

PROJECT SHEET

FREMANTLE PROJECT, HARBOUR DEEPENING & BERTH WORKS
PORT DEVELOPMENT BASED ON EARLY CONTRACTOR INVOLVEMENT

INTRODUCTION

Fremantle Ports is the Western Australian Government trading enterprise responsible for strategic management of the Port of Fremantle. The Port of Fremantle provides modern deep-water facilities for handling container trade, break-bulk vessels, livestock exports and motor vehicle imports as well as accommodating cruise ships. Of Australia's five major ports, Fremantle is the closest to Europe and is very often the first or last port of call for global shipping lines operating between Australia and overseas destinations. In recent years the trend towards bigger container ships has impacted ports worldwide, including Fremantle. Deepening the Inner Harbour was essential to enable the port to continue to accommodate these ships at full cargo-carrying capacity.

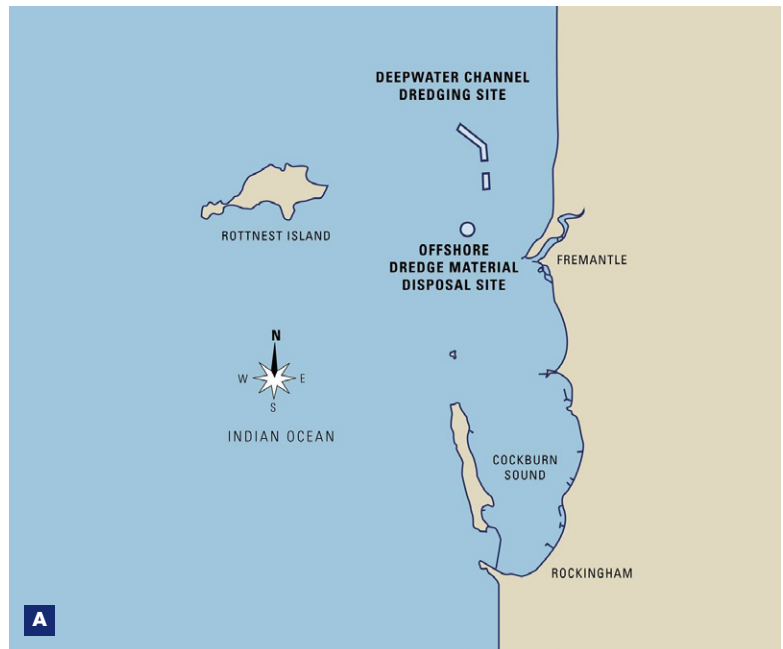
PROJECT SCOPE AND EXECUTION

The Project comprised the following project works:

- The dredging of Fremantle Inner Harbour to a depth of RL-14.7 m LWMF including berthing pocket along Berths 4-9. The soft overburden dredged during this phase was placed into reclamation in the designated bunded area at Rous Head.
- The dredging of the entrance channel into the Inner Harbour to a depth of RL-15.6 m LWMF with disposal partly into the Rous Head reclamation area or the spoil dump area in Gage Roads.
- The dredging of sections of the outer Deepwater channel to a depth of RL-16.5 m LWMF on straight sections and RL-18.0 m on the bend.

FEATURES

Client	Fremantle Ports
Location	Fremantle, Western Australia
Period	January 2010 to November 2010
Contractor	Boskalis Australia Pty Limited



A Location map

B CSD Phoenix at the entrance of the port



B

The project also involved strengthening of the North Quay container berths to cater for the heavier loads the bigger ships impose on wharf infrastructure.

Dredged material from the deepening was reused to create additional land at Rous Head for port-related purposes. This material was pumped behind a new seawall which was lined with geotextile material.

Equipment Deployed:

- TSHD Cornelis Zanen & Gateway
- CSD Phoenix
- BHD Gunfleet Sand & Storken (used for dredging berth pockets in close proximity to the fenderline).

