

# Guyana – Sea and River Defences

## Provision of coastal engineering design services

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Existing sea defences (2016) at Zorg, to the west of the Essequibo River – a long lasting seawall in need of replacement and improvement

**Client:** DLN Consultants International Ltd.

**Services provided:**

- services of Key Expert – Coastal Engineer (Team Leader)
- site and structure inspections
- coastal process assessment
- defence option considerations
- outline design
- detailed design advice
- design advice during construction

With finance from the Caribbean Development Bank, the Government of Guyana contracted DLN Consultants International (DLN) to provide engineering services for final design and construction supervision of eight coastal/river defence schemes, totalling 5.4km. The important role of Coastal Engineer was awarded to ENBE Ltd, the role incorporating that of Team Leader.

Agriculture is a major contributor to Guyana's economy. Securing this vital asset depends on the enduring protection of the low lying coastal lands from the sea – an endeavour that has persisted since sea defence technology was introduced by the Dutch in the 17<sup>th</sup> century.

Coast protection in Guyana is not without its particular features, including: (i) the mud wave that issues from the Amazon - migrating along the nearshore zone with roughly a 20 year rhythm it significantly affects wave activity at the shore; (ii) mangrove forest provides vital attenuation of wave activity at the shore – the degree of protection varies and may be absent or lost if wave conditions change (e.g. due to negative phase of the mud wave); (iii) variable but generally very poor ground conditions requiring special design measures to allow for potentially high degrees of settlement. The aggravation of shoreline conditions [(i) and (ii) above] meant that the extent of improvements to coast protection at the site to the west of the Demerara River lengthened considerably in the lead up to the project.

Working closely with DLN and Guyana engineering consultants SRKN, ENBE developed sea defence schemes for all eight sites. The detailed design details of these schemes are currently being finalised for tendering and construction. ENBE's role continues with the provision of expert coastal engineering advice through to construction completion.