

Coastal Protection for Safeguarding of Railway Lines, Ireland

Iarnród Éireann (Irish Rail) has initiated a comprehensive program for inspection and rehabilitation where necessary of the civil works of its entire network. As part of this programme, COWI with sub-consultants Fehily Timoney Gifford and Thomas Garland & Partners, is carrying out feasibility studies and providing detailed design services for slope protection, sea defences and coastal protection at nine locations in Ireland.

The project is a major coastal and geotechnical engineering project and much analysis and state-of-the-art investigations went into defining the technical solutions adopted on each site.

Initially, desk studies and visual inspections were carried out in order to obtain relevant historical and current-day background material as well as determining the state of the existing coastal defence structures along the railway line. A basis to be used in the subsequent design of repair works and new structures was prepared based on data analysis and MIKE21 numerical modelling of the wave conditions and the coastal morphology.

The feasibility study included development of solutions for remedial works, budget estimates and prioritisation of the proposed remedial works, these formed the basis for site investigations and detailed design of the remedial works starting in year 2001.

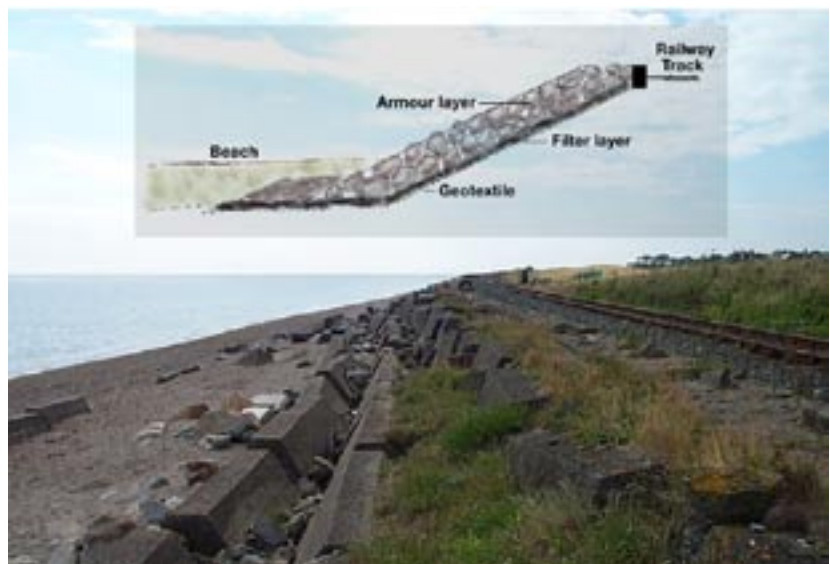
Bray Head

At Bray Head, the railway runs around a rocky headland through four major tunnels between which the railway line is on high slopes.

In the feasibility study, alternative remedial works were proposed to improve the slope stability at Bray Head and simultaneously reduce wave impact and run-up, e. g. a berm breakwater in front of the open sections.



Berm breakwater solution for Bray Head.



Existing revetment south of Greystones.

Greystones to Wicklow

From Greystones to Wicklow the railway runs adjacent to the coastline, and the track is located on an ancient littoral beach berm.

The proposed remedial works included improvements or complete rebuilding of the existing rock structures possibly combined with offshore breakwaters and beach nourishment with shingles.

Services by COWI:

- Feasibility study
- Hydraulic, environmental and geotechnical engineering
- Numerical modelling
- Detailed design
- Tendering
- Site supervision

Project period: 2000 - ongoing

Client: Irish Rail