Geomorphological impacts of the Mornington Harbour proposal

by Dr Eric Bird

1. The suggested changes to Mornington harbour, including the insertion of a concrete wave screen and the extension of moorings, would have major geomorphological impacts on the coastal environment of Mornington, notably on Mothers Beach, Scout Beach and Shire Hall Beach and the sea floor east and south-east of Mornington Pier.

2. Existing structural works, including Mornington Pier, which has been partly made into a solid structure, and the reclamation and development of land to the south, have already resulted in sand accretion within Mornington harbour and the widening of Mothers Beach (Report by J.B. Hinwood and E.C.F. Bird, 1994). The changes now suggested will lead to further movement of sand from Shire Hall Beach, Scout Beach and the adjacent sea floor into the harbour and on to Mothers Beach.

3. It should be understood that sand movement on beaches in the Mornington area is due to wave action and not to tidal or wind-driven currents, although these may move sand on the sea floor. Any structure designed to reduce wave action (such as a concrete wave screen) will lead to modifications in the wave regime on Mothers Beach, and will create a trap for further sand accretion in the harbour, particularly during the winter half-year (May to October), when northerly and north-easterly winds generate waves that move sand from Shire Hall Beach and Scout Beach on to Mothers Beach. These waves and associated currents also move sand from the sea floor on to Mothers Beach.

4. At present westerly wave action, particularly in the summer half-year (November to April), and including waves refracted round Schnapper Point and beneath and around Mornington Pier, sweep sand back from Mothers Beach to Scout Beach and Shire Hall Beach. The proposed additional structures will reduce westerly wave action reaching Mothers Beach and so increase the retention of sand delivered here from Shire Hall Beach and Scout Beach, and from the adjacent sea floor by northerly and north-easterly waves and associated currents. The situation is similar to that at Sandringham, where the original harbour has been greatly reduced in depth and area by sand accretion from the north, following exclusion of westerly wave action by a solid breakwater.