalised Maintenance and Operation Plan, including as-built drawings, will be prepared and submitted to ORC following the completion of construction. The plan will be held by the consent holder and will be reviewed annually for the first three years, and on a five-yearly basis thereafter. The consent holder will be responsible for monitoring, inspection and maintenance of the groynes and beach renourishment.

Post-construction monitoring and inspection will comprise:

- Quarterly beach surveys for the first year, from the northern groyne to the foreshore just north of the Pakihau Road / Harington Point intersection;
- Annual beach surveys for the following two years with a view to reducing survey frequency depending on beach performance;
- Annual inspections of the groynes, markers and signs for the first three years with a view to reducing survey frequency depending on performance;
- Post-storm inspection of the groynes and beaches following events with 10% or less AEP; and
- Annual surveys of water depth at Wellers Rock for the first three years with a view to reducing survey frequency depending on water depth trends.

The areas 150 m north and south of the project areas and 50 m seaward of the seaward end of the groynes are to be included within the survey inspection regime. There will also be real-time feedback via the TRBCCC Chair on beach and groyne condition.

While significantly reduced by the proposed works, sand will still migrate from Te Rauone Beach through natural coastal process, storm events and wind. Maintenance requirements are expected to include:

- Relocation of sand within each crenulate beach between the groynes. This may be on a 2-5 yearly frequency and following significant storm events.
- Onshore wind conditions have the potential to carry sand landward from the beach onto the reserve, where it will be trapped by the existing vegetation. This windblown

sand remains part of the overall system, contributing to any dune created as part of the future reserve upgrade.

- Sand from the renourished beaches that is removed offshore or blown landward will be replaced.
- As determined by beach monitoring, sand may be recycled from the accreting southern beach to the renourished middle and northern beaches. The objective is to relocate the sand accreting at the southern beach before it has the opportunity to be moved to Wellers Rock area. This may be on a 2-5 yearly frequency and following significant storm events.
- Renourishment of the beaches using new sand sourced from channel dredging or similar. This may be on a 5-10 yearly frequency and following significant storm events.
- An average grain size of no less than 0.2 mm and less than 2% fines will be used.
- Groyne maintenance such as restoring the crest height and side slopes following storm damage and replacing degraded / fractured armour rock with new rock. This may be on a 5-10 yearly frequency and following significant storm events. More substantial reconstruction would be expected following storm events exceeding the design conditions (i.e. 2% AEP events).

3.5 Description of the Environment

3.5.1 General

Te Rauone Beach is a sandy beach inside the Otago Harbour near Harington Point. The proposed works will take place within a 300 m stretch at the northern end of Te Rauone Beach.

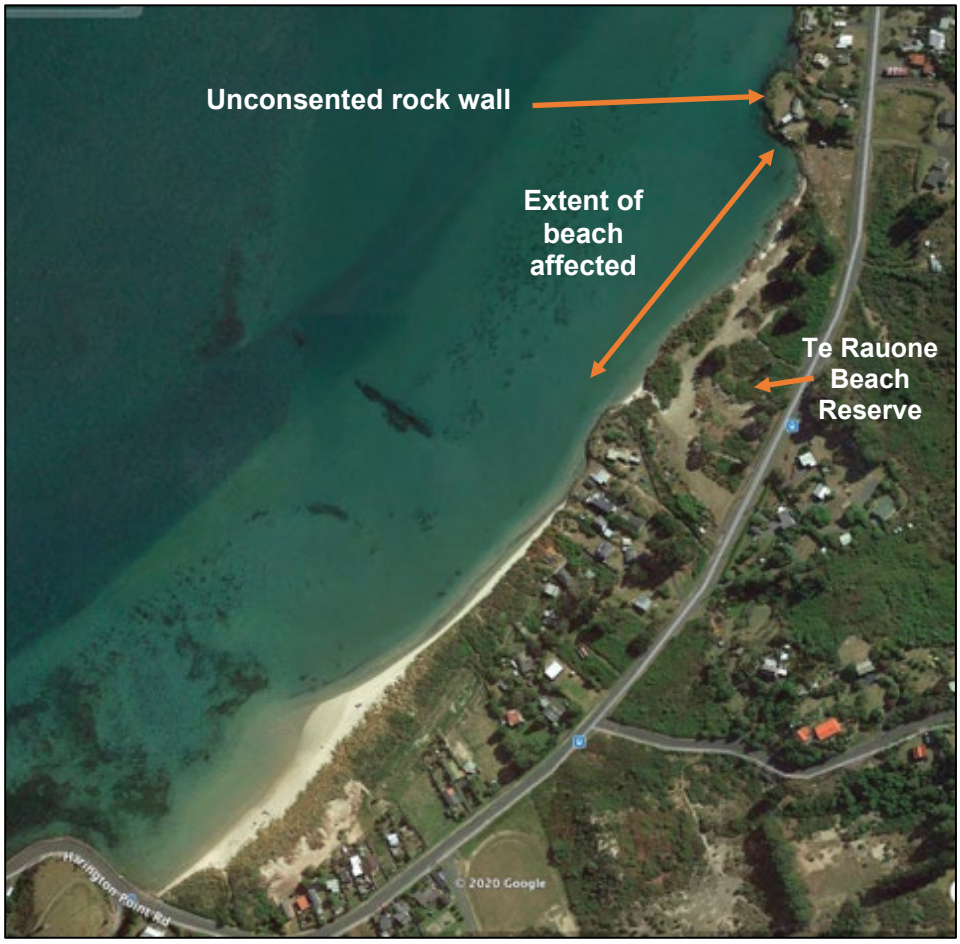

Figure 2: Location of proposed works (Source: Application)

As previously discussed, the Te Rauone Beach Reserve is located immediately landward of the proposed works and is characterised by pockets of vegetation and trees along with

Council-owned toilet facilities and a playground area. This reserve is included in DCC's Otago Harbour Reserves Management Plan, 2006, which provides background information along with details of management issues including erosion and beach access. The plan also contains suggestions for ecological enhancement of the reserve including planting native species and providing interpretative panels on local wildlife and their threats. The reserve is also subject to DCC's Coastal Reserves Management Plan, 2010, where the principal purpose is to provide coastal protection while providing for recreational opportunities. Key issues identified for Te Rauone are safety of beach access for visitors, and erosion.

A number of residential properties are located on the small headlands beyond the northern and southern extent of the reserve and form part of the Harington Point community. Several of these properties have constructed unconsented rock sea wall structures of their own in an attempt to protect their properties from coastal erosion.

Remnants of original timber groynes (circa 1890s) have been found in the vicinity of the southernmost proposed groyne. No other findings of archaeological or heritage value have been found.

The beach is subject to wave attack from three types of wave environment. The first comes from longer period swell waves and shorter period wind waves entering the harbour through the entrance channel, eroding sand from the beach and transporting it south towards Wellers Rock. The second comes from short period waves generated from south-westerly winds travelling across the harbour, eroding sand from the dunes and beach, and depositing it offshore. The third type of wave attack is generated by vessel traffic in the harbour, which includes a surge component that can, in some instances, take sand offshore and transport it along the shore. These three forms of wave attack have resulted in sand eroding at the northern end and accreting at the southern end. The middle part of the beach has been also been adversely affected by a sand deficit.

3.5.2 Benthic Flora and Fauna

The applicant undertook sampling during October 2019 to identify benthic infauna species richness and relative abundance, along with a visual survey of flora and epifauna. A total of 6,813 infauna animals, among 66 taxa, were found within the benthic samples. There is no indication that uncommon or rare species occur within the scheme footprint area. The relative abundance and species richness of benthic fauna found are similar to that reported on when the area was sampled in 2010[1].

Filamentous brown algae were observed in many of the areas sampled and are likely as a result of high sun, high nutrients and recent minimal wave actions. This alga is not expected to persist in the area for long.

Cockle beds (aka southern clams) are known to exist in the area, but were not observed on the sand's surface during the survey, probably because of the low tide at the time. They were, however, recorded in low numbers in the control area.

