Boskalis
Dredging & Marine Experts

# PROJECT SHEET

**THE BERBICE RIVER PROJECT**
A CAPITAL AND LONG-TERM MAINTENANCE DREDGING CONTRACT IN GUYANA

## INTRODUCTION

One of Guyana's major export products is bauxite, which originates from the Aroaima, Kwakwani and Ituni regions around the Demerara and Berbice rivers in north-eastern Guyana. Guyana annually exports approximately 2.2 million tons of bauxite from it's mines along the Berbice River. Boskalis International has long been associated with the mining industry in Guyana. In 1990 a long-term overburden removal project for the Aroaima mine was begun in Guyana involving the dredging and disposal of a sand and clay layer of 30-45 meters thickness. For this project the cutter suction dredgers Gemini and Edax, have been deployed. The bauxite from the Aroaima mine is transported with barges via the Berbice River to New Amsterdam, located at the mouth of the river. In New Amsterdam the bauxite is trans-shipped into Panamax size bulk carriers. To enable this trans-shipment, Boskalis International executed a Design, Finance, Build and Maintain contract in 1995 for a 15-km long access channel and a mooring and turning basin and is currently still executing the maintenance dredging works.

## FEATURES

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| Clients | Alcoa (formerly Reynolds)<br>1993 - 2005<br>Bauxite Company of Guyana Inc.<br>(a subsidiary of the Rusal group)<br>2006 - 2011 |
| Location | North East Guyana |
| Contractor | Boskalis International bv |


**A** Location map
**B** Boskalis' trailing suction hopper dredger Atlantico dredging in the loading basin
**C** Loading process of the TSHD Atlantico
**D** Work in progress: Boskalis' cutter suction dredger Edax



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## ENVIRONMENTAL CHALLENGES

Potential environmental effects of the capital and maintenance dredging had to be mitigated and were: a possible increase of salt intrusion in the Berbice River, the risk of additional sedimentation or erosion at the adjacent mangrove flats and possible effects on the coastal system.

## DETAILED DESIGN

Hydronamic, the in-house consultant of Boskalis, was asked to design the loading basin and the access channel. Furthermore, Hydronamic was requested to optimize the capital and maintenance dredging to achieve the lowest NPV of the project costs. Hydronamic also developed a monitoring system (hydraulic, morphological and environmental) as an integrated part of the dredging work, thus mitigating the environmental impact of the maintenance works to the limits set by the client. The quality control system for the project consisted of regular bathymetric surveys of the loading basin, the access channel and its surroundings. These surveys were the proof of the functional requirements, being design depth and width.

## MAINTENANCE DREDGING

In 1999 the maintenance period was renewed and for the past years Boskalis International successively executed the maintenance dredging works.

The maintenance dredging called for :

- Maintaining the access channel to a depth of CD -8,30 m and a width of 80 m
- Maintaining the extended mooring basin to a depth of CD -10,80 m, including the turning basin/circle to a depth of CD -7,00 m, with a length of 300 meters and a width of 160 meters
- Monitoring the depths and dimensions of the access channel and the extended mooring basin monthly to determine when dredging campaigns will be necessary to re-establish the required depths and dimensions.

Over the years Boskalis executed the maintenance dredging works with a trailing suction hopper dredger and occasionally a Clamshell has been mobilized to widen and or to deepen the mooring and turning basin.




**E** Work in progress: TSHD Coronaut sidecasting
**F** The dredging and disposal of a sand and clay layer of 30-45 meters: CSD Edax at work.
**G** Sidecast nozzle of TSHD Coronaut, dredging in the Berbice River

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