

# STAFF REPORT

**TO:** Mayor & Councillors  
**FROM:** Eric Verstappen  
**DATE:** 9 September 2005  
**SUBJECT:** Torrent Bay Beach Renourishment Scheme

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## INTRODUCTION

Council agreed two years ago, to provide the sum of \$10,000 per annum, funded from general rate, to meet the cost of engineering, environmental or community projects identified for priority action by the Torrent Bay Township Committee. To date, \$20,000 is held in the Torrent Bay allocation fund.

This paper identifies the Torrent Bay beach renourishment scheme as that project, which has been identified because of the severity of ongoing erosion.

Recently Council staff and elected representatives visited Torrent Bay to inspect the state of the beach. This visit was followed by a meeting at which all aspects of the project, including costs and timetable were discussed.

## BACKGROUND

The Torrent Bay community is a small enclave of private land nestled in the Abel Tasman National Park, comprising some 54 properties (including Council and DoC reserves within the community) Private land is separated from the coastline by a Council Reserve, both on the eastern foreshore and within the Torrent Bay estuary. This reserve performs a number of functions, chief amongst these being as an erosion and inundation buffer for the community, as well as a major public amenity and access through the community for the large numbers of visitors to the ATNP.

The eastern foreshore is directly exposed to Tasman Bay and is particularly susceptible to coastal erosion during periods of easterly wind. This reserve has gradually reduced in width over the years to perhaps half of that originally surveyed. In recent years, however, the combination of increasing foot traffic and adverse weather patterns has accelerated erosion of the foreshore.

## THE PROBLEM

The reserve suffers from a long term coastal erosion problem. However, the reserve is also not well managed. Foot traffic along and across the reserve is largely indiscriminate, with a number of access points to the beach. This foot traffic exacerbates erosion of the vertical face at the head of the beach. Members of the Torrent Bay Township Committee have become increasingly concerned about the state of the

reserve and have, in liaison with Council staff, been exploring measures that can be taken to protect the foreshore from erosion. The solution not only involves managing coastal process impacts on the foreshore, but also managing the use and access across the reserve itself.

## **SOLUTION OPTIONS**

### **a) Foreshore Erosion**

When wave erosion of the reserve occurs, material is deposited on the intertidal platform to form sand bars in front of the beach, and is also deposited in the estuary channel flood and ebb tide deltas. However, the wave climate lacks longer period waves that act to drive sand ashore and rebuild the beach. This means that the reserve and beach is subject to long term erosion.

Community members have at various times suggested the building of timber retaining walls along the head of the beach. However, this is far from an optimum solution. Waves reflect off such a structure with very little loss of energy, accelerating the removal of upper beach material to the low tide platform. Such a structure is ultimately very destructive of the beach and reserve amenity values.

Other structural interventions are possible, such as rock protection works, as witnessed in other parts of the District. However, these structures are very expensive to build (even more so in areas with no road access) and are very intrusive in this national park setting.

As erosion rates are historically not that strong, an effective solution is to mimic what nature would normally do, but cannot do at all well in this location due to the lack of appropriate wave climate. That is, to undertake beach renourishment by putting back what storm wave attack has removed. This involves mechanically excavating the sand bars from the inter-tidal area and placing the material back on the beach from whence it came. This proposition has been discussed with the local community, as well as with DoC and Iwi representatives, and all are in support of such a proposal. Resource consent (coastal permit) would be required for this work, but it is anticipated that it would be readily obtainable without public notification.

An assessment of the amount of sand bar material available (off the intertidal platform, excluding the flood tide delta area) has been recently undertaken and exceeds 4500 cubic metres. This would provide a nourishment volume of nearly 15 cubic metres per metre run of beach most affected by erosion. This volume of material would effectively build up the beach to a depth of almost 1m over its full slope and would remove the existing erosion escarpment at the head of the beach. This work, along with follow-up access and vegetation management measures, would enormously improve the amenity values and stability of the beach.

While such a project can be undertaken at any time, an opportunity exists to do this work later this month that is too good to miss. A Picton-based barge is working at the Port Motueka marina during mid-September and is both large enough and available to transport a digger and two dump trucks to Torrent Bay immediately following completion of that work. Mobilisation costs for this barge are approximately \$2,500-\$3,000 per day

(ie approximately \$13-\$15,000 ex-Picton). Undertaking the proposed work at Torrent Bay immediately after Port Motueka will save over \$10,000 mobilisation costs. This is a substantial proportion of the total cost of the renourishment works.