3.5.3 Sea Lions

Te Rauone Beach is an important haul-out location for the Nationally Vulnerable Hooker's sea lions, especially because sandy beaches are a limited resource in Otago Harbour. Sea lions haul up to rest, suckle their young, play and socialise. Sightings are, however, generally confined to the southern part of the beach (which lies outside of the scheme footprint) because the northern end of the beach is too steep and eroded. The lack of sandy beach habitat at the northern end of the beach is another reason why the sea lions are not seen there as often as the southern end.

[1] Pavvo, B., 2010, *Te Rauone Sampling - Results Reporting*

3.5.4 Birds

Several indigenous birds including red billed gulls (declining), little shag (not threatened) and the native Welcome Swallow (not threatened) were sighted during the field assessments in October 2019. However, no breeding habitat, nor habitat vital for the persistence of either red billed gulls or little shags was detected.

Stumps of very large trees at the northern end of the beach had bird droppings on them, indicating that they are used as a resting area of local sea-birds, most probably red billed gulls, but possibly also white-front terns (at risk declining) or shag.

Many other native birds are known to frequent Te Rauone Beach, including:

- Southern black billed gull (not threatened)
- Variable oyster catcher (recovering)
- Pied stilt (not threatened)
- White-fronted heron (not threatened)
- Southern blue penguin (at risk declining)
- Yellow eyed penguin (nationally endangered)
- Little pied cormorant (vagrant)

Exotic bird species known to frequent the area include little owl, blackbird, sparrow, starling, dunnock, mallard, thrush and goldfinch.

3.5.5 Lizards

The southern grass skink (at risk declining) was detected at multiple sites along the foredunes of the scheme footprint during the October 2019 surveys. This species is also known to occur over the Te Rauone Beach Reserve. The habitat for these species is significant under the Otago RPS and DCC 2GP policies (see below)

3.5.6 Significance of Habitat

Schedule 4 of the Proposed Otago Regional Policy Statement (RPS) provides criteria for determining significant indigenous vegetation and significant habitat for indigenous biodiversity. The scheme footprint is significant as it triggers Criterion 2 - Rarity - by providing habitat for the at risk declining southern grass skink.

Policy 2.2.3.2 of DCC's 2GP contains Section 6C significance criteria. The construction footprint is significant as it triggers Criterion B - Rarity - by providing habitat for the at risk declining southern grass skink.

The scheme footprint triggers the Department of Conservation's 'rarity and special features' criterion by providing habitat for the at risk declining southern grass skink (Davis M, Head N J, Myers S C and Moore S H, 2016, *Department of Conservation guidelines for assessing significant ecological values*, New Zealand Department of Conservation). This criterion incorporates rarity in the uncommon sense, and threatened in its classification sense (e.g. species classified as Nationally Threatened or At Risk, or ecosystems classified as naturally rare). It is important to apply this criterion within a local context (i.e. EDs and ERs), as some biota or ecological features can be uncommon locally, even though they may be common elsewhere in the country.

3.5.7 Site Visit

A site visit was undertaken on Friday 10 January along with representatives from Port Otago, Dunedin City Council and Te Rauone Beach Coast Care Committee. The area of the proposed works was sighted, as well as the unconsented sea wall where the northern groyne will be attached. There was discussion about the community consultation processes that have been undertaken over the past 10 years and how the final design was chosen.

3.5.8 Recognised values listed in the Regional Plan: Coast

Schedules 2 & 3 of the RPC provide details recognised values and hazards along the Otago coastline.

Te Rauone Beach falls within Coastal Protection Area 17 (CPA17) Otakou and Taiaroa Head, which is recognised for the following values:

- Kai Tahu cultural and spiritual values.
- Estuarine values which include a wading area for migratory birds.
- The intertidal flats are a significant cockle habitat.
- There are eelgrass beds in parts of this area.
- Historic values; midden, NZHP Register Number 5682 Otago Harbour Rock Walls along Portobello Road, NZHP Register Number 4726.

The proposed groynes may extend out into Coastal Recreation Area 9 (CRA) Otago Harbour, which is recognised for the following values:

- Boating, fishing and walking.

Te Rauone Beach, is listed as Coastal Hazard Area 6 (CHA6):

- Sandy beach erosion (beach, road and property at risk)

Te Rauone Beach does not feature in any other schedules of the RPC.

4. Status of the Application

Resource consents are required under the Regional Plan: Coast in accordance with the following rules:

> Rule 7.5.1.5 Except as provided for by rules 7.5.1.1, 7.5.1.2, 7.5.1.3, or 7.5.1.4 any activity involving occupation of land of the Crown within the coastal marine area is a ***discretionary activity***. (*Occupation by the rock groyne structures)*
>
> Rule 8.5.1.9 Except as provided for by Rules 8.5.1.1 to 8.5.1.6, 8.5.1.8 and 8.5.1.10, any activity involving the erection or placement of a structure or structures in, on, under, or over any foreshore or seabed is a ***discretionary activity***. *(Placement of the rock groyne structures)*
>
> Rule 9.5.3.6 Except as provided for by Rules 9.5.3.1 to 9.5.3.5 any disturbance of foreshore or seabed is a ***discretionary activity***. *(During the works period)*
>
> Rule 9.5.4.3 Except as provided for by Rules 9.5.4.1, any activity involving the deposition of sand, shell, shingle, or other natural material in the coastal marine area is a discretionary activity. *(Deposition of sand for beach renourishment)*
>
> Rule 10.5.6.2 The discharge of water or contaminants into the CMA not provided for by Rule 10.5.6.1. *(Discharge of water and sand during renourishment works)*

There are no permitted activity rules which cover the proposed occupation, placement, disturbance and deposition activities.

Overall, the application is considered to be a **discretionary** activity.

The applicant has stated that they will operate in accordance with the following permitted activity rules for the ongoing maintenance of the groynes throughout the duration of the occupation permit:

> Rule 8.5.2.3 The maintenance, alteration, replacement or reconstruction of a structure, or part of the structure outside a Coastal Development Area, that is fixed in, on, under,

or over any foreshore or seabed, other than as specified in rule 8.5.2.1 or 8.5.2.2 is a **permitted activity** provided:
(a) It does not result in a change to the overall dimensions or outline of the structure; and
(b) The disturbance of the foreshore or seabed is confined to within the perimeter of the structure, and after completing the activity the foreshore or seabed is smoothed over to leave a depression no deeper than 0.5 metres; and
(c) As far as is practicable the work on the structure results in the structure blending in with the character of the adjoining landscape.

Rule 9.5.3.4 Clearing a coastal structure of natural material, and the disturbance of the foreshore or seabed when undertaking maintenance or minor alterations to a structure, and the launching of ships from the foreshore, is a **permitted activity** provided:
(a) Any natural material that is moved is not removed from the coastal marine area; and
(b) Any disturbance of the foreshore and seabed is confined to within three metres of the perimeter of the structure, except when launching a ship; and
(c) Any disturbance of the foreshore and seabed is smoothed over on completion of the clearance and a depression no greater than 0.5 metres lower than the surrounding foreshore and seabed is left; and
(d) The natural material cleared from a structure is spread evenly over the foreshore no further than 50 metres from the structure; and
(e) The structure has a current coastal permit or is provided for by a rule.

5. Assessment of Adverse Environmental Effects

5.1 Engineering Considerations

5.1.1 Effects of Earthworks

Minor landward works are required to establish laydown areas and construction vehicle access within the reserve and onto the beach. As mentioned earlier, this will comprise:

- Temporary accessways with minor grading of the sandy backshore at the beach accesses to provide a smooth transition between land and beach;
- Temporary disturbance of the beach surface by vehicle stacks and excavation; and
- Minor stockpiling of sand and rock for beach nourishment and groyne construction.

These works and any associated adverse effects will be temporary in nature. Earth-worked areas and stockpiles will be disestablished post construction. There is low potential for release of fines. Clean aggregate will be used for the temporary accessways, which are to be laid on existing ground. The minor grading at the beach accesses will use sandy backshore material, which allows for rapid infiltration of rainwater, limiting runoff.

Temporary disturbance of the beach surface by vehicle tracks and excavation for toe establishment around the groyne perimeter may also have some very minor effects. Any track marks and movement of sand are likely to be restored naturally over subsequent tidal cycles.

Overall, the proposed earthworks are considered to have less than minor effects given the temporary nature and very minimal amount of works proposed.

