

# Maasvlakte 2, providing ample space for the future

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Maasvlakte 2 was the next logical step in the continued development of the port of Rotterdam. Through its strategic position within the European market, its excellent hinterland connections and the many available facilities, the port has enormous business drawing power. In anticipation of the ongoing demand for space, the Botlek was created in the middle of the last century. The Europort followed in the 1960s, and the current Maasvlakte in the 1970s. Over 15 years ago, the growing world trade, expansion of ports elsewhere in the world and forecasts based on the annual throughput of containers in Rotterdam, clarified the need for another extension of the port of Rotterdam. Maasvlakte 2 is a 20 feet deep port that has space for deep sea related container activities, distribution and chemical industry. This makes Maasvlakte 2 the gateway to Europe with 24 hour access for the largest containerships of the future.

## Broad package

The construction of Maasvlakte 2 is not occurring in isolation. The land reclamation is part of a broad package of measures

which will both enhance the main port and improve the social and environmental climate of the area. Five Dutch ministries, the Province of South Holland, the Rotterdam City District and the Rotterdam Municipality all joined hands in 1997 in the Rotterdam Main Port Development Project, or PMR. PMR encompasses three inextricably linked projects. These are the construction of Maasvlakte 2, including extensive compensation measures for the nature areas which will be lost in the process. Looking at the existing Rotterdam areas: execution of a large number of projects in the existing port and industrial zone for more efficient use of the space and improvement of the social climate. And finally the construction of 750 hectares (nearly three square miles) of new nature and recreation area in the immediate vicinity of Rotterdam.

## Sustainable port

The Port of Rotterdam Authority has the ambition to achieve the most sustainable port area with Maasvlakte 2. It has deliberately chosen sustainability as an integral part of developing the new



Photo courtesy of the Port of Rotterdam Authority

An aerial shot of the Maasvlakte 2 development taken in April 2013

port and industrial area. In all phases of the project and all sub-projects it is looking for the most sustainable solutions. The scale of Maasvlakte 2 provides unique opportunities to be ground breaking in the sustainable development of a new port. That's why the most compact form of design was chosen, the share of inland shipping and rail transport of containers will increase significantly by 2035, chemical companies will use each other's waste heat, dirty trucks are banned and barges are fitted with cleaner engines.

## Overall costs

Construction of Maasvlakte 2 is a project by the Rotterdam Port Authority. Costs and risks concerning the land reclamation are the full responsibility of the Port of Rotterdam Authority. Estimated project costs amount to €2.9 billion (price level 2004).

## Environmental reports

In a project such as the construction of Maasvlakte 2 a statutory duty is to report on the environmental impact in a so called Environmental Impact Assessment (EIA) report. The Port of Rotterdam Authority conducted one of the most comprehensive environmental impact assessments ever. The impacts of Maasvlakte 2 on a wide range of subjects were mapped and solutions were found for every possible problem.

In parallel with the EIA, Port of Rotterdam Authority consulted dozens of parties involved, including nature and environmental organisations. It was the Port of Rotterdam Authority's objective to take the interests of these parties into account in the designs for Maasvlakte 2 and to agree upon these plans in constructive arrangements. The comprehensive EIA in combination with stakeholder participation resulted in the withdrawal of appeals.

## New land

Maasvlakte 2 includes 2,000 hectares of new land that connects directly with the current port and industrial zone. Land reclamation will provide some 1,000 hectares of new industrial sites, adjacent to deep water. Container transshipment, distribution and the chemical industry will all find ample space here. The other 1,000 hectares consist of infrastructure such as seawall, waterways, railways, roads and harbours. As a result the port will expand by 20 per cent and triples its capacity for container handling.

## PUMA

Maasvlakte 2 is being built in phases. The speed at which the Port of Rotterdam Authority acquires customers for Maasvlakte 2 will effectively determine the speed of its construction. Expanding the port in distinct parts will avoid sites being reclaimed from the sea before customers have been acquired for them. After an international call for tenders, the consortium PUMA (Project Uitbreiding Maasvlakte, which is the Dutch abbreviation for Project Extension Maasvlakte) was contracted to build the first sites, quay walls, road and rail infrastructure, docks and canal, sea defence. This consortium of Koninklijke Boskalis Westminster NV and Van Oord NV delivered this scope on the 17th April 2013. This first phase covers a port area of 700 hectares of plots for lease.

## Design and construction

The contract with PUMA is by far the largest and most striking part of the work. For this contract, with a value of approximately €1.1 billion, the Port Authority chose a design, construction and maintenance contract. A programme of



Photo courtesy of the Port of Rotterdam Authority

Maasvlakte 2 is expected to incur an overall investment of €2.9 billion (price level 2004)

requirements, consisting largely of functional requirements, specifies the design, realisation and maintenance. This allowed Boskalis and Van Oord to demonstrate their innovative added value. In collaboration with the client, the design of the hard seawall was optimised as a stony dune with a block dam in front of it as a breakwater. The gale which this innovative seawall should be able to resist occurs in statistical terms only once every 10,000 years. Scale testing demonstrated the real effectiveness of the design prior to construction.

