

PROJECT SHEET

PORTSMOUTH APPROACH CHANNEL FOR QUEEN ELIZABETH CLASS AIRCRAFT CARRIERS 2015 - 2017
 PORTSMOUTH, HAMPSHIRE, UK

Capital dredging and debris removal in the Portsmouth Naval Base, including the approaches, harbour entrance, turning basin and berth pocket, enabling the new Queen Elizabeth Class aircraft carriers to operate from the port.

PROJECT DESCRIPTION

This high profile, nationally significant capital dredging project was undertaken utilising several divisions of the Boskalis group and deploying numerous specialist dredgers and other vessels from the extensive Boskalis fleet. The original major scope of the work was the deepening and widening of the approach channel, berths and turning circle requiring the dredging of approximately 3 million m³ of material. This comprised mainly of silt, sands and gravels with smaller quantities of clay and peat. The design of the dredged side slopes was carried out by Hydronamic, the Boskalis in-house engineering consultancy.

Approximately 750,000m³ of dredged material was deemed suitable for possible beneficial use in the future. Boskalis Westminster have therefore placed it in our underwater stockpile, at the site of an existing Crown Estate winning area, for recovery and re-use when a suitable project requiring coarse sand and gravel arises. Several loads were also sold directly into the local aggregate market for use in the construction industry. Unsuitable material was transported to the designated licensed disposal area close to the Nab Tower.

In addition to the dredging, a debris removal operation was required. During the project, the number of obstructions with the potential to both delay the dredging and possibly cause significant health and safety risk was found to be much greater than originally envisaged. A team of UXO (unexploded ordnance) detection and removal specialists from Boskalis Hirdes deployed to site using bespoke equipment fitted to a long reach excavator on our Stemat 87 barge. The multi-tool head on the excavator comprised an underwater camera, pump/jet and a grab. Objects detected from the Sub-Tem magnetometer survey were investigated and, once deemed safe, removed from the seabed. In the event UXOs were detected, operations were handed over to the Royal Navy bomb disposal teams who relocated them into safe water for detonation.

The discovery of a 2000lb aluminium ground mine resulted in the Boskalis Hirdes team investing in state of the art technology and developing their own 'Sub-Tem' underwater sledge which is not only capable of detecting ferrous objects, but also all other metallic targets including aluminium, copper and bronze.

FEATURES

Project Name	Portsmouth Approach Channel for Queen Elizabeth Class Aircraft Carriers 2015 - 2017
Client	MOD
Contractor	Boskalis Westminster Ltd.
Location	Portsmouth, Hampshire, UK
Execution period	2015 - 2017



A Causeway - Terramare -
 Terraferre - Manu Pekka
B Terramare
C Causeway



This resulted in the safe detection and removal of numerous items of UXO plus almost 1,500te of other debris including cables, wires, anchors, chains as well as archaeological artefacts such as cannons and cannon balls.

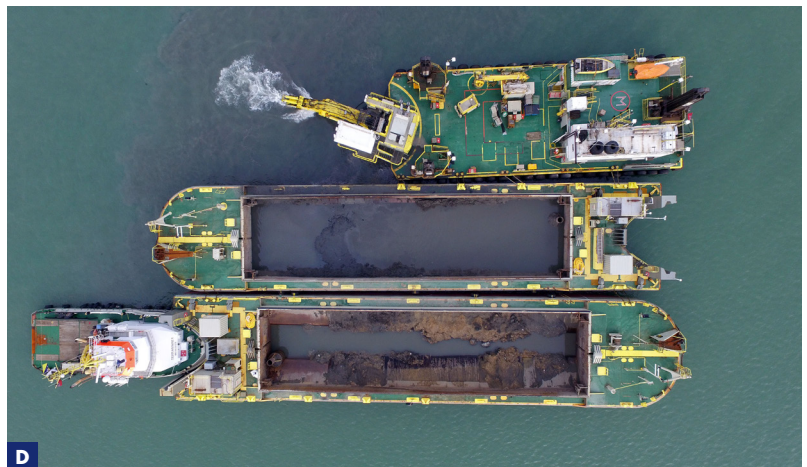
The utilisation of numerous Boskalis vessels has ensured that the correct equipment for efficient execution of each task and section has been achieved. We have employed trailing suction hopper dredgers; Freeway, Shoalway, Causeway, Sospan Dau and Deo Gloria plus the backhoe Manu Pekka in conjunction our Terraferre tug and barges. The UXO and debris clearance was undertaken from the crane barges Stemat 87 and Strekker. We used the newly built multi-purpose vessel Terra Plana for ploughing and bed levelling, in conjunction with purpose built large plough Norma.

The sensitive location of Portsmouth Harbour also required extensive environmental monitoring of turbidity and water temperature using a 'smart' buoy in the approaches, calling on valuable experience gained on the similar Southampton Approach Channel Dredge project a few years earlier.

Another key aspect of the project, in addition to the engineering and technical challenges, was the liaison with the local stakeholders. For every operation, stakeholder risks had to be assessed involving extensive communication. In addition to the marine traffic of military, commercial, ferries and leisure craft, the harbour entrance is adjacent to a busy shopping centre, bars, restaurants and residences. All buildings which could potentially be affected by the works were surveyed prior to commencement and surveyed again on completion to ensure that there had been no detrimental effect.



A Stemat - Crane barge
B Afon Lligwy Beaumaris
- Holyhead Towing
C Terra Plana
D Manu Pekka
- Terraferre



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