

Wave refraction processes after a sea level rise of 1.5 m may reverse the accretory process occurring at the cusped foreland, and halt the development of the tombolo-type feature. Wave refraction also indicated that storm events tend to promote wave-induced transport of sediment towards the inlet mouth, assisting estuarine sedimentation during storm events.

9.2 RECOMMENDATIONS

9.2.1 *Future development*

In many harbours it is common practice to react to problems rather than to plan wisely ahead. The Whangamata Community Council has expressed an intention to plan for the future by the initiation of this study. The following recommendations are suggested for problems which have become apparent over the 1989 - 1991 study period. The recommendations do not include the extra planning, modelling or bathymetric investigations which may be necessary, but are offered as options for the Whangamata Community Council to consider.

9.2.2 *Mooring facilities*

The demand for increased moorings and upgraded maintenance facilities will become more pressing as both the permanent and seasonal population of Whangamata increase. As demand is already far beyond present capacity, it would be prudent to plan future mooring in the small anchorage in advance. Various options include:

- a) Limit travel of marine traffic to the main boating channel between the two lines of pile moorings already in place.
- b) Disposal of the swing moorings as inefficient users of space, and development an extra line of piles for vessels with shallow draughts.
- c) Mooring of smaller boats in shallower areas of the harbour. Many areas of the estuary remain which would be suitable for pile moorings.

9.2.3 *Marina siting*

Eventually all available space in the inlet may be being used efficiently for pile moorings, yet the demand may still remain. For the sake of aesthetics and freedom of movement in the inlet, the Council may consider a more compact method of anchoring vessels before choking the inlet with moorings. There have been various points raised in the past protesting the desirability of a marina at Whangamata:

- a) The marina would be used by commuters and priced out of the reach of local residents. While this may be so in some cases, any local resident who took a position in the marina would make a space for another to utilise a pile mooring. New boats in the marina would bring business to local services, from which the community would stand to gain.

b) A marina would increase pollution in terms of possible effluent, and runoff from maintenance areas. Planning a marina is a lengthy business requiring numerous reports, including an environmental impact report. To avoid pollution problems experienced in the past, many conditions can be placed on marina users, e.g. prohibiting the pumping of sewage and the flushing of bilge tanks into the estuary, and ensuring wastes from maintenance areas are disposed of inland and not washed into the harbour. These considerations are important as a substantial amount of the water which leaves the harbour on the ebb-tide is transported back in on the flood, gradually increasing the concentration of undesirable elements.

c) Problems with the accumulation of metals in sediments from tin-based anti-foulants have resulted in the development of alternatives now available on the market. It is preferential to use them while mooring in a marina, and can be included in the conditions to hold a berth. PAULING (1989), notes however, '*there is more destructive heavy metal running off the land and causing ecological problems in coastal waters than could ever come from tin compounds washing off a few boats.*'

d) Parking may disturb local residents and public access to the beach. Two potential parking areas include council owned land currently used to dump dredged material upon, and the extension of current facilities adjacent to the wharf. It is considered that these would cause a minimum of inconvenience to the public.

e) The marina may need to be dredged. Siting of the marina is important in this case, and three alternatives will now be considered.

A major point in favour of a marina is that if it were dredged to a depth where vessels involved in the transport of tourists on fishing, diving and sight-seeing trips, could moor, then their business could be conducted with the public at the marina which would take the pressure off the wharf. At present these vessels are permanently moored in the main channel and the captain's time at the wharf restricted. Siting of a marina immediately north of the wharf (Site A, fig. 9.1) would ease several problems:

- The shortage of vessel storage facilities;
- Car parking could make use of the present carpark, and the flattened area of dune behind the harbour masters building. While it is desirable to conserve the dunes, this area has already been flattened and planted with trees. Its development as a carpark would be far preferable to the construction of buildings upon it;
- Instability of the bank for which groynes were installed could be permanently remedied by a retaining wall forming part of the marina;
- Proximity to the main channel would encourage maximum tidal flow, rapid flushing of the marina, and a minimum of dredging;
- Although the marina would project into the harbour, the main channel between the two rows of pile moorings would remain accessible;

- Charter vessels may run their businesses, and load and unload passengers at the marina, easing congestion at the wharf.