5.1.2 Effects on Hydrodynamics

The proposed renourishment of the beach will intentionally move the high tide mark and corresponding lower intertidal beach face seaward of its present positions, back to where it was in the 1970s / 1980s. This will marginally (0.4%) reduce the cross-sectional area of the harbour at mean sea level (MSL), however, there should be no effect on harbour tide level given the very small scale of the proposed works relative to the overall scale of the harbour.

Effects on the sandy foreshore at Te Rauone Beach will be confined between the rock-protected coastline on either side and the shipping channel, where strong currents and deep water provide an outer boundary. Te Rauone experiences semi-diurnal tides with a tidal

range of 2 m. Tidal currents are aligned parallel to the beach and are much smaller in magnitude than those in the main channel (20-30 cm/s versus 155 cm/s). Tidal currents reduce further closer to shore and are estimated to be around 10 cm/s at the site of the proposed works. Localised changes to wave and current conditions at Te Rauone Beach as a result of the proposed works will not, therefore, affect other harbour areas. There may be minor, localised current effects at mid-tide, and low velocity currents will be deflected around the groynes, but localised increases in current velocity should be difficult to discern.

The groynes have been designed with mild side slopes and voids between the rocks to help to dissipate energy and will refract waves and provide a physical barrier to wave attack. Voids between the rocks will dissipate the wave energy and reduce wave reflection, though there may still be some localised wave reflection and refraction. Wake from large vessels might be reflected back into the channel but shouldn't impact adjacent shores. There may be more reflection / refraction on the northern side of the northern groyne because there is no beach there to dissipate the waves. This part of the groyne will be lower and more porous to ensure less reflection.

5.1.3 Effects on Sediment Processes

The proposed works will intentionally alter sediment processes and reduce the amount of sand eroding from the northern end and accreting at southern end of the beach. The southern-most groyne has been designed to allow sand to pass through it and there may need to be topping-up of the beach to the south of this if there is localised erosion.

There will be a need to avoid down-coast effects resulting from the restriction of natural sand movement. Down-coast sediment processes will be monitored, including around Wellers Rock Jetty. There may need to be initial renourishment of the southern fillet beach, south of the southern groyne and adjacent to the existing rock revetment, as a result.

5.1.4 Engineering Peer Review

Tonkin & Taylor (T&T) were asked to review the coastal engineering aspects of the application on behalf of ORC. T&T's initial review identified some matters for consideration relating to the design life versus the consent term, sand migration, geotextile placement in the rock armour, toe design details, windblown sand, survey area and sand grain size.

Further information was requested under section 92 and the applicant responded with a revised consent application. T&T reviewed the revised application and confirmed that their queries have been responded to to an appropriate level, meaning that there are no further matters for consideration from a coastal engineering perspective.

When asked specifically whether there should be cause for concern regarding deflection of waves off the northern groyne and resulting erosion of the rest of the unconsented sea wall further up the coast, T&T replied:

The northern groyne will result in some reflected waves, but is a reasonably porous structure (so will dissipate some wave energy too). Due to the prevailing north to south alongshore transport, it can also be expected to get a small amount of sand build up on the northern side of the groyne (small because there is not a lot of sand to the north). So do not anticipate this to be a significant impact on the structure of the existing seawall.

T&T concluded that overall, the works should ensure the retention of a beach along this stretch with no significant adverse effects to the adjacent physical coastal environment for the design life of the project

5.2 Ecological Considerations

5.2.1 Effects on Benthic Flora and Fauna

There is a risk of loss of habitat for benthic communities through the deposition of rock groynes onto the seabed, vehicle traffic over seabed, an increase in turbidity when sand is deposited onto the beach for the purpose of beach renourishment.

Regarding the suspended sediment, the application states:

As the sediment proposed to re-nourish Te Rauone beach will include a range of size classes of substrate (i.e., fine to coarse), but a range entirely within the natural range for Otago Harbour, it will be possible for the fine sediment to become suspended in the immediate vicinity of the beach. The harbour normally experiences heavy sediment loading during flood and heavy rainfall events, and as such, it follows that the benthic communities are adapted to naturally turbid conditions. Due to the strong currents in the area and a relatively fast cycling of water in the harbour, it is likely that this will be no more than a short term, minor effect. We consider this potential effect to be no more than minor.

Mitigation measures to reduce sedimentation will be undertaken such as sourcing clean sand and rock along with depositing above the high tide mark where possible, or within defined or bunded areas, to allow for settlement, as described in the construction methodology above.

Regarding the loss of habitat as a result of the construction of the rock groynes, the application states:

The area where the groynes will be established will be lost, but due to the homogenous nature of the beach, the loss of this area is not considered a highly significant effect. This assessment is supported by the results of the benthic sampling reported... some elements of the macroinvertebrate communities may even be able to migrate out of this area as rock substrate is placed upon the shore meaning a total loss scenario may not occur. We consider this potential effect to be no more than minor.

Regarding the physical disturbance by vehicles, the application states:

The proposed works to install the rock groynes will result in loss and/or disturbance of the seabed and resident benthic communities, as the machinery moves backwards and forwards over the bed to retrieve rocks from the stockpile and place the rocks on the groynes. This short-term, temporary effect is not considered significant.... In addition, previous researchers have suggested that any infauna communities lost and / or disturbed over the duration of the POL works to build groynes at Te Rauone will recolonise the scheme footprint area over a period of one or two years. We concur with this assessment. We consider this potential effect to be no more than minor.

Field surveys undertaken in the preparation of the consent application found no cockle beds located within proximity to Te Rauone Beach. However, the application states it is almost certain that cockles are present within the project footprint either as spat, or juveniles/sub-adults/adults (albeit at low densities). Regarding adverse effects on cockles, the application states:

The replenishment of sediment to the northern reaches of Te Rauone Beach will provide additional tidal flats that are likely to be suitable for the establishment of cockles. ..We expect losses will occur in any cockle habitat that currently lies beneath the area where the rock groynes will be placed... We accept that there will be losses where groynes are installed, but note that natural recruitment of cockles in the area has been recorded. The effects of this vehicle movement on cockles at Te Rauone will be at least partially mitigated by the robust nature of cockles, being often referred to as "bioturbators". Cockles are highly mobile and capable excavators, able to resurface within days (often hours) from under 2, 5

and 10 cm, and even 25 cm, of sediment, where no physical disturbance to their natural (in situ) orientation had occurred... There may, however be some losses / deaths of the low-density cockle beds of the schemes footprint as a result of vehicle traffic. Overall, we anticipate the effects of the scheme on cockles of the scheme footprint will be no more than minor when the mix of positive and adverse effects are considered together.

There is a risk of affecting seagrass beds when sediment is mobilised and deposited during the proposed works. Field surveys undertaken in the preparation of the consent application did not detect any seagrass beds within the project footprint, however, extensive seagrass beds are located to the south of the project area. Regarding adverse effects on these seagrass beds, the application states:

Due to the cyclical nature of the tides in the outer harbour, coupled with the location of the scheme footprint near to the harbour entrance and our experience, we hold the firm view that fine sediment, which is most threatening to seagrass condition and growth, will not be retained in the area for longer than known tolerance levels. More importantly, we do not believe fine sediment that is retained following renourishment (including top-ups) will drift up the harbour to reach lethal levels over the existing seagrass beds over to the south of Te Rauone Beach, and as we understand it, it is unlikely that the intermittent "top ups" will be of a scale comparable to the initial works and as such, the effects will be less than those of the first renourishment attempt.

The application further notes that replenishment of sediment at the northern reaches of Te Rauone Beach will provide additional tidal flats that could be suitable for the establishment of native seagrass beds.

The applicant has proposed consent conditions (see below) which require benthic monitoring / surveys to be undertaken post construction to determine recolonisation rates post construction. The subsequent report must analyse the results, report on the interim adaptive management trigger, discuss any trends and review overall ecological effects. The report should recommend if any further benthic monitoring is necessary and advise on any necessary adjustments for future monitoring if considered necessary.

The applicant has also proposed consent conditions including trigger thresholds, which indicates the degree of impact on benthic communities and sea grass which will be tolerated:

- Overall percentage occurrence of cockles in benthic samples of the impact site shall remain within 40% of occurrence in control site samples;
- Benthic species richness and density (using relative abundance data) of the impact site shall remain within 25% of species richness and density in the control sites;
- Seagrass distribution, extent and relative condition shall not deviate by >25% of baseline metrics (applies to seagrass immediately to the south of the site only).

