

PROJECT SHEET

LYTTELTON PORT
CHANNEL DEEPENING - STAGE 1

INTRODUCTION

Lyttelton Port is the third largest deep-water port and the largest port on the South Island of New Zealand and provides a vital link to international trade routes and a key role in the global transport network. As a result of the Canterbury earthquakes in 2010 and 2011 the port sustained significant and widespread damage to infrastructure impacting service demands in relation to throughput, productivity and customer services. This was the driving force behind a large scale redevelopment program of Lyttelton Port of which a key part was creating a new deep-draught capable container terminal. Lyttelton Port Company Ltd (LPC) contracted Boskalis to execute the dredging works for Stage 1 of the Channel Deepening Project.

SCOPE

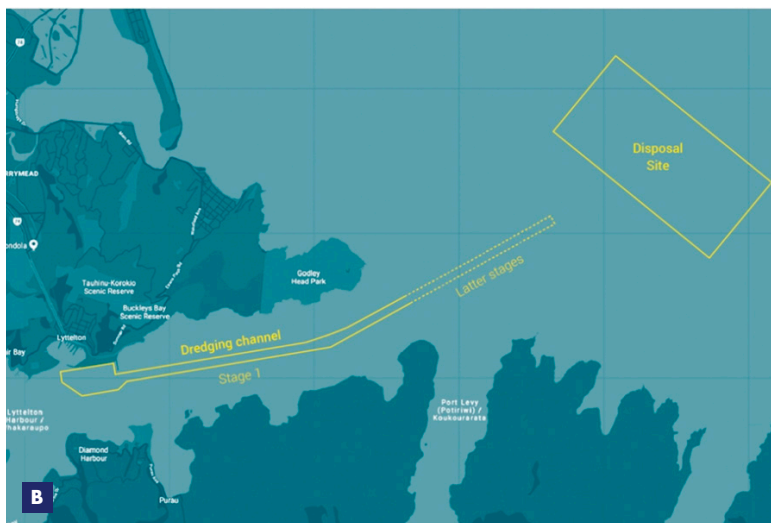
The works included the widening, deepening and extension of the existing channel and swing basin. The channel was widened from 180 to 200 m, deepened and lengthened by approximately 2 m and 2.5 km respectively. Dredging works were undertaken by the TSHD Fairway assisted by a plough vessel for a period of approximately three months. The dredged material was disposed of at a designated disposal ground, located approximately 5 nautical miles offshore. A total volume of 5 million m³ nett was dredged which comprised mainly of a clayey silt material. Due to the high ecological and cultural value of the area, strict environmental requirements applied.

ENVIRONMENT AND ADAPTIVE MANAGEMENT SYSTEM

Prior to Contract award Boskalis was involved in preparation works, working collaboratively with LPC and their experts to establish various environmental management plans required under the Consent. This ensured the management plans were protective of the environment, incorporated stakeholders concerns and could be executed in a

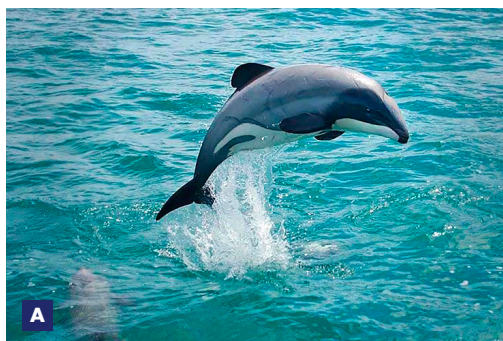
FEATURES

Client	Lyttelton Port Company Limited
Location	Lyttelton, South Island, New Zealand
Period	March 2018 – November 2018
Contractor	Boskalis Australia Pty Ltd
Main Equipment	TSHD Fairway
Long-term driver	Growth energy consumption, world trade



- A Hector's Dolphin, endangered and endemic to New Zealand waters (WWF, New Zealand)
- B Location map
- C Fairway dredging in Lyttelton Harbour

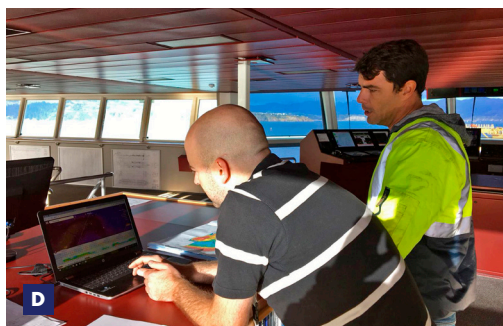
practical manner by Boskalis. These plans included: turbidity, biosecurity and marine mammal management. The environmental monitoring program, implemented by LPC, was the largest ever undertaken in New Zealand and consisted of a baseline period of 12 months prior to commencement of dredging. During the works a system of 14 monitoring buoys measured turbidity continuously and were displayed in real-time on a web-based interface. Together with real-time met-ocean, current and wind measurements the



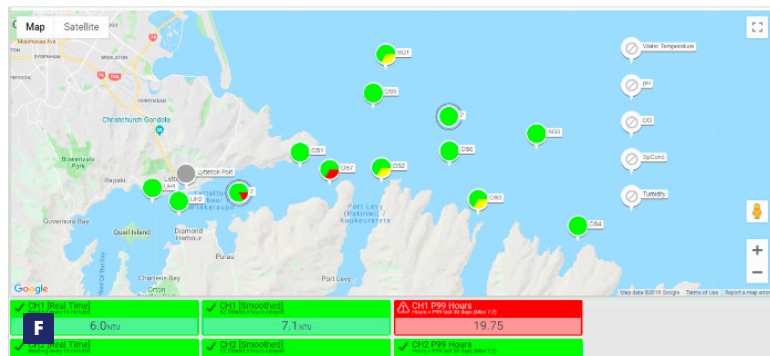
monitoring system allowed a good understanding of the environmental system and facilitated adaptability of the dredge works if required. Through this process, turbidity levels remained below the threshold values during the works resulting in full compliance with the Resource Consent.

STAKEHOLDERS

Stakeholders played a large part in the project. Technical advisory groups were established consisting of scientific advisors, Iwi representatives, commercial fisheries and aquaculture representatives. These were involved in the design phase as well as during the delivery of the project. Boskalis attended meetings with these groups including attendance at the local marae (Iwi meeting ground) and the Fairway crew were formally welcomed by Te Hapū o Ngāti



Wheke with a ceremony on board. Furthermore, the regulator Environment Canterbury was involved early on in the project and a good relationship was built throughout the project through open communication. During the project, several stakeholder groups visited the Fairway, helping in a better understanding of how the dredge operations were managed.



TEAM-WORK

During the works excellent team-work, open communication and a result driven team-spirit between the Fairway crew, the project team and LPC, ensured environmental thresholds were met through adaptive management and the project was completed successfully, on time and within budget.

“Regular team communication facilitated clear understanding of client requirements. Boskalis Australia cooperation and communication with the client were exemplary.”
Martin Watts, Project Director
Lyttelton Port Company

SAFETY

As the Fairway had to work in close proximity to operational berths, regular SIMOPS (simultaneous operations) meetings were held with stakeholders to ensure safety during dredging operations.

SUCCESSFUL COMPLETION

The Lyttelton Channel Deepening Project represented New Zealand's largest dredging project to date. In total 5 million m³ nett was dredged by Boskalis using TSHD Fairway in compliance with stringent environmental requirements through excellent team work and in the spirit of collaboration with LPC.



- D** Real-time turbidity monitoring on board the Fairway
- E** Project team visit at the local marae
- F** Dashboard web-based interface
- G** Fairway maneuvering in turning basin close to quay wall

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