

# Guyana – Sea and River Defences

## Provision of coastal engineering design services

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Completed sea defence works to the east of the Demerara River  
March 2019

**Client:** DLN Consultants International Ltd.

**Services provided:**

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

With finance from the Caribbean Development Bank, the Government of Guyana contracted DLN Consultants International (DLN) to provide engineering services for design and construction supervision of eight coastal/river flood 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 enduring protection of the low lands from flooding – 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 and generally very poor ground conditions requiring special design measures to allow for usually 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 east 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 seven sites, contributing to the eighth. Detailed designs by DLN, tendering and construction works are progressing (2019). ENBE's role continues with the provision of coastal engineering advice through the construction to completion.