Where a threshold is triggered, the adaptive management process shall commence. This will include evaluation of monitoring results by a suitably qualified ecologist and agreement between the ecologist and the consent holder about what actions will be taken to remedy any observed effects above the threshold limits. Due to the potential for unforeseen effects during construction and maintenance, the applicant has not provided any further detail regarding what this remedial action may include.

5.2.2 Effects on Sea Lions

As previously noted, Te Rauone Beach is an important haul-out location for the Nationally Vulnerable Hooker's sea lions, although they are generally confined to the southern part of the beach, which lies outside of the scheme footprint. Regarding adverse effects on sea lions, the application states:

Sea lions resting or socialising on the southern reaches of Te Rauone Beach, or any that occur or attempt to haul up onto the northern areas of the scheme footprint, may suffer disturbance by noise, vibration and human presence as the groynes are constructed. Disturbance may cause sea lions to be temporarily displaced from the beach, during works.... Machinery movements, including the placement of rocks onto the seabed and groynes, may injure / displace any sea lions moving in and around the scheme footprint.

As a result, the applicant has proposed that an Environmental Management Plan (EMP) will be implemented to mitigate any potential impacts on marine mammals. This plan will include a requirement for a sea lion expert to conduct an on-site briefing to contractors prior to all works commencing, and that works will not be undertaken during the period from mid-December to early February to avoid the sea lion breeding season. The application further notes:

The scheme development, by replenishing the sediment of Te Rauone Recreation Reserve, will have a potential positive effect on sea lions by providing greater expanses of sandy beach habitat they favour, a habitat that is rare in the inner Otago Harbour. In addition, by sculpturing the foredunes to visually replicate the dune system of the southern reaches of Te Rauone beach, the back dunes will again be easily accessible to sea lions.

The creation of sandy beach habitat over the northern part of Te Rauone Beach, a valuable resource for sea lions of the inner harbour, will offset entirely any potential adverse effects of the scheme on sea lions and by doing so will leave no significant residual adverse effects on sea lions. Naturally occurring sandy beaches, except for Te Rauone, are not present in the inner Otago Harbour. With this in mind, a net gain in sandy beach habitat will occur following the successful renourishment of beach at Te Rauone.

In summary, adverse effects on sea lions should be limited to the construction period and no adverse effects are anticipated following completion of the works. Consent conditions proposed by the applicant seek to limit adverse effects on sea lions during the construction period as far as practicable.

An email from the Department of Conservation (DOC) to the applicant dated 4 July 2019 was provided with the application. DOC advised that they see a lot of benefits from the work being done, such as the creation of a place for sea lions to breed and rest, a place for sea birds to roost, introduction of an ecological rocky coastline that has been lost, a stable sandy beach in that area, and a way to mitigate the issues we face from the impacts of climate change. DOC asked for more information on how the works will be undertaken and what steps will be taken when encountering marine mammals such as sea lions and they also asked for an AEE. This information has now been provided in the consent application.

5.2.3 Effects on Birds

As previously noted, many native and exotic birds are known to frequent Te Rauone Beach. Regarding adverse effects on birds, the application states:

Overall, we anticipate the effects of the scheme on indigenous birds of the scheme footprint will be no more than minor when the mix of positive and adverse effects are considered together. We base this assessment on the following:

- *Only red billed gulls and variable oyster catcher were found within the footprint, these in low numbers (<5 individuals sighted) and only intermittent use (based on low build-up of faeces/guano on the rocks).*
- *Records from the wider area indicate only occasional visits by other species, and the most likely species to be a regular visitor in any numbers, apart from the red billed gulls, is the variable oyster catcher; but available records of this species were sparse over the northern Te Rauone beach.*

- *There was no evidence of indigenous birds roosting (little shags) or nesting (penguins) within the footprint, and no evidence of any critical habitat for any indigenous bird species present.*

Whilst there may not have been many birds present during the site visit in late 2019, there may be more birds present at other times, although no critical habitat for indigenous species has been identified. There will be temporary disruptive effects resulting from noise, vibration and people during the construction period, and some potential habitat may be lost i.e. deadwood and tree stumps on the beach. However, that habitat is being lost to the sea anyway through erosion processes. The removal of some exotic vegetation and trimming of mature tree branches may also remove roosting habitat for little shags, or any other resident birds. Following construction, bird resting locations may be increased through the development of the rock groynes. The wider, shallower beach may also provide increased tidal foraging and wading habitat. The applicant has stated that overall, effects are likely to have a temporary disruptive effect rather than impacting on the health and breeding patterns of these birds.

5.2.4 Effects on Lizards

The southern grass skink was detected during the field assessment at multiple sites along the fore dunes of Te Rauone Beach. The species is currently listed by DOC as a nationally at risk / declining species. Regarding adverse effects on skinks, the application states:

The grading of the landward berm of the beach with concomitant removal of habitat currently used by southern grass skinks; and the removal of small areas of pohuehue vineland over the Te Rauone DCC Reserve may result in the disturbance, death, injury and/or displacement of any southern grass skinks present over these areas at the time of works. We consider these potential effects to be more than minor.

The applicant has proposed to develop a site specific management plan prior to works commencing as a way of managing the effects on the southern grass skinks within the works area. This plan should cover the beach works and the future reserve upgrade collectively. The management plan will include measures such as 'no-go' zones:

Southern grass skinks are present throughout the scheme footprint, and were found in highest numbers in and around MHWS mark. With this in mind, 'no-go' zones that contain southern grass skinks or their habitat will be negotiated on-site with contractors, and marked on the ground for avoidance, prior to the commencement of works. Notwithstanding these no-go zones, storage and access tracks / vehicle parking will use existing clearings and roads to further minimise the potential impact on southern grass skinks.

Additional skink habitat could be provided when the reserve is upgraded, but the reserve upgrade works are not the subject of this consent application.

To undertake works within habitat of the at risk southern grass skink, a permit will be required under the New Zealand Wildlife Act. It is noted that the Wildlife Act permit will be applied for post granting of consent from ORC.

5.2.5 Ecology Peer Review

Pisces Consulting Ltd (Pisces) were asked to review the ecological aspects of the application on behalf of ORC. Pisces' initial review identified some matters for further consideration, including:

- Further detail about the ecological surveys conducted;
- Information about the baseline benthic environment;
- Comparison of the proposed disturbances with natural disturbances;
- Effects on cockle beds and other shellfish;
- Proposed benthic monitoring locations;

- Effects on seagrass beds;
- Remediation proposed if adverse effects occur;
- Further information about effects on sea lions, birds and lizards.

Further information was requested under section 92 and the applicant responded with a revised consent application. Pisces reviewed the revised application and most of their queries were responded to an appropriate level. There were a number of matters for further discussion, which are detailed below along the applicant's subsequent responses.

Item 1 - Uncertainty remains regarding whether the proposed monitoring / mitigation / remediation consent conditions applied to the initial works only, or to the subsequent beach top-ups as well.

Applicant's response *- We have included a new part to Condition 18 to clarify when such monitoring / surveys would be required for top ups. It is our opinion that the top ups will be significantly less than the initial renourishment and that the effects (if any) would be significantly less also. It is therefore proposed to only undertake further surveys if the top up sand amount is in excess of 20% of the initial renourishment volume. Condition 22(ii) includes seagrass surveying for 'top ups'.*

Item 2 - The AEE states that the threshold for the seagrass beds to the south (>30% decrease in distribution, extent and relative condition) "*is a serious change that requires action in the form of adaptive management… is evidence that the beds have moved beyond their physical limits to the point of concern*". The suitability of the proposed threshold was questioned and there were also concerns that the baseline aerial imagery had not been analysed adequately to determine what the baseline is.

Applicant's response *- We agree that reading the two sections of the EIA together can be interpreted as greater than 30% decline constitutes irreparable damage to the southern sea grass beds. Whether this is actually the case however, cannot be determined as there is no data / previous studies to help determine the actual threshold, but it is likely to be much higher i.e. seagrass beds are likely to be able to recover from levels of damage higher than 30%, so long as the sediment source is managed to allow recovery.*

That said, and assuming that greater than 30% damage is irreparable, we agree that the initial trigger should therefore be more conservative and recommend the trigger point be amended to 25%. Condition 16(c) has been altered to reflect this change. In amending the trigger start point, we note that the conditions allow for the trigger point to be amended once site-specific seagrass distribution, extent and relative condition data is collated (baseline), collected and analysed.