Dredging started early January 2010 and ended in November 2010. In total over 2,000,000 m³ of material was dredged from the Inner Harbour. Approximately 1,332,000 m³ (net) of sand was used in the reclamation site at Rous Head. Approximately 715,000 m³ (net) required pretreatment (crushing) with a Cutter Suction Dredger (CSD) prior to removal using a Trailing Suction Hopper Dredger (TSHD). This material was placed into the offshore spoil ground. The project was executed in separate stages.



C TSHD Gateway and CSD Phoenix
D Aerial view January 2010

1st stage:

Using the TSHD Cornelis Zanen to remove soft overburden consisting of mainly uncemented sandy materials and pumping these materials ashore to the Rous Head Reclamation Area.

2nd stage:

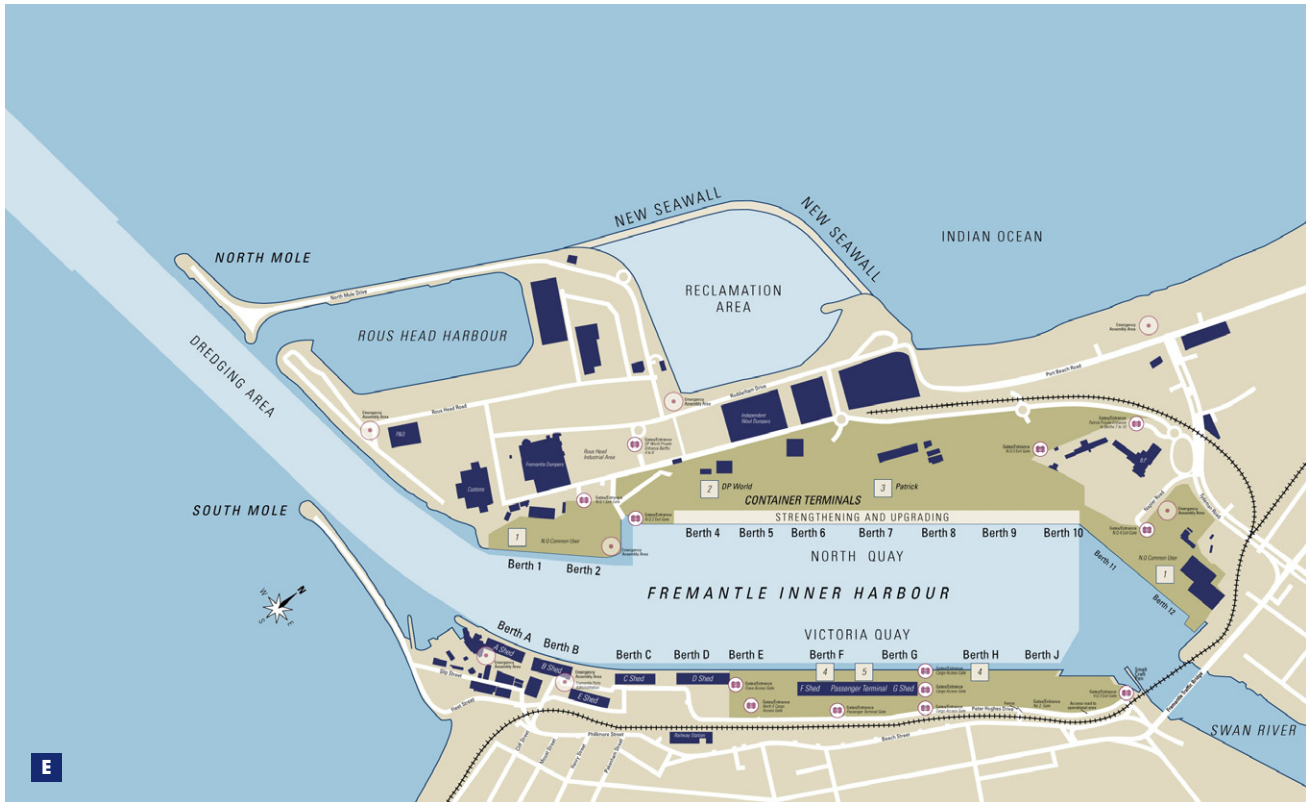
Using the CSD Phoenix to crush hard materials and for subsequent dredging and disposal to the offshore spoil ground using the TSHD Gateway.

