

Geotechnical considerations in constructions in sensitive coastal sedimentation zones

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The physical environment of our coastlines is complex and dynamic. The seabed, shoreline and water characteristics respond continuously to the ever-changing effects of tides, waves, ocean (and river) currents and winds. These changes occur on time scales varying from only a few seconds (wave by wave), to a few months (seasonally), to several years (long term erosion or accretion/siltation).

When engineering works are undertaken in the coastal zone, changes may be forced on to the natural processes. Such changes are not always beneficial and may degrade the economic, social and environmental value of the coastline as a result of erosion, siltation and deteriorating water quality. In addition, significant engineering challenges may be encountered when attempting the implementation of engineering works within such dynamic regimes.

A case study is described to illustrate the phenomena of siltation in the coastal regime, the rate of which is considerably accelerated by piled structures. The review also illustrates the sensitivity of the environment, its potential impact on the behaviours of structures constructed within its influence zone, and the construction techniques utilised to overcome or reduce the potential impacts on the new constructions and existing adjacent structures.
