

PROJECT SHEET

DELFLAND COAST, NETHERLANDS
UPGRADING HOOK OF HOLLAND - SCHEVENINGEN COASTLINE

INTRODUCTION

The Delfland Coast project tackles one of the ten 'Weak Links' that the Dutch government has designated for upgrading to safeguard the protection of the hinterland. The sea level is rising due to climate change. And the strength of the waves is also increasing. That has implications for coastal protection in the future.

CONTRACTING CONSORTIUM

The Delfland Coast consortium consisting of Boskalis and Van Oord executed this work for Rijkswaterstaat and the Delfland water authority. It is a Design & Construct contract based on system-based contract management operated by Rijkswaterstaat. System-based contract management is an approach involving the risk-oriented use of the data generated by the contractor's certificated quality management system (mainly ISO certificated). The assignment was to strengthen the coastline by upgrading the dunes and widening the beach. The assignment also included nature compensation for the construction of Maasvlakte 2. The contract sum for this work was EUR 120 million.

THE WORK

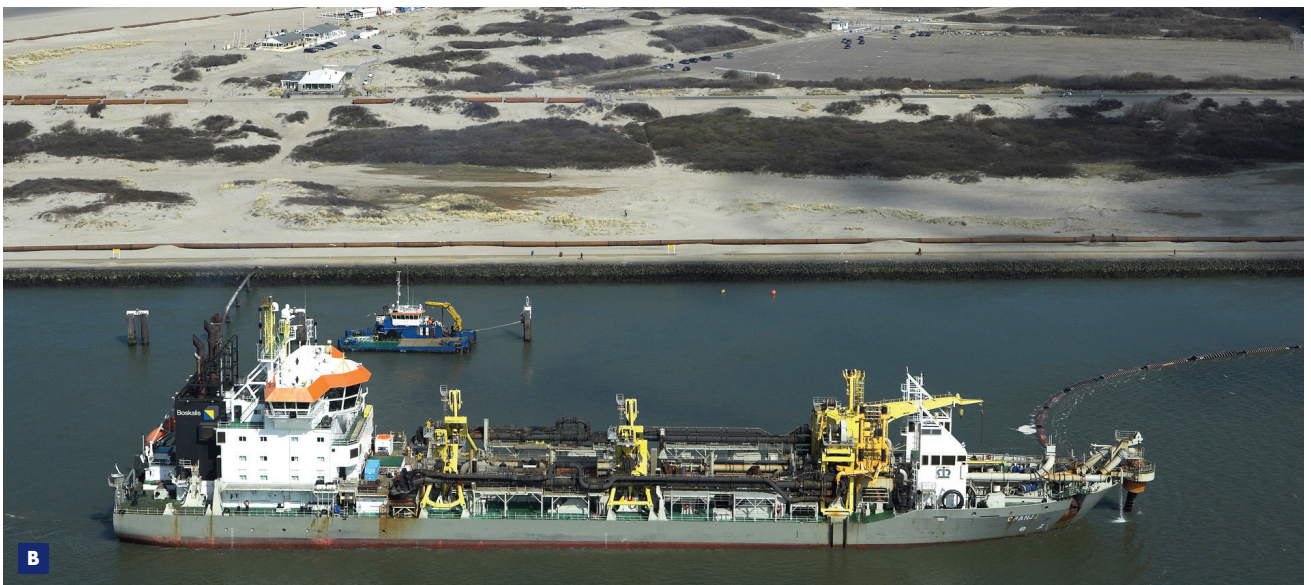
The Delfland coast is the largest of the 'Weak Links' projects. A total of approximately 21.5 million m³ of sand was brought in to strengthen the foreshore, the beach and the dunes. A range of trailing suction hopper dredgers were used in the operation. The 15-kilometre-long section between Hook of Holland and Scheveningen was completed

FEATURES

Client	Rijkswaterstaat (Dutch Directorate General for Public Works and Water Management), Province of South Holland and Delfland water authority
Location	Hook of Holland - Scheveningen
Period	2008 - 2012
Contractor	Delfland Coast consortium consisting of Boskalis and Van Oord
Type of contract	Design & Construct



- A** One part of the work
B Trailing suction hopper dredger Willem van Oranje engaged in shore pumping





between 2008 and 2012. On the seaward side of the existing dunes, an additional row of dunes was created and the coastline was straightened up. The beach was also widened. Where necessary, the entrances to the beach were extended and overhauled, and new steps were put into place. Approximately 25 beach pavilions have been moved and alterations have been made to the connections to public utilities. Near Kijkduin, the dunes have been widened but the view of the sea has been preserved. The extra wide beach acts like a 'conveyor belt': the wind picks up the beach sand and blows it to the dunes. This means that the dunes will grow in a natural way and develop in line with the changing safety requirements. Marram grass has been planted in the new dunes.

NEW NATURE AREA

In parallel with the coastal upgrade, a new nature area was also created between Hook of

- C** The work in December 2010. An extra row of dunes is being formed to the seaward side of the existing dunes. The coastline is being straightened up and the existing beach is being widened

Holland and 's Gravenzande. The creation of this 35-hectare area compensates for the impact of Maasvlakte 2. This involved widening the beach here, and building a mound halfway along to accommodate two new buildings. A raised footpath will pass through the new nature area, linking the old beach entrance to the new mound. An eco-culvert was installed beneath this path, allowing the water to flow around the mound at high tide. This results in a semi-flooded nature area, a dune valley, where new flora and fauna will have an opportunity to flourish in the years to come. New cycle paths covering a distance of 3.5 kilometers have also been set out.

LOCATION MANAGEMENT

The contractor consortium took an active approach to informing stakeholders and emergency services about the work in good time. These activities included setting up a website and periodical newsletters. Work was suspended in the recreational areas during the summer months.

QUANTITIES

Sand deliveries	21.5 million m ³
Length of coastal upgrade	15 kilometers
Area for nature compensation	35 hectares
Start of operations	2008
Completion	2012

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