Analyses of the photographs taken of the southern sea grass beds have not been carried out – but photos were supplied to Council and were included in the ecological impact assessment. It is not considered necessary to provide baseline data at this point. Condition 16 requires that this analysis is undertaken as part of the preparation of the EMP which is required 1 month prior to construction commencing. This is considered sufficient.

Item 3 - How the adaptive management thresholds were determined and why they are considered measures of successful re-colonisation.

Applicant's response - *There are no precedents in the scientific or best-practice literature that Ryder have reviewed. Thresholds were formulated based on anticipated significance of effects and anticipated variation in metrics that will describe any such effects. With this in mind, an essential feedback loop was included within the conditions so that thresholds may be altered based on results – providing an adaptive management approach to mitigate any unforeseen effects.*

Item 4 - There was a discrepancy between the conditions and the revised AEE. Condition 16(c)(i) specifies that "Seagrass distribution, extent and relative condition shall not deviate by >30% of baseline metrics", while the ecology report states "if more than 30 % of seagrass beds are lost between surveys", thus allowing a shifting baseline of seagrass metrics.

Applicant's response *- The proposed conditions take precedence as they were designed as a cohesive package, with much thought, after the AEE was revised.*

Item 5 - Uncertainty remains as the why the proposed monitoring of the benthic environment had been reduced from two scheduled events (6 months and 1 year) to one event (6 months).

Applicant's response - It is considered that the sampling proposed is sufficient. This is based on the results of previous assessments and the trigger points for adaptive management. The adaptive management approach also allows for management procedures to change and be altered to match any effects that are unforeseen.

Item 6 - The AEE states that the proposal may result in an increase in infauna invertebrate communities and an increase in habitat for the establishment of seagrass, however, no monitoring has been proposed to demonstrate this.

Applicant's response *- there is no intention to provide a net increase in infauna invertebrate communities and an increase in habitat for the establishment of seagrass, but could be a positive result and was intended as a possible positive effect as part of the overall AEE. Reporting post monitoring would most certainly include any indication of whether there is an increase in these communities which would feed back to the Regional Council and DOC for recording purposes.*

It is considered that all of ORC's questions have been responded to adequately in preparation for public notification of the application.

5.3 Other Considerations

5.3.1 Effects on Cultural Values

Te Rauone Beach is an area of deep cultural and spiritual significance. Its position near the entrance to the Otago Harbour and to the marae at Otakou means that it has been an important and well-loved area for generations of Kai Tahu on the Otago Peninsula. Kai moana will be temporarily disrupted, but the applicant anticipates that the proposed groynes and renourishment will have an overall positive effect on fauna and benthic communities, allowing for Manawhenua to continue to practice their tikanga.

The applicant has provided an inventory of community meetings which have occurred over the past 10+ years, many of which were attended by representatives from Te Rūnanga o Ōtākou.

A letter from Aukaha, dated 29 November 2019, has been provided with the application. This letter states that Te Rūnanga o Ōtākou do not oppose the application proceeding on a non-notified basis, subject to the following conditions:

- That all work is undertaken at low tide as much as possible;
- *That all machinery is clean and well maintained prior to entering the work site;*
- That any rock used for the proposed work is clean and placed rather than dumped into position;
- That machinery only enters the waterway for the extent necessary, to carry out as much of the proposed work as possible, using one corridor for entering and exiting;
- *That monitoring results be forwarded to Te Rūnanga o Ōtākou;*
- That Te Rūnanga o Ōtākou are notified of any maintenance work undertaken at Te Rauone Beach;

- That the Heritage New Zealand Pouhere Taonge Archaeological Discovery Protocol should be adhered to.

The letter further notes that it is understood that the monitoring regime will include:

- The overall health of the benthic communities with sampling undertaken at regular intervals over 5 years following the completion of the works. *The monitoring will also include an additional survey 6 months* after any sand / sediment top up that occurs at Te Rauone Beach.

Only those conditions shown in *blue italics* have been incorporated into the conditions of consent proposed by the applicant, as discussed below.

A further letter directly from Te Rūnanga o Ōtākou, dated 21 November 2019, was also provided with the application. The purpose of the letter is to support TRBCCC endeavours to fundraise for the project. The letter notes that:

- The Rūnanga has a close association with Te Rauone Beach.
- The beach was historically the location of several old and large villages and a number of events that occurred on the beach itself have been remembered and passed down through oral tradition.
- A number of whanau who affiliate to the Rūnanga continue to live in very close proximity since the Crown grants to the Ōtākou Native Reserve in the 1860s, whereby a portion was reserved from the original land sale of the Otago Block to provide for and sustain future generations.
- Tūaki (cockles) are gathered from Te Rauone and presented as a delicacy to manuhiri at Ōtākou Marae - a tradition that reinforces the mana of the people of Ōtākou.
- The Rūnanga has a very deep and spiritual connection to the beach; the erosion and its effects upon our whanau to carry out their everyday and traditional practices are of huge concern.

The letter concludes by saying that the tremendous effect being made by the TRBCCC towards realising the rock groynes and sand renourishment project is to be applauded, and that Te Rūnanga o Ōtākou supports the committee wholeheartedly.

For completeness, a map of the Ōtākou Mātaitai is provided below. Te Rauone Beach is located on the eastern side of the Mātaitai (Ōtākou) on land known to locally as the Ōtākou Native Reserve. Customary fishing still possible with a permit within the mātaitai, and recreational is allowed without a permit, but bag limits will be determined by the mātaitai rules which are still being determined. In the meantime, usual bag limits apply. Commercial activity cannot take place within the mātaitai.

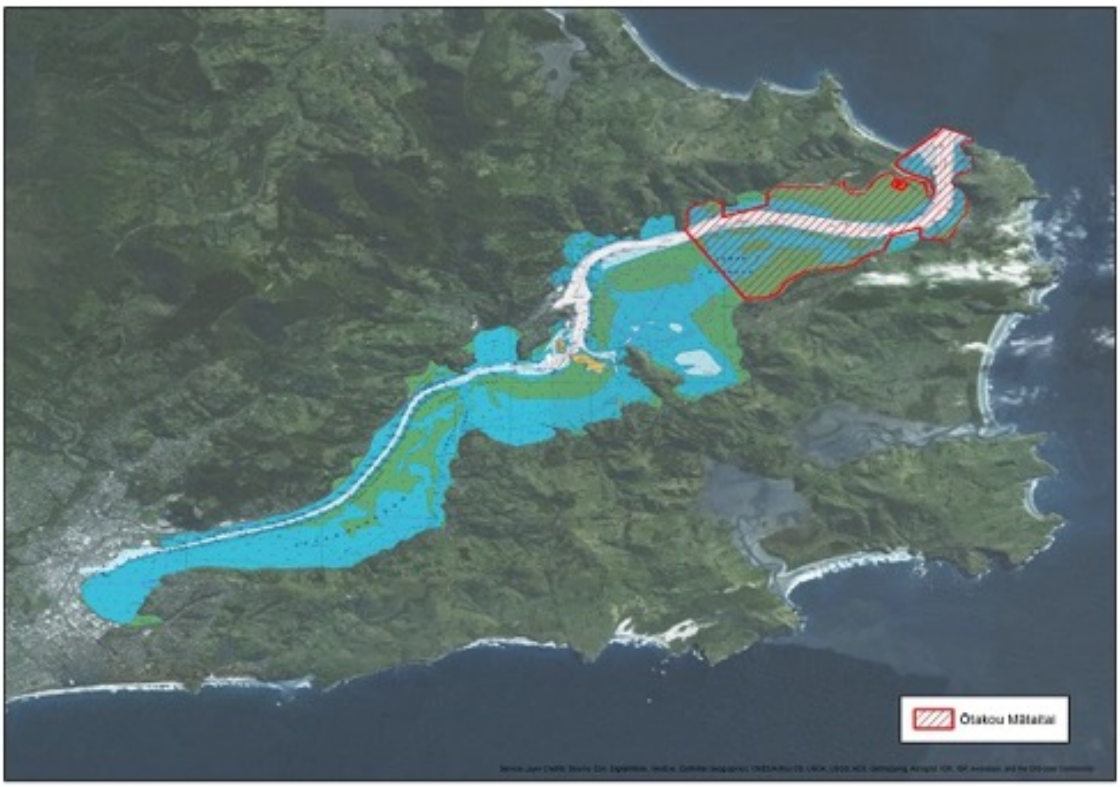

Figure 3: Ōtākou Mātaitai (Source: Te Rūnanga o Ōtākou)

5.3.2 Effects on Public Access

During construction works, public access to some areas will be limited to ensure public safety. These areas are expected to include the vehicle access track, the groynes (which will be prohibited to the public at all times during construction) and the relevant sections of the beach that will be subject to construction. The majority of the reserve, including the playground and pedestrian access areas will remain open to the public.

