

PROJECT SHEET

SAND MOTOR, THE NETHERLANDS
UNIQUE ECODESIGN FOR COASTAL PROTECTION

INTRODUCTION

Rijkswaterstaat orders the depositing of large amounts of sand on the western coastline of the Netherlands every five years in order to prevent the erosion of the dunes. An innovative and sustainable alternative has been developed: the Sand Motor. It involves depositing an enormous amount of sand in a single operation at a single location. The waves, tides and wind transport the sand naturally to the right place. If the Sand Motor works as expected, no additional sand replenishment will be needed for the next 20 years, preventing the regular disruption of the vulnerable seabed.

ECODESIGN: UNIQUE AND SUSTAINABLE

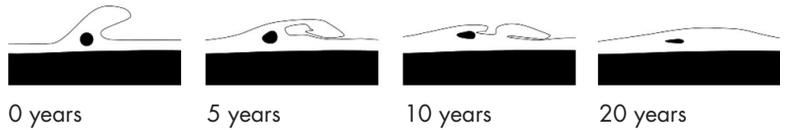
The experiment with the Sand Motor is the first of its kind in the world. The Netherlands is leading the way with an approach to coastal protection that uses the forces of nature rather than working against them. It is expected that this approach to dynamic coastal management will be repeated, not just in other places in the Netherlands, but also in the rest of the world.

CONTRACTING CONSORTIUM

The Sand Motor consortium (Boskalis and Van Oord) executed the project for Rijkswaterstaat and the Provincial Authority of South Holland. The contract sum was € 50 million, and the Boskalis share was 50%. The project is an Engineering & Construct contract: the elaboration of the design and the execution were outsourced

FEATURES

Client	Rijkswaterstaat (Dutch Directorate General for Public Works and Water Management), Province of South Holland
Location	Kijkduin - Ter Heijde
Period	January 2011 - November 2011
Contractor	Sand Motor consortium consisting of Boskalis and Van Oord
Type of contract	Engineering & Construct



A One part of the work
B Aerial photo of the near-completed project





to the contracting consortium. The work began in early 2011 and was completed on schedule in November of that year. Natural forces are now strengthening the coastline and creating a dynamic nature and recreational area.

C The work in November 2011. Trailing suction hopper dredgers delivering the final batches of sand. The new peninsula extends one kilometer into the sea and is two kilometers wide where it meets the shore.

THE DESIGN

There is now a hook-shaped peninsula measuring 128 hectares - 256 football pitches - off the coast between Ter Heijde and Kijkduin. The wind, waves and currents will spread the sand over the next twenty years along the coast between the Hook of Holland and Scheveningen, forming new beaches and dunes. This sand will protect the western coastline from flooding, and create extra space for nature and recreation. The Sand Motor is open to walkers, who can also climb the watchtower to savor the views. Birds and seals have also found their way here.

THE BOSKALIS ROLE

Boskalis teamed up with Van Oord to create the peninsula. It extends one kilometer into the sea and is two kilometers wide where it meets the shore. Trailing suction hopper dredgers picked up the sand ten kilometers offshore and brought it to the right location. Two underwater sandbanks were also created alongside the peninsula.

To ensure the safety of the public and the work, a 1.3 km strip of beach was closed during the construction period.

UNUSUAL TECHNIQUES AND CHALLENGES

Scientists will be studying how the Sand Motor develops to see whether this innovative approach to coastal protection does indeed work. The data they obtain will also be important in terms of managing the Sand Motor, for example to map out new currents and ensure the safety of water sports enthusiasts. But also to see which animals visit the Sand Motor, and how visitors spend their leisure time here.

LOCATION MANAGEMENT

It was striking to see how a project of this size was embraced so quickly by the public organizations involved. There was considerable media attention. Most people involved are now supporters. The energetic launch and execution can be attributed to the readiness of the parties involved - the provincial and national authorities - to work together. The contracting consortium adopted an active approach, and informed the organizations concerned and emergency services in good time about the work, for example by setting up a website and periodical newsletters. The WWF is also a stakeholder. The fund is closely monitoring the development of the Sand Motor and the nature area.

QUANTITIES

Sand deliveries	21.5 million m ³
Surface area	128 hectares, ultimately resulting in 35 hectares of new beach and dunes
Start of operations	January 2011
Completion	November 2011

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