

## DIVE SURVEY, MARINE GEOTECHNICAL INVESTIGATION AND ANALYSIS FOR PROPOSED UNDERWATER REEF, MIRYA BAY





Figure 1: Drilling in Marine

**BRIEF:** The Mirya Bay area, situated along the coast of Ratnagiri, Maharashtra, India, faces significant challenges due to coastal erosion. This issue has been intensified by both natural factors, such as strong monsoons and wave action, and human activities, including construction and unregulated coastal development. The resulting shoreline erosion has led to land loss, directly affecting local communities that rely on fisheries and tourism. This case study focuses on evaluating the geotechnical properties of the site and conducting a sea bed dive survey to support safe and sustainable development.

## **SALIENT FEATURES OF THE PROJECT:**

LOCATION: Mirya Bay, Ratnagiri, MH

**ELEVATION:** Sea level

**PROJECT YEAR: 2012** 

**OWNER:** Maharashtra Maritime Board (MMB)

**CONTRACTOR:** Maccaferri Environmental Solution Pvt. Ltd.

**SCOPE OF WORK:** Four boreholes (BH) were drilled to a depth of 20 meters below the sea bed, accompanied by a dive survey.



**ROLE OF GENSTRU:** The primary objective is to determine the subsurface profile at the reef location and assess potential settlement impacts due to reef construction. A sea bed dive survey, carried out by an expert diver, helped identify any obstructions that could interfere with the installation of geotextile tubes. This was followed by geotechnical investigations, stability analysis, and settlement analysis to ensure feasibility and long-term stability.

## **MAIN DELIVERABLES:**

- a) Necessary arrangements and mobilization of all equipment, manpower, floating paraphernalia to carry out sea bed dive survey and geotechnical investigation by conducting 4 boreholes at Mirya Bay.
- b) Conduct sea bed dive at Mirya Bay encompassing an area around the footprint of proposed submerged reef with the help of expert diver to identify any rock out crop or boulder or depression or any abrupt change in ground profile that shall hamper the installation of geotextile tubes at reef location.
- c) Carrying out sea bed analysis to understand make up of sea bed.
- d) Conducting 4 boreholes at proposed location of submerged reef up to 20m depth, in an open sea.
- e) Conducting all necessary laboratory tests and submitting laboratory test result, field bore log and submitting a detailed geotechnical investigation report which also include determining the bearing capacity and post construction settlement of ground.

f) Evaluation of filled height of tubes and post construction settlement.



Figure 2: Mirya Bay site location



Figure 3: Borehole Location



Figure 4: After completion of protection work