Once completed, the central groyne has a walk-through access at its landward end to allow people to walk between the two beaches at low tide. A boardwalk will also be installed at the landward end of the southern groyne as part of this consent application to provide for better access to the beach at the southern end. This will tie in to the DCC revitalisation works of the Te Rauone Beach Reserve.

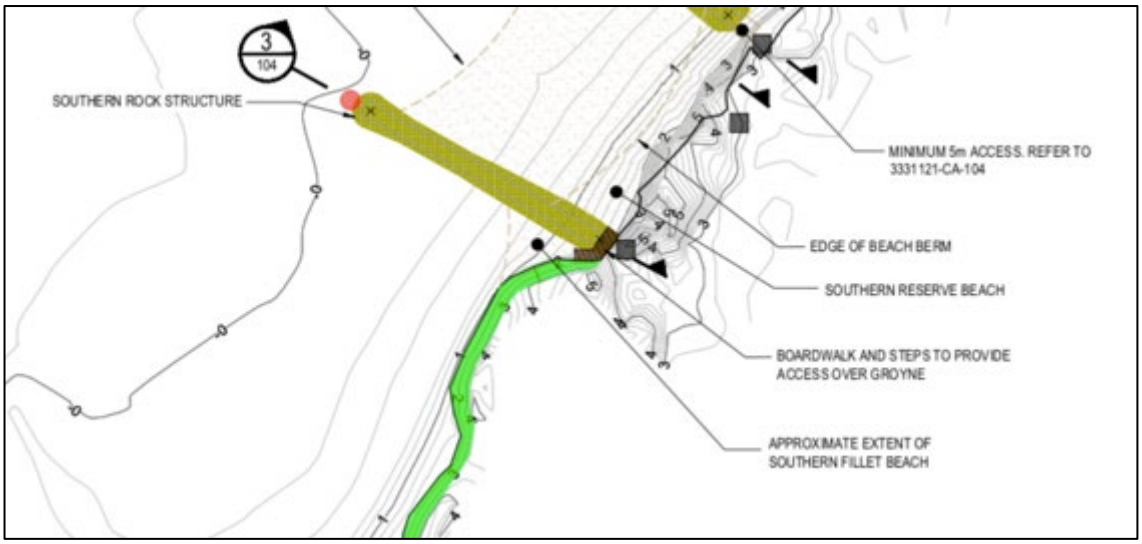

Figure 4: Extract from a design drawing showing the boardwalk (Source: Application)

During maintenance works, public access will be restricted to that portion of the site that is subject to the maintenance works, with the construction lay-down area and construction access used for the construction of the groynes expected to be reused for these purposes. A 'rolling' temporary fencing restriction will most likely be applied where restrictions to those portions of the beach undergoing maintenance will be fenced. Fencing will be moved along as the maintenance works are progressed.

In summary, areas of the beach and reserve will be excluded from the public during the construction and maintenance periods, but some areas will still be accessible, and access will not be adversely affected once the works are completed.

5.3.3 Effects on Visual and Amenity Values

The groynes will have an impact on visual amenity, as is typical with engineering structures in the coastal marine area, but it is noted that this design was the preferred option identified during consultation. Visual representations of what the rock groynes will look like have been developed by the applicant, with some examples shown below.

Figure 5: Visual representation of what the groynes will look like from the beach

Figure 6: Visual representation of what the groynes will look like from the channel

The visual representations show that the rock groynes will be easily seen from Te Rauone Beach but they will be less visible at high tide. The visual representation also shows what the groynes will look like from the shipping channel. The applicant has stated that whilst the groynes will be visible, from a distance they will blend into the wider landscape and already modified coastal environment. This is due to factors such as their low profile design and the rock material proposed to be used. The colour and texture of the rock against the coastal background should help to prevent the groynes from being highly dominant or obtrusive from viewpoints within the channel, the other side of the harbour, or from further along the Otago Peninsula.

The visual impacts of the rock groynes were considered during the design phase. The design only proposes the absolute minimum bulk, length and number of groynes required to ensure re-establishment of the beach is achieved. The seaward end of the groynes will also only be constructed to the height of MSL to reduce visual impacts.

When considering the visual impacts of these structures, it is important to consider that the coastline of the Otago Harbour is highly modified. The historic coastal sea wall runs almost the full length of Portobello Road and significant sections of Harington Point Road, while rock groynes have been used to train the harbour channel for over a century. As a result, it is not considered that the rock groynes located on Te Rauone Beach would be out of character with the wider environment.

Overall, adverse visual effects on landscape values are expected to be minor.

Amenity values are defined in the RMA as:

"Those natural or physical qualities and characteristics of an area that contribute to people's appreciation of its pleasantness, aesthetic coherence, and cultural and recreational attributes".

The key objective of the project is to improve the amenity values of Te Rauone Beach. This has resulted from strong lobbying from the TRBCCC who, for a long time, have pushed for action to be taken to rebuild the beach and restore those amenity values once associated with the area. Consultation identified the qualities and characteristics of the beach prior to advanced erosion including:

- The ability to walk along the beach at high tide;
- The presence of vegetated sand dunes;
- The presence of tidal flats.

Currently, as a result of the advancing erosion, the beach is unable to be accessed at high tide and the sand dunes have been eroded away along with land which makes up the Te Rauone Beach Reserve. The re-nourished foreshore will restore much of the amenity lost through the advanced erosion experienced in the area through re-establishment of the beach berm and protection from further erosion. There will be some short-term, localised restrictions on beach use during construction and maintenance, but there should be no adverse effects on amenity values in the medium to long term.

Safety features built into the design and construction of the groynes include signage to alert beach users of vessel wake / currents, markers on groynes to alert boat users, clearance of debris from foreshore, and procurement of an experienced marine contractor to provide a Site-Specific Safety Plan for the construction and maintenance periods.

There will be some short-term, minor effects on amenity values during construction. There will be positive effects on amenity values following completion of construction.

5.3.4 Effects on Heritage and Archaeological Values

Historic timber groynes are located in the shallow at Te Rauone Beach, with one of these groynes being within 10 m of the proposed southernmost groyne. To ensure preservation of the timber groyne, the applicant has stated that the location shall be confirmed prior to contractor engagement and that an Archaeological Authority will be obtained prior to works commencing as a precautionary measure. This is offered as a condition of consent along with normal accidental discovery protocols to protect any artefacts if uncovered during the works.

The applicant has stated that no other findings of heritage or archaeological significance have been found through the site visits and research undertaken.

5.4 Proposed Consent Conditions

The applicant has proposed the following consent conditions to ensure that potential adverse effects of the proposed activities are avoided, reduced, remedied or mitigated.

Deposition of Material

1. A total volume of approximately 26,500 m^3 – 34,000 m^3 of sand shall be deposited generally as illustrated on drawing number 3331121-CA-103 Rev G prepared by Beca, dated 06.03.20 as part of the initial beach renourishment stage. An updated survey prior to construction works shall be undertaken to determine the final amount of sand required and that volume provided to the Otago Regional Council – Compliance Monitoring prior to the start of construction works.

2. Material deposited onto Te Rauone Beach shall only be derived from dredging material sourced from the Port Otago Harington Bend claim area as authorised by the Regional Plan: Coast for Otago or by resource consent 2010.193.

