

Hydrodynamics and Sediment Modelling for a Fishery Harbour in Konkan Region of Maharashtra, India

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ABSTRACT

Coastal regions are among the most important places for urban development and industrial expansion. However, the system is active and it must be well examined before any infrastructure is planned, to avoid harm from natural processes like degradation, sedimentation, and sometimes sea-generated natural disasters. Numerical modelling of the coast to forecast the area's natural parameters is an important technique for assessing these systems. Coastal regions are of critical importance to most of the world's citizens with a significant bearing on economic activities. In the present study, a well-calibrated mathematical model of Vengurla, Maharashtra, has been developed using MIKE 21 flexible mesh software, with the latest prototype data and also carried out 2-D hydrodynamic studies for the proposed 500m breakwater and approach channel. The simulated model will be tangled with the sediment transport model to ascertain the likely pattern of siltation in the area. After studying the Hydrodynamic model, it was observed that in existing conditions, currents varied in the range of 0-0.02 m/sec inside the Vengurla creek and 0-0.15 m/sec in the seawater and currents under the proposed condition varied in the range of 0-0.029 m/sec inside the Vengurla creek and 0-0.22 m/sec in the seawater. No severe circulation or eddies were observed near the beach area in the existing condition as well as in the proposed condition, hence no siltation has occurred in that area. From the sediment model, it was observed that there is not much siltation/erosion after the construction of the proposed breakwater and deepening of the approach channel.

Keywords: Hydrodynamic, Coastal region, Fishing harbour, MIKE 21 HD, Siltation, Vengurla creek.