



### ABOUT

The Vila Nova de Gaia coastline is affected, in a general way, for continuous erosion phenomena's, mostly assigned to the decrease of sediment transported by the littoral drift currents in many cases and sometimes enlarged by the human action. This situation was compounded with severe winter weather in 2013/2014, which caused significant damages with very high investments needs. This project pretends to undertake the strengthening of coastal protection at Granja and Valadares (beaches in the Atlantic Ocean coastline in Northern Portugal (totalizing approximately 550m), avoiding the dune system's retreat and protect the existing buildings and infrastructures. Accordingly, the protection solutions were set in order to:

- Dune stabilize, avoiding the growing advance of the sea as a result of erosion;
- Reduction of spreading and volumes of overtopping, ensuring the integrity of structures and infrastructures;
- Minimizing the amplification of reflection, this could result in the sand disappearance.

The solutions proposed for shoreline protection were:

- 125 m of armour stone protection, structure partially buried on the beach and founded on rock, variable slopes 3H:2V and 1H:1V (geotextile, filter, under layer and an armour layer);
- 175 m of 3,25 m diameter geotubes (systems of geotextile encapsulated sand);
- 150 m sand recharge to replace the previous levels.

The requalification project on the coastline of Vila Nova de Gaia was executed in 2018.

### FACTS

**Year:** 2013-2014

**Client:** APA - Portuguese Environment Agency

**Services:** Geotechnical site investigation plan, Detailed design, Coastal defense constructions, Environmental studies, Environmental geotechnics, Quantity surveying, Cost assessment, Construction and Demolition Waste Control and Management Plans, Health and safety study, Technical specifications

### TEAM

### LOCATION

Vila Nova de Gaia, Portugal

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