

Portsea front beach – Options Analysis

Option 2

Offshore breakwater (three options)

Description

This is a shore-parallel structure offshore of Portsea Pier that would block the incoming swell wave energy that is causing erosion at Portsea front beach.

Scenario

Three configurations being attached, detached and of varying length to be examined, along with and without sand nourishment.

Detached breakwater

A detached breakwater is designed to reduce wave energy on the shore. It provides for the build-up of beach deposits in its lee and maintaining transport of littoral drift to down-drift beaches. The structure could be extended westward, if desired, to develop a beach in front of the recently constructed rock revetment. The works would need to be combined with sand nourishment to avoid erosion of down-drift beaches.



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Attached breakwater

An attached breakwater reduces wave energy at the shoreline in its lee. It also is a complete barrier to littoral drift transport. The concept design for an attached breakwater comprises a “T-groyne” that would provide for a small boat harbour. The western wing of the “T” provides sheltering to allow build-up of littoral drift for bypassing. Without this wing there would be no build-up of sand because wave incidence enhanced by wave reflection off the structure would result in high wave energy at the shore.

Initial nourishment to prograde the beach 20 m would be 60,000 m³. A sand bypassing system would be required to transport the up-drift fillet to the down-drift beaches. The “T-type” breakwater could be a rock rubble mound or be constructed from sheet piling.



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