

# PROJECT SHEET

**PORT OF TANJUNG EMAS, INDONESIA**  
DESIGN AND BUILD DREDGING OF TURNING BASIN

## BOSKALIS

Royal Boskalis Westminster is a leading global services provider operating in the dredging, maritime infrastructure and maritime services sectors. The company provides creative and innovative all-round solutions to infrastructural challenges in the maritime, coastal and delta regions of the world. With core activities such as coastal defense, riverbank protection and land reclamation Boskalis is able to provide adaptive and mitigating solutions to combat the effects of climate change, such as extreme weather conditions and rising sea levels, as well as delivering solutions for the increasing need for space in coastal and delta regions across the world. The company facilitates the development of offshore energy infrastructure, including renewable wind energy. Boskalis is furthermore active in the construction and maintenance of ports, waterways, access channels and civil infrastructure, thus helping to facilitate trade flows and regional socio-economic development. In addition, Boskalis is a global marine salvage expert and has a number of strategic partnerships in harbor towage and terminal services (Keppel Smit Towage and Smit Lamnalco). With a versatile fleet of more than 700 vessels and floating equipment and 10,000 employees, including associates, Boskalis is creating new horizons around the world.

## INTRODUCTION

Tanjung Emas is the seaport of Semarang, Central Java, and is used for cargo and passenger traffic. The port is managed and operated by state-owned company PT. Pelabuhan Indonesia III.

The development of the port of Semarang is aimed at strengthening the loading and unloading capabilities of the port, as well as to support the economy of the Central Java province, which has seen continued growth since 2012. The port is set to become one of the 24 feeder ports for the planned Sea Toll Road, an initiative by the Indonesian government to enhance domestic maritime connectivity between the western and eastern parts of the Indonesia archipelago. Deepening of



A

## FEATURES

Client	PT. Pelabuhan Indonesia III (Persero)
Location	Semarang, Central Java, Indonesia
Period	2018 - 2020
Contractor	PT. Boskalis International Indonesia



A Grab Dredger working at Pelabuhan Dalam

B Overview Port of Tanjung Emas, Semarang

C TSHD Gateway at Tanjung Emas

the port and the removal of underwater caissons form part of the development works. The WIKA-Boskalis KSO (consortium) was awarded the contract for design and build of Kalibaru Terminal Phase 1 at the port of Tanjung Emas in July 2018.

## PROJECT SPECIFICATION

Under the WIKA-Boskalis KSO, WIKA was responsible for the design and construction activities for the reclamation of the new Kalibaru Terminal Phase 1. The dredging works at the turning basin of Tanjung Emas were executed by PT. Boskalis International Indonesia. The first stage of the works consisted of capital dredging of some 2.4 million cubic meters, a stability study of existing structures and monitoring thereof during the execution of the works and the removal of nearly 950 cubic meters of underwater caissons. During the second stage of the works, regular monitoring surveys were carried out to assess the rate of siltation and a final maintenance dredging campaign was executed.



C



D

By April 2019 the capital dredging works and caisson removal were completed. After a maintenance period of one year, the final maintenance dredging campaign was concluded in May 2020.

### SAFETY, HEALTH AND ENVIRONMENT

Boskalis' No Injuries, No Accidents (NINA) behavioral based safety program was adopted for the whole project. Challenges were presented in the form of a local workforce with little focus on safety and not used to wearing personal protective equipment. Extensive project inductions, continuous follow-up through toolboxes, on-the-job trainings and relentless attention for SHE-related matters made it possible to execute the project in nearly 280,000 safe working hours without lost time injuries.

The maintenance dredging works were performed in the midst of the worldwide Covid-19 pandemic. Special care was taken to ensure health and safety of all involved, whilst still finalizing the works in time.

### CAPITAL AND MAINTENANCE DREDGING WORKS

The aim of the capital dredging works was to deepen the port to a depth varying between seven to twelve meters below lowest astronomical tide for the various areas. A total volume of 2.4 million cubic meters was dredged in a period of some five months by the trailing suction hopper dredger (TSHD) Gateway and two grab dredgers. Dredged material was transported to and discharged at the designated offshore disposal area by the TSHD and split hopper barges.

The contract stipulated a maintenance dredging campaign, one year after completion of the capital dredging works. The maintenance dredging works have been executed by the TSHD Oranje and one grab dredger for the shallow areas.

### STABILITY STUDY AND MONITORING OF EXISTING STRUCTURES

Prior to the commencement of the capital dredging works, a stability study of the existing structures, such as quay walls and jetties, was undertaken in cooperation with a local consultant. The study consisted amongst others of cone penetration tests, sub-bottom profiler surveys and a review of the various construction drawings from the past. During the capital dredging works, the deformation of relevant existing structures was monitored by means of a robotic total station and by inclinometers. All measured deformations remained within the predefined limits.

### CAISSON REMOVAL

Due to land subsidence in Semarang and surrounding areas, an old and disused wharf in the port of Tanjung Emas had submerged below the water surface over the years. Earlier attempts by the client to remove the caissons which formed the perimeter of the wharf were unsuccessful. With the use of a heavy duty chisel deployed from a grab dredger, the caisson structures were broken into smaller sections, which were subsequently dredged by the grab dredger. Nearly five hundred meters of caissons were removed successfully.

### LOCAL CONTENT

With the UN's Sustainable Development Goals and our commitment to local capacity building highly valued, the works were executed by a nearly completely Indonesian team, in close collaboration with a local consultant. An Indonesian subcontractor was contracted to undertake the grab dredging and caisson removal scopes. The local stakeholders were very much aligned with this way of working and no grievances of local fishermen and communities were voiced.

### SUCCESSFUL COMPLETION

Both the client and other stakeholders in the port were fully satisfied with the high efficiency performance achieved, resulting in the project being completed safely, within budget and on time.



E



F

- D Caisson removal works
- E Maintenance dredging by TSHD Oranje
- F Survey in progress

**Boskalis**  
 PO Box 43  
 3350 AA Papendrecht  
 The Netherlands  
 T +31 78 69 69 000  
 royal@boskalis.com  
 www.boskalis.com