Boskalis
Dredging & Marine Experts

PROJECT SHEET

KLAVERBLAD, SURINAME
OVERBURDEN DREDGING DEMERARA AREA LELYDORP III EAST MINE

INTRODUCTION
To enable the extraction of bauxite from the Lelydorp III Mine, overburden had to be removed hydraulically from the Demerara area.

ACTIVITIES
Before the dredging works could start, several activities had to be completed:

BUSHCLEARING
Approx. 40% of the total surface of Lelydorp III East Mine was covered by "high" vegetation which had to be cleared. Works were executed by a local subcontractor with excavators and bulldozers. Cleared vegetation was transported to designated locations with dump trucks to be burned during the dry season.

ANCHOR-HANDLING PATHS
Because dredging works had to be executed mainly in soft soil swamp areas with approx. 0.5 m water and "Mokko Mokko vegetation" on top, possible anchor locations were far from optimum. Anchor handling paths had to be constructed through swamp areas just above maximum water level by bulldozers and excavators with sand and/ or clay from locations above water level near or inside the area to be dredged. Works were executed during the dry season only.

RETOUR WATER CANALS
To ensure controlled and constant flow of retour- or process water during all seasons, drains or canals

FEATURES

Client	NV Billiton Maatschappij Suriname (BMS)
Period	1996 - 1997
Location	Lelydorp

A Location map
B The cutter suction dredger Edax
C 'Locking' the dredgers
D Overview of the Klaverblad mine

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from the disposal areas to the dredge pit had to be designed, excavated or profiled/cleaned up. Due to the long distance between disposal area and dredge pit (4 to 9 km), works had to start early.

PIPELINE INSTALLATION

After locations for disposal of 2 mln. m^3 material early December 1995 became definitive, works to install the pipeline commenced. Clearing and leveling works of the planned route, mainly along existing infrastructure, were executed. Pipes have been sorted on quality and transported along the route. Especially near the high tension line and places which were difficult to reach during rainy seasons, leaking of pipes or flances had to be avoided during dredging works.

The discharge distance between dredge pit and disposal area Lelydorp I and II was inside limitations for the equipment used.

EXECUTION DREDGING WORKS

The execution of the dredging works can be divided into 3 stages:

- Removal of 900.000 m^3 Demerara clay/firm clay from West side of Lelydorp III and discharged material into Lelydorp I
- Removal of 950.000 m^3 firm to stiff/hard clay from the center of Lelydorp III ("high clay island") and discharge of material into Lelydorp II
- Removal of 5.350.000 m^3 Demerara clay / firm clay from remaining area of Lelydorp III and discharged material into Kankantrie North.

CSD Para was deployed on this project, the total volume dredged amounts to around 7 mln. m^3.

WATER MANAGEMENT DURING OPERATIONS

Water management of this project was of a major importance, since the Lelydorp mining area is not connected to open water. Even the area which had to be dredged, Lelydorp III East, was holding a minimum of water.

After the project was completed all culverts (or pipes), dikes, water boxes, valves etc. which were part of the total water management were removed and reconditioned in original state

E Dewatering of the mine
F Mining in operation
G The 'dry' mine

Royal Boskalis Westminster N.V.
PO Box 43
3350 AA Papendrecht
The Netherlands

T +31 78 69 69 000
F +31 78 69 69 555

royal@boskalis.com
www.boskalis.com