A quote to undertake the Torrent Bay works (ex Port Motueka) has been obtained from Adcock and Donaldson, for a project involving various volumes of material. This is outlined below:

a) 1500 cubic metres	\$17,411.00 (\$11.61/cu.m)
b) 3000 cubic metres	\$25,470.50 (\$8.49/cu.m)
c) 4500 cubic metres	\$33,129.00 (\$7.36/cu.m)
d) 5500 cubic metres	\$40,874.00 (\$7.43/cu.m.)

To get the greatest value for money from this project (and the availability of the barge), as much sand should be placed on this beach as is available from the intertidal platform. This will maximize the beach restoration opportunity and reduce the future need for, and frequency of, further renourishment works.

## **b) Reserve Management and Beach Stabilisation**

An integral aspect of beach renourishment works is the stabilization, revegetation and traffic management on the reserve. This involves revegetating the upper beach with sand-binding species such as pingao and spinifex, isolating beach revegetation works from foot traffic until the vegetation is established, limiting access along the reserve and across the upper beach-reserve interface to specific locations, and providing a “running surface” (such as timber sand ladders) at access points so as to minimize foot traffic erosion of the head of the beach.

These “Coast Care” - reserve management measures have been discussed with the local community and are fully supported by them. Some of these measures have already been implemented in part, including reducing access points to the beach, isolating upper beach vegetation margins from foot traffic, and constructing flexible timber sand ladders in beach access ways. These works need to be incorporated into a comprehensive management plan for the reserve. A revegetation program has been discussed with Council staff, who are keen to become involved with the local community in a Coast Care initiative with them. A planting program cannot realistically be initiated until autumn.

A particular problem arises at the northern end of the beach, where Abel Tasman track users emerge and are either dropped off or picked up by commercial operators. This is the most sheltered part of the beach and therefore suffers least from wave erosion. However, the very high foot traffic movement across the reserve and onto the beach at this location is eroding the upper beach and vegetation margin. The same problem is also occurring on the estuary margin opposite. Several trees worthy of retention are about to be lost due to this erosion pressure.

Creating a low timber wall edging at the top of the beach, perhaps no higher than 300-400mm and some 50-60m is warranted in the interim, to support the reserve margin at this location. Ideally, this edge restraint should be supplemented by beach

renourishment also, and sand will be feathered into this area to reduce foot traffic erosion effects.

## **FUNDING**

As was noted in the introduction to this report, Council is currently holding \$20,000 of funds allocated from general rate towards projects at Torrent Bay. The Committee has advised that whilst they have very little funds of their own available to cover the cost of the project, they are prepared from within their community, to cover costs of up to \$5,000 for materials to erect the low retaining wall proposed for the northern end of the beach. They will also provide and pay for, the transporting and cost of a smaller digger required to carry out this part of the project. Labour required in the erection of the low retaining wall will be provided by the residents.

Council's commitment to continue to allocate the sum of \$10,000 per year is currently included in our long term plan. Of the required cost of \$40,000, the first \$20,000 will be met from existing funds, and a further \$5,000 from the local committee. It is proposed that the remaining \$15,000 will be drawn from funds allocated in advance to the Torrent Bay community. This cost could, in the first instance, be drawn against the Motueka DILs account and repaid from the general rate allocation over the subsequent two financial years – thereby neutralizing the effect against Motueka DILs in the longer term.

## **RECOMMENDATIONS**

- 1. That a project to renourish the Torrent Bay beach immediately upon the barge becoming available after completion of the work at Port Motueka be approved.**
- 2. That funding of up to \$40,000 is approved, to cover the initial uplifting and placement of at least 4500 cubic metres of sand, construction of a low timber wall at the northern end of the beach (and/or additional sand placement if available), and associated resource consent fees.**
- 3. That funding requirements above those already available be drawn from the Motueka DILs account, with these funds being replaced over the next two financial years.**
- 4. That a reserve management strategy be compiled by Council, and that a program of appropriate Coastcare planting, vegetation protection works, access limitation and foot traffic erosion control measures be implemented.**

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