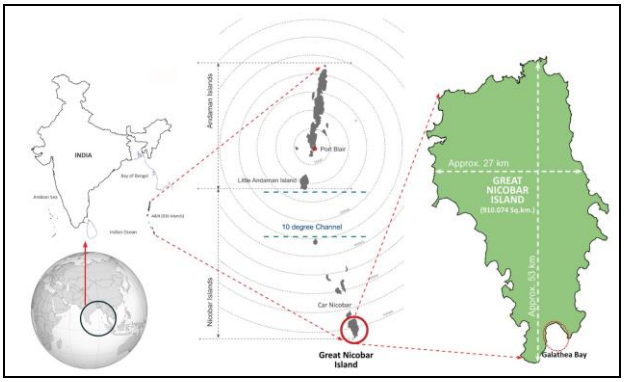
CENRAL WATER AND POWER RESEARCH STATION

MATHEMATICAL MODEL STUDIES FOR HYDRODYNAMICS & SILTATION FOR DEVELOPMENT OF INTERNATIONAL CONTAINER TRANSSHIPMENT PORT (ICTP) AT GALATHEA BAY, A&N ISLANDS.



STUDY OVERVIEW

The project involves Hydrodynamic model studies for the development of International Container Transshipment Port (ICTP) at Galathea bay, A&N Islands. The proposed layout evolved from wave tranquillity studies is considered to carry out Hydrodynamic model studies along with sediment transport.

APPROACH

- To meet the objective, CWPRS conducted Hydrodynamics and siltation studies for proposed development and evolved the feasibility of layout with Hydrodynamics and siltation point of view.
- To ascertain the impact of development on hydrodynamics and sedimentation, CWPRS further conducted mathematical model studies using 2-Dimensional hydrodynamic model MIKE 21 HD and the mud transport model MIKE 21 MT.
- The proposed layout consists of 2442 meter long of shore connected Eastern Breakwater and 720 m of long of offshore breakwater, Turning Circle with diameter 860 meter, three Container terminal viz CT-1, CT-2 & CT-3 and the proposed harbour basin area will be dredged to - 20 m below CD.

KEY FINDING

- The model studies carried out reveal that peak tidal currents in the vicinity of bay are in the rage of 0.05 m/s to 0.1 m/s in existing condition.
- Currents with marginal increase in magnitudes are observed above 0.13 m/sec in proposed condition.
- Eddies / weak circulatory currents observed in front of CT-3 reclamation and near turning circle which may give rise to settlement of suspended sediment load in the area.
- It can be seen from model simulation that total annual siltation at the proposed development area would be about 0.8 M cum.

IMPACT

- It is seen from model results that, the proposed layout at Galathea Bay, Andaman & Nicobar Island is suitable from hydrodynamics and siltation point of view.