3. Sand with an average grain size of no less than 0.2 mm and with less than 2% fines shall be used for beach renourishment.

4. At the completion of the re-nourishment works, a final as-built survey will be completed to determine an estimation of the actual volume of sand imported with this being provided to Otago Regional Council – Compliance.

5. That all rock placed within the coastal marine area is as far as practicable, free of foreign material prior to placement.

Construction Environmental Management Plan (CEMP)

6. A CEMP shall be prepared by the principal project contractor prior to construction to meet the requirements of the conditions of this consent and shall include details of groyne construction methodology. The final CEMP must be submitted to the consent authority one month prior to construction.

Maintenance and Operation

7. The works shall be in accordance with the *Outline Maintenance and Operation Plan* provided within the BECA Detailed Design Report dated 12 March 2020. A living Maintenance and Operation Plan (MOP) shall be prepared based on the *Outline Maintenance and Operation Plan* and shall be submitted to Otago Regional Council – Compliance two (2) months following the completion of works. The MOP shall include the following:
   a) Beach and bathymetric surveys, which shall be at the frequency set out in Condition 8, This shall also include the method of survey to enable assessment of changes in vertical level;
   b) The survey area shall extend 150 m north and south of the project site and 50 m seaward of the seaward end of the groynes;
   c) Outline beach nourishment maintenance and actions post significant storm events, and outline methodology associated with these;
   d) Inspection of rock structures, markers and signs, which shall be at the frequency set out in Condition 8;
   e) Outline rock structure maintenance and actions post significant storm events, and outline methodology associated with these;
   f) Mechanisms for gathering community feedback in regard to groyne and beach conditions with reporting of this feedback provided in line with the beach survey frequency outlined in condition 8 below.

8. That post construction monitoring shall be included in the MOP and shall be undertaken at no less than the following frequencies:
   a) Post-storm inspections of the groynes and renourishment following significant storm events;
   b) Quarterly beach surveys for the first year after construction;
   c) Annual beach surveys to be undertaken at 2 and 3 years post construction. The need and frequency of any further beach surveys shall be as set out in a report provided to Council by the consent holder to assess and provide recommendations for monitoring frequency going forward;
   d) Bathymetric survey within one month following completion of the works; and then at six months and twelve months after completion of works. The need and frequency of any further bathymetric survey shall be as set out in a report provided to Council by the consent holder to assess and provide recommendations for monitoring frequency going forward;
   e) Annual inspections of the rock groynes, markers and signs for the first three years post construction. The need and frequency of any further inspections shall be as set out in a report provided to Council by the consent holder to assess and provide recommendations for inspections frequency going forward.
   f) Monitoring results shall also be forwarded to Te Rūnanga o Ōtākou and TRBCCC.

9. The MOP shall be updated as required based on the post-construction monitoring for the maintenance requirements, actions and methodologies (including top up and

recycling methods). Following any update, a copy of the updated MOP shall be submitted to Otago Regional Council – Compliance for information.

Public Access

10. The consent holder shall minimise the area and duration of access restriction to the public and disturbance to the foreshore, to the extent necessary for public safety and good construction practice, while undertaking the renourishment and groyne construction work.

11. The consent holder shall only exclude the public from the area of the project works during authorised construction work or maintenance work.

General Conditions

12. All work shall be undertaken between the hours of 7am to 7pm, Monday to Saturday, excluding public holidays.

13. The site shall be left in a clean and tidy state on completion of the authorised works. Disestablishment, including removal of temporary accesses, site offices, plant and any surplus materials and reinstatement of the contractor's site area shall be completed at the end of construction.

14. The consent holder shall ensure that any machinery, including fuel storage tanks, in the construction area shall be cleaned and maintained at all times to prevent leakage of contaminants, including oil or fuel, into the coastal marine area.

Archaeological Protocol

15. That construction works shall not proceed until an Archaeological Authority is in place from Heritage NZ and all protocol associated with the Authority shall be followed.

Environmental Management Plan (EMP)

16. An Environmental Management Plan (EMP) shall be prepared with input from a suitably qualified ecologist prior to construction to meet the requirements of the conditions of this consent and to provide methodology for adaptive management of benthic species and seagrass. The EMP shall also include measures for the management of sea mammals. The final EMP must be submitted to the consent authority one month prior to construction. The EMP shall include:

    a) Baseline data as presented in the Ecological Impact Assessment written by Ryder Environmental and dated April 2020 for marine benthic communities and cockles including:

    i. A series of marine benthic core samples from within (impact) and adjacent (control) to the scheme footprint to set up a BACI design (before, after, control impact) for the determination of effects;
    ii. Visual quadrat surveys from within (impact) and adjacent (control) to the scheme footprint to set up a BACI design (before, after, control impact) for the determination of effects; and
    iii. Baseline seagrass survey data from collating available aerial photographs to show seagrass distribution, extent and relative condition (condition measured by assessing percent coverage of seabed by seagrass).

    b) The following interim timebound benthic species richness and density thresholds for adaptive management for each tidal height within 6 months of works completion:

    i. Overall percentage occurrence of cockles in benthic samples of the impact site shall remain within 40% of occurrence in control site samples; and
    ii. Benthic species richness and density (using relative abundance data) of the impact site shall remain within 25% of species richness and density in the control sites.

c) The following interim reductions in seagrass distribution, extent and relative condition thresholds for adaptive management within 6 months of works completion:

i. Seagrass distribution, extent and relative condition shall not deviate by greater than 25% of baseline metrics unless such change can be attributable to other effects beyond the scope of the proposed works; and
ii. This condition relates to the seagrass beds located immediately south of the scheme footprint only.

d) Remediation methods if the pre-set thresholds are met in relation to benthic communities;

e) Remediation and rehabilitation methods if pre-set thresholds are met in relation to seagrass beds.

f) Methodology for management of sea mammals encountered during project works, including that:

i. No vehicles shall drive within 50m of a sea lion, and contractors shall withdraw to at least 50m (or to a greater distance if 50m allows human/sea lion interaction).
ii. Eye-contact with sea lions will be avoided by workers, where practicable.
iii. The Department of Conservation (DOC) shall be called for assistance and no attempts shall be made to interact/move/scare any sea lion from the project footprint without DOC guidance.
iv. If a sea lion is spotted in the ocean, all vehicle and vessel movements and placement of rocks and sand shall be stopped until the location of the sea lion is ascertained and/or the sea lion has been confirmed to have moved away.

17. No works are to be undertaken on Te Rauone beach during mid-December to early February each year to avoid sea lion breeding season.

Benthic Monitoring

18. a) Benthic monitoring / surveys shall be undertaken post construction, in accordance with the EMP required by condition 16 above, to determine recolonisation rates and be carried out at 6 months post construction.

    b) Benthic monitoring / surveys shall only be undertaken for consequent 'top ups' that exceed 20% of the original sand nourishment volume.

19. A report summarising the results of the benthic monitoring required by Condition 18 shall be prepared by suitably qualified ecologist(s) and submitted to the Department of Conservation, Te Rūnanga o Ōtākou and Otago Regional Council – Compliance within three months of sampling. The report must analyse the results, report on the interim adaptive management trigger, discuss any trends and review overall ecological effects. The report should recommend if any further benthic monitoring necessary and advise on any necessary adjustments for future monitoring if considered necessary.

20. Where the EMP threshold for adaptive management is triggered (occurrence of cockles shall remain within 40% of control site, benthic species richness and density shall remain within 25% of control site), the adaptive management process outlined in Condition 22 shall be commenced.

Sea Grass Monitoring

21. Monitoring of sea grass beds, which occur south of the project footprint, shall be undertaken while the works are being completed to ensure suspended sediment loads do not exceed the adaptive management threshold (seagrass distribution, extent and relative condition shall not deviate by >30%). Monitoring requirements shall be included within the EMP required by Condition 16 above and shall comprise:

i. An aerial survey using a drone shall be undertaken every four weeks during works to determine the distribution and extent of the beds, and the relative sediment-loading of them.
ii. Aerial surveys shall continue to be undertaken in Spring and Autumn for three years post-works, to ensure the renourishment works including intermittent "top-ups" of sand/sediment to the beach, does not adversely affect the distribution and extent of the sea grass beds.
iii. A report summarising the results of the sea grass aerial surveys shall be prepared by suitably qualified ecologist(s) and submitted to the Department of Conservation, Te Rūnanga o Ōtākou and Otago Regional Council – Compliance within three months of survey. The report must analyse each new set of results. The report may also suggest refinements to the interim trigger for the adaptive management process and advise on any necessary adjustments for future monitoring.
iv. Where the EMP threshold for adaptive management is triggered, the adaptive management process outlined in Condition 22 shall be commenced.

