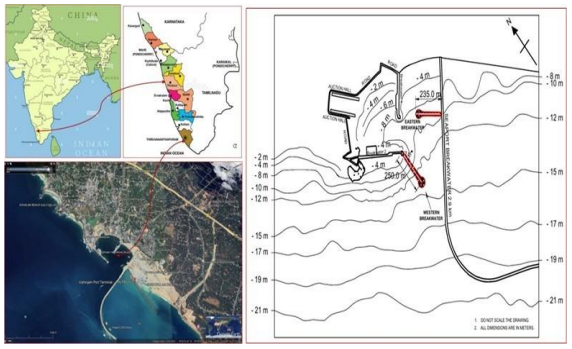
CENTRAL WATER AND POWER RESEARCH STATION

DESK & WAVE FLUME STUDIES FOR THE DESIGN CROSS SECTION OF BREAKWATER EXTENSION OF WESTERN BREAKWATER (250 M) FOR THE DEVELOPMENT OF FISHING HARBOUR AT VIZHINJAM, KERALA



STUDY OVERVIEW

The project involves the design of breakwater sections for the proposed extension of Western breakwater of length 250 m upto -13.0 m sea bed level. The design cross sections of trunk and roundhead portions of the breakwater at -12.0 m and -13.0 m sea bed level consists of 10 t tetrapods and 12 t tetrapods in armour layer respectively.

APPROACH

- To determine optimal design evolving through desk and wave flume studies for the design cross sections of trunk portion consists of 10 t tetrapods in armour layer from existing breakwater to -8.0 m sea bed level and from -8.0 m to -12.0 m sea bed level and roundhead portions of the breakwater at -13.0 m sea bed level with 12 t tetrapods in armour layer.
- The significant wave height of (Hs) 4.50 m and wave height ($H_{1/10}$) of 5.72 m at Design Water Level (DWL) of +2.10 m was considered for the design of breakwaters.

IMPACT/SIGNIFICANCE/ OUTCOME

The research facilitates optimal design of the cross-section for trunk and roundhead portions of the breakwater at -12.0 m and -13.0 m sea bed level consists of 10 t tetrapods and 12 t tetrapods in armour layer respectively for the proposed extension of Western breakwater of length 250 m.

KEY FINDINGS

- CWPRS has designed and evolved the cross-sections of breakwater at various sea bed levels. It is proposed to provide 8 m wide crest slab at +8.0 m level with parapet wall with top level of +10.56 m for round head section at -13.0 m bed level with 12 t tetrapods in armour layer with 1:2 slope on either side and 10 t tetrapods in armour layer for trunk section with 1:2 slope on sea side and 1:1.5 slope on harbour side from existing breakwater to -8.0 m sea bed level and from -8.0 m to -12.0 m sea bed level.
- The hydraulic stability of the breakwater has been confirmed through the wave flume studies with the significant wave height of (Hs) 4.50 m and also wave height ($H_{1/10}$) of 5.72 m at Design Water Level (DWL) of +2.10 m.