The contract includes a maintenance period of 10 years. Boskalis and Van Oord have undertaken to keep the entire seawall at optimum strength until 2023. Similar to the entire Dutch coastline, sand will also have to be added here to the soft seawall. Following every severe gale, the hard seawall will also be inspected and, if necessary, the cobble beach will have to be replenished.

## Big numbers

Maasvlakte 2 is a project with big numbers. There were 240 million cubic metres of sand that was sprayed to create land, raise industrial sites and construct 7.5 kilometres of beach and dunes. Seven million tonnes of riprap, 20,000 concrete blocks, each weighing more than 40 tonnes and 150,000 tonnes of clay were processed in the 3.5 kilometres of hard seawall. Around 300,000 cubic metres of concrete was used in the construction of the quay walls.

## Further work

PUMA, the joint venture of the two contractors, started the expansion of the port of Rotterdam five years ago. Today the realisation of 700 hectares of new industrial sites, 11 kilometres of seawall, 3.5 kilometres of quay wall, 24 kilometres of roads, 14 kilometres of rail and 560 hectares of port basin is a fact. The work that is completed by PUMA is the lion's share of the construction of Maasvlakte 2. The Port Authority is currently working on the nautical accessibility of Maasvlakte 2; the installation of leading lights and buoys for shipping will enable Maasvlakte 2 to be opened to ships from 22 May. In the coming year work will continue in full swing on infrastructure on the boundary between the existing port area and Maasvlakte 2, including the construction of a flyover intersection, connection from the rail infrastructure to the rail terminals and the facilities for nautical service suppliers like tug boats and barges. In addition,



Photo courtesy of the Port of Rotterdam Authority

Maasvlakte 2 includes 2,000 hectares of new land that connects directly with the current port and industrial zone

APM Terminals (APMT) and Rotterdam World Gateway (RWG) are working hard on the new container terminals which both companies want to have in operation by the end of 2014.

## Monitoring of the effects on the ecology

In the period before construction started on Maasvlakte 2, researchers published thousands of pages of reports dealing with the possible consequences of the construction for life in the sea. To monitor the project's effects, the Port of Rotterdam Authority is keeping a close eye on the sand extraction activities. Researchers are keeping close track of life in and around the seabed. It is being studied, for example, whether the common cockles have become short on food. To study this, researchers carry out silt measurements, not just in the future site of Maasvlakte 2, but at 100 sites along the North Sea coast.

In 2007, before work started on Maasvlakte 2, researchers conducted a baseline measurement for the studies. The first follow-up measurements were carried out in 2009. By carefully measuring levels and comparing these measurements, it will soon become clear, whether the sediment has an effect on life on and in the sea. The number of particles in the water falls well within the levels predicted in the EIA. So far, no effects have been observed on life in the sea.

## Experience Maasvlakte 2

Everyone who wants to know all the details of the construction of Maasvlakte 2, can visit the free interactive information centre FutureLand. FutureLand is suitable for young and old, for landlubbers and water rats, for port enthusiasts and gamers, for families and groups. Visitors can experience what it's like when the deepest sea and largest dock cranes predominate. For example by making a 3D trip through the new port area with the FutureFlightExperience: zoom past tall cranes or glide alongside a passing container giant. The newly created port can be viewed up

close by land with the FutureLand Express XL or by water with the FutureLand Ferry. Visit [www.futureland.nl](http://www.futureland.nl) for more information.

### ABOUT THE AUTHOR



**René van der Plas** is managing director of the project organisation Maasvlakte 2. In 2004 he was hired as a consultant from Twynstra Guddé Management Consultants as director of port development and construction Maasvlakte 2. In 2005 he entered into the service of the Port of Rotterdam Authority and was responsible for the commercial development of Maasvlakte 2, the masterplan (including cost estimations and risk analyses), tenders and the construction of Maasvlakte 2. Since September 2012, René has the overall responsibility as managing director.

### ABOUT THE PORT

**Rotterdam** is one of the main ports of Europe. The port is the gateway to the European market of more than 500 million consumers and one of the most important junctions of good flows of the world. The annual throughput is about 450 million tonnes. The port and industrial cluster in Rotterdam extends over a length of 50 kilometers and covers approximately 12,500 acres. This makes the port of Rotterdam Europe's largest logistics hub and industrial cluster. Also, the port is a source of employment which provides prosperity to the region. As a developer, operator and manager of the port and industrial area, the Port of Rotterdam Authority is a partner for (international) clients in the areas of (petro) chemical, energy, transportation and logistics. In addition to the settlement of shipping, the Port of Rotterdam Authority develops infrastructure, brings parties together and ensures synergy between companies. Visit [www.portofrotterdam.com](http://www.portofrotterdam.com) for more information.

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