Adaptive Management

22. If required by conditions 20 and 21(iv), the consent holder shall commence the adaptive management process. This will include, the project appointed suitably qualified ecologist to evaluate monitoring results and agree actions with the consent holder to remedy effects caused by exceedances in benthic and seagrass adaptive management thresholds. These remediation measures shall be undertaken in accordance with the EMP required within Condition 16 above. Details of any adaptive management to be carried out shall be reported to the Department of Conservation, Te Rūnanga o Ōtākou and Otago Regional Council – Compliance prior to implementation.

5.5 Consideration of Alternatives

Several number of studies have been undertaken by ORC, POL and DCC over the past 25 years to determine why the northern end of the beach is eroding. A northern headland concept was developed 2007-2011, reviewed by Tonkin & Taylor and Beca, and found to have limitations.

Renourishment and groynes was chosen as the preferred option because:

- Provides high tide beach amenity;
- More acceptable visual impact than offshore breakwaters;
- Being built on a beach that used to exist there;
- Allows for marine access to the beach;
- General similarity to the historic harbour training walls; and
- More straightforward construction than some other options considered.

The concept was agreed upon at a stakeholder meeting in Feb 2017 attended by ORC, POL, DOC, TRBCCC, coastal geomorphologist Martin Single, and Beca. It was agreed that construction would be followed by monitoring of beach behaviour and modification of the design of subsequent rock structures / renourishment depending on monitoring results. This "try it and see" approach was preferred over undertaking further coastal process monitoring given the limited scale of the structures and the complexities of the local wave climate.

5.6 Conclusion

For the purposes of this notification assessment, the adverse effects of the proposed activities may be more than minor but they will be localised, and the vast majority of potential adverse effects should be temporary in nature. This assessment has not taken into account the positive effects of the proposal as this is not consideration under s95 of the RMA. Positive effects will be considered when making a recommendation on whether to grant the consent under s104 of the RMA.

6. Notification and Written Approvals

6.1 Section 95A Public Notification

Step 1: Is public notification mandatory as per questions (a) – (c) below?

(a) Has the applicant requested that the application be publicly notified? **Yes**

(b) Is public notification required by Section 95C? **No**
Has further information been requested and not provided within the deadline set by Council? **No**
Has the applicant refused to provide further information? **No**
Has the Council notified the applicant that it wants to commission a report but the applicant does not respond before the deadline to Council's request? **No**
Has the applicant refused to agree to the Council commissioning a report? **No**

(c) Has the application been made jointly with an application to exchange recreation reserve land under section 15AA of the Reserves Act 1977? **No**

Step 2: Is public notification precluded as per questions (a) – (b) below?

(a) Is public notification precluded by a rule in the plan or a NES? **No**

(b) Is the application for one or more of the following activities but no other activities**:**

(i) A controlled activity? **No**

(ii) A restricted discretionary, or discretionary activity, but only if the activity is a subdivision of land or a residential activity? **No**

(iia) A restricted discretionary, discretionary or non-complying activity but only if the activity is a boundary activity? **No**

(iii) A prescribed activity (see section 360G(1)(a)(i)? **No**

Step 4: Do special circumstances exist in relation to the application that warrant the application being publicly notified? No

When an application is publicly notified under s95A of the RMA, the Council must also notify prescribed persons as required by Regulation 10 of the Resource Management (Forms, Fees and Procedure) Regulations 2003. The persons to be served notice include:

- every person who the consent authority decides is an affected person under section 95B of the Act in relation to the activity that is the subject of the application or review:
- every person, other than the applicant, who the consent authority knows is an owner or occupier of land to which the application or review relates:
- the regional council or territorial authority for the region or district to which the application or review relates:
- any other iwi authorities, local authorities, persons with a relevant statutory acknowledgement persons, or bodies that the consent authority considers should have notice of the application or review:
- the Minister of Conservation, if the application or review relates to an activity in a coastal marine area or on land that adjoins a coastal marine area:
- the Minister of Fisheries, the Minister of Conservation, and the relevant Fish and Game Council, if an application relates to fish farming (as defined in the Fisheries Act 1996) other than in the coastal marine area:
- Heritage New Zealand Pouhere Taonga, if the application or review—-
    - relates to land that is subject to a heritage order or a requirement for a heritage order or that is otherwise identified in the plan or proposed plan as having heritage value; or
    - affects any historic place, historic area, wāhi tūpuna, wāhi tapu, or wahi tapu area entered on the New Zealand Heritage List / Rārangi Kōrero under the Heritage New Zealand Pouhere Taonga Act 2014:
- a protected customary rights group that, in the opinion of the consent authority, may be adversely affected by the grant of a resource consent or the review of consent conditions:
- a customary marine title group that, in the opinion of the consent authority, may be adversely affected by the grant of a resource consent for an accommodated activity.

In accordance with Regulation 10 of the Resource Management (Forms, Fees and Procedure) Regulations 2003, the persons to be served notice are detailed in the table below.

Party	Why
Te Rūnanga o Ngai Tahu	• Activity located in Statutory Acknowledgement Area. • Iwi authority. • Customary marine title applicant. They have also already been notified by the applicant.
Robert and Natalie Karaitiana	• Customary marine title applicant. They have also already been notified by the applicant.
Aukaha	• Iwi authority. • Effects on cultural values.
Department of Conservation	• Application relates to an activity in a coastal marine area. • Effects on native fauna and flora.
Dunedin City Council	• Owner of some of land to which the application relates.
Heritage New Zealand Pouhere Taonga	• Historic timber groyne structures in the vicinity of the proposed works.

The following parties were considered, but it was decided not to serve notice on them because effects on them may not be greater than those on the wider public, and they will still have the opportunity to make a submission through the public notification process.

Party	Why not affected
Owners and occupiers of nearby properties	The proposed locations of the northernmost and southernmost groynes are close to adjacent properties but do not encroach upon them. Coastal engineering assessments have not identified any significant impacts on adjacent properties. The view from these properties will be altered, but not to an extent that is far greater than it will be for other properties in the area. The public notification process will allow all adjacent property owners to make a submission if they feel that they will be adversely affected.

6.2 Other Notifications

Maritime New Zealand (MNZ) was sent a copy of the application as the proposed activity fell within the criteria outlined in Section 89A of the Act. MNZ did not comment within 15 working days, therefore the application proceeded.

6.3 COVID-19 Considerations

This application will be publicly notified whilst New Zealand is still under lockdown restrictions related to the COVID-19 pandemic. A public notice will be provided on the ORC website and in the Otago Daily Times newspaper, satisfying the minimum requirements for a public notice under the RMA. In addition, a site notice will be erected and the Chair of the TRBCCC will be asked to circulate notice via email to as many contacts in the local area as possible. Should New Zealand be moved back into Level 4 during the submission period then the submission period may be extended to allow submitters additional time whilst they are juggling other impacts on their lives related to the lockdowns.

NOTIFICATION RECOMMENDATION:

In accordance with the notification steps set out above, it is recommended that the application proceed on a publicly notified basis.

Name: Hilary Lennox
Title: Consultant Planner
Date: 4 May 2020

Decision on notification

Sections 95A to 95G of the Resource Management Act 1991

Date: **4 May 2020**

Application No: **RM19.441**

Subject: ***Decision on notification of resource consent application under delegated authority***

Decision under Delegated Authority

The Otago Regional Council decides that this resource consent application is to be processed on a **publicly notified** basis in accordance with sections 95A to 95G of the Resource Management Act 1991.

The above decision adopts the recommendations and reasons outlined in the Notification Recommendation Report above in relation to this application. We have considered the information provided, reasons and recommendations in the above report. We agree with those reasons and adopt them.

This decision is made under delegated authority by:

Peter Christophers
Principal Consents Officer

4 May 2020

Joanna Gilroy
Manager Consents
5 May 2020