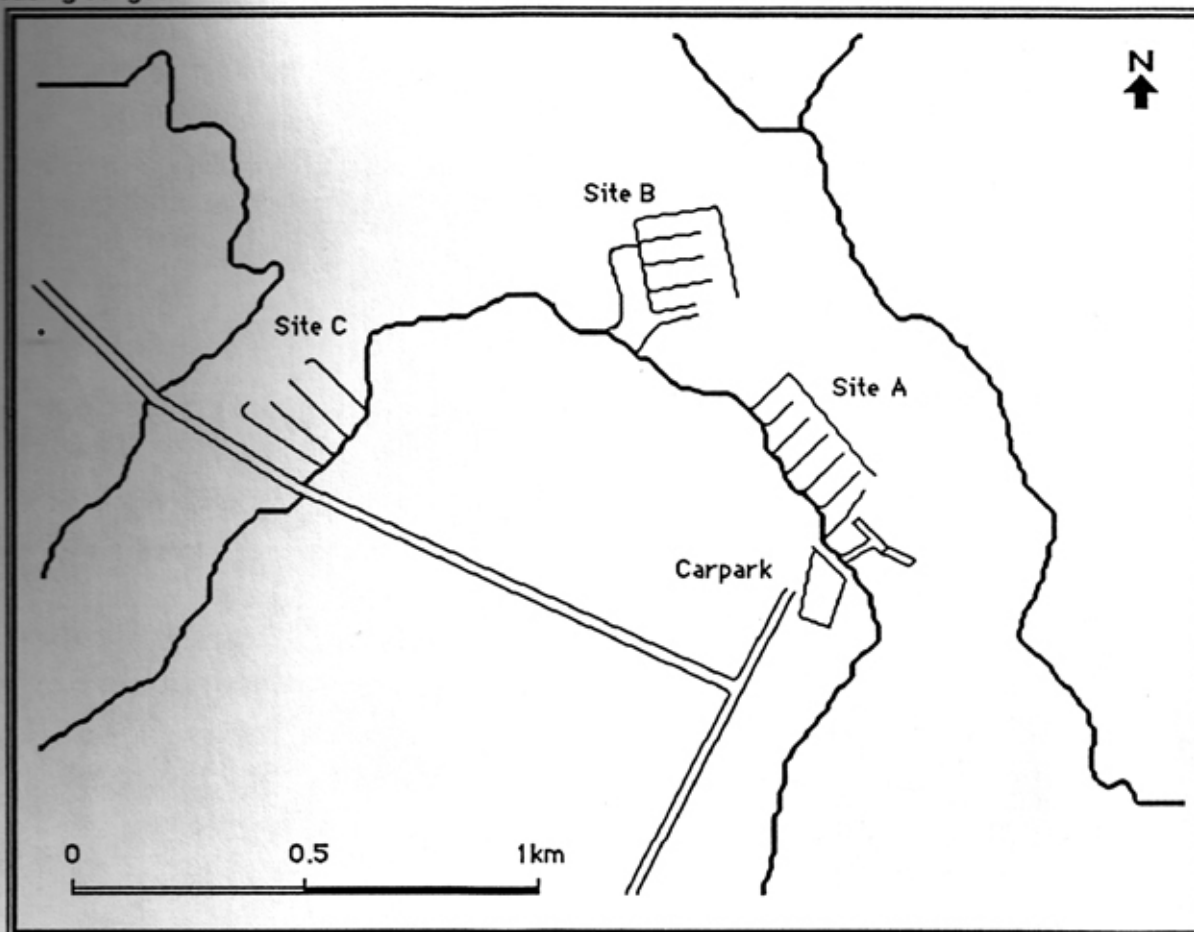


Figure 9.1: Bruce Wallace & Partners identified Site C, followed by Site B as recommended sites for marina development. Site A is the author's preferred option.

Bruce Wallace and Partners recommended two sites in 1985. Their favoured site was immediately seaward of the causeway in an area colonised by mangroves since causeway construction in 1976. The advantage of this site is its proximity to land owned by the council which could be available for parking and boating facilities. The site is however, in an area of rapid sedimentation, and very low tidal flushing, hence would be susceptible to water quality and sedimentation problems, and require regular dredging. Based on the collection of further data than that available to Bruce Wallace & Partners, Site C is considered to be the least favourable of the three.

Site B is situated at the point of deflection of the Moanaanuanu channel, and being located in an area of relatively high velocity flow would be regularly flushed by tidal flow. This area is characterised by rapid channel migration as identified in the boatramp core, where 0.5 m of sand was deposited so rapidly as to preclude any shell material or pollen. A marina at this site may stabilise the Moanaanuanu channel, although sediment transport processes would be altered by the construction of an access road to the marina. Owing to the nature of the channels in the vicinity, Site B is considered to be a second best option.