Provisional works:

The BHD's Gunfleet Sand and Storken were used to dredge the berth pockets close to the quayside.



D



E MAP DWC

MAINTAINING PORT OPERATIONS

During simultaneous dredging operations in the narrow entrance to the port with both the CSD Phoenix and TSHD Gateway the port was kept operational for shipping through careful planning and proactive dialogue with Fremantle Ports and port stakeholders including terminal operators.

Following a thorough selection process by Fremantle Ports Boskalis was selected to enter an ECI phase based on its experience and track record of successfully undertaking previous contracts involving an ECI phase and for its SIMOP's expertise including coordination of project stakeholders and contractors.

EARLY CONTRACTOR INVOLVEMENT

Upgrading a port involves many unknowns in terms of costs and risks. Fremantle Ports sought a way to have control over the budget as well as quality. Neither a traditional lump-sum contract nor an alliance contract was suitable and an Early Contractor Involvement (ECI) approach was selected. Starting in early 2009 Fremantle Ports spent six months preparing for the operation with three teams – from the port, from Boskalis and from the civil contractor.

The teams all worked together in one office, examining the risks together, developing solutions and building relationships. Boskalis was able to add value by bringing its knowledge and expertise to the design process early on.

Dredging was taking place on the doorstep of the capital of Western Australia, with more than 1.5 million residents. This also borders on beaches and the Swan River, a heritage icon site, and an area considered the playground of Western Australians as well as a distinctive marine life habitat for whales, dolphins and sea lions. The ECI relationship-building process also had added value regarding nature-protection and communicating with the community.

DIALOG WITH THE LOCAL COMMUNITY

Fremantle Ports consulted with the community during its planning for the Inner Harbour deepening project so community and other stakeholder views could be taken into account. This consultation included workshops, briefings and meetings with various groups, organisations and individuals.

The consultation process included meeting with Aboriginal Elders to obtain consent for the project under Section 18 of the Aboriginal Heritage Act 1972 and consultation with the Environmental Protection Authority and Department of Environment and Conservation as project regulators. Submissions were also sought on the Public Environmental Review document.

In the preparation stage the parties together examined the issues and perceptions about dredging. Here Boskalis brought its experience to bear, offering simulations and presentations to community groups and building up the picture and expectations of dredging before the work started.



RESPECT FOR NATURE

Boskalis used the most modern equipment, for instance, dredgers with 'green' valves to reduce the environmental impact and continued throughout the job to consider how to minimize and mitigate dredging impacts. One aspect unique to Australia was the independent training course that was provided to Port staff and Boskalis crewmembers to work together as trained 'whale observers.' ECI gave the opportunity to teach everyone how to detect the presence of whales, identify the type of whale, predict the whale's behavior and determine what might need to be done if whales came too close to dredging vessels."

NO ENVIRONMENTAL ISSUES

An audit of the project, particularly of the dredging activities, confirmed that there were no environmental or other issues. The auditors attributed the high level of compliance to a number of factors including the high degree of transparency provided through information to the general public and the good communication between Fremantle Ports and Boskalis.

The auditor also noted other significant factors contributing to the high level of compliance. For example, the vessel undertaking the dredging and spoil disposal, the new trailing suction hopper dredger Gateway, was equipped with a state-of-the-art computer, monitoring and navigational equipment, and the Boskalis crew were well trained and demonstrated good knowledge and professionalism during the execution of the dredging operations.

CONCLUSION

The deepening and associated works have expanded the port's trade capability and are ensuring that Western Australian business continues to have access to major direct shipping services.

"We certainly have met all our project objectives – an expanded, sustainable port, created with community acceptance, and within a specified budget – and the joint venture partners have helped significantly in achieving this. We had a great cooperation with Boskalis that most likely wouldn't have happened if we hadn't gone through the ECI process and built up those relationships. It's been a positive learning experience and hopefully we have transferred some knowledge to Boskalis, just as they have to us."

Lyle Banks – Fremantle Ports



F Dredging January 2010

G TSHD Cornelis Zanen pumping ashore Rous Head

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