

“Royal HaskoningDHV’s understanding of maritime design has been a vital contribution to the success of the project. As mediators between the client and the contractor, they played an important role in solving the problems and issues at hand. This has been done in a very professional way”

Edwin van Espen, General Manager  
Sohar Ports Special Projects Division

## Developing the Port of Sohar – bulk iron ore jetty

Located just before the Strait of Hormuz – a major shipping channel between the Persian Gulf and the Gulf of Oman – the deep-sea port of Sohar is within easy reach of the prosperous economies of the Gulf and the Indian subcontinent, and close in proximity to Abu Dhabi, Dubai, Al Ain, and Oman’s capital Muscat, 220 kilometres away.

The Port of Sohar operates as a 50/50 joint venture between the Government of Oman and the Port of Rotterdam. Since opening in 2004, there has been a steady increase in the number of vessels calling at the port, and in 2010, it handled more than 2,200 ship movements. The development of the port by the Omani Government is part of a plan to diversify the country’s economy away from oil. The port houses three clusters: logistics, petrochemicals and metals. Recently the port also started the development of a Special Economic Zone for downstream and logistics companies.

Brazilian mining company Vale, the world’s largest producer of iron ore pellets, has constructed a processing plant near the port, where it will convert iron ore to steel pellets for onward export. Also iron ore will be distributed to the Middle East and North Africa from Sohar.

To facilitate the import and export of materials and products associated with facility, a new bulk iron ore jetty is undergoing construction. Vale operate the jetty, which will provide berthing facilities for ships importing the iron ore from Brazil, and for ships exporting the iron ore and the steel pellets to the Middle and Far East.

Royal HaskoningDHV was commissioned in 2008 to carry out a reference design and prepare contract documents for the design and construction of the jetty. It has overseen the tender assessment and has worked on-site to supervise completion of construction works.

The project was led by Royal HaskoningDHV’s Senior Project Director, Tim Bownes, and Project Manager Harvey Bostock, supported by a team of five Omani administrators, resident engineer, assistant resident engineer, and inspectors from Pakistan and India.

At the peak of construction, over 2,000 staff worked shifts to cover round the clock activity, seven days a week. To supervise this, Royal HaskoningDHV deployed a team of thirteen administrators and construction staff to work on site. Additional inspectors supervised offsite fabrication in the Middle East, Europe and Asia.



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## Imports and Exports

The import side of the jetty is designed to handle some of the largest ore carriers in the world. Vale has built 400,000 dead weight tonnage (DWT) Valemax ships especially for this operation.

On the export side two berths will cater for smaller vessels that will export the iron ore and the steel pellets. The first export berth is designed for a 75,000 DWT Panamax ship and the second for a 150,000 DWT Cape size ship.

## Jetty design and construction

The structure is almost 1.4km long. It comprises a 780m long access trestle, and a main jetty, 600m long and 64.5m at its widest point. The jetty is built from steel piles with a steel superstructure and reinforced concrete deck.

Commenting on the design and construction of the jetty, Royal HaskoningDHV's Senior Project Director, Tim Bownes, said: "Supporting this massive structure has been an interesting challenge. The ships have a draft of up to 23m below the water line and the approach channels and berthing pockets have been dredged to 25m, requiring the removal of more than 8 million m<sup>2</sup> of material.

"The structure is supported by piles almost 2m in diameter. With the jetty being 10m above the low tide water level, the resultant length and thickness of the piles has made handling and driving technically difficult. In total, some 500 piles have been driven. The concrete deck binds all the piles together and maintains the rigidity of the structure so that it can handle the required loads."

"The remaining task is to ensure the jetty is fitted out with the buildings and mechanical and electrical installations Vale needs for its import and export operations, including conveyor belts to transport the raw materials and finished products."

The first ship docked on the import side of the jetty in July 2011. "Our on-site supervision staff have worked incredibly hard to ensure expected standards have been maintained and it has been a pleasure to work with such a professional and multicultural team on a truly multi-national project."

In addition to the port's Middle East location, the Employer is Omani-Dutch, the Operator South American and the contract is a joint venture between European and Indian contractors. Staff working on site represented a diverse number of nationalities.

"To me the great thing about undertaking large multinational projects such as this, is carrying out interesting and rewarding work with people from many different countries, cultures and backgrounds. This facility will enable significant industrial growth to take place, and bring prosperity to the region and the country for the foreseeable future."

## Tim Bownes

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