



CAUSEWAY
GEOTECH

Alexandra Dock Cruise Ship Terminal, Belfast Harbour Land and Overwater GI

Projects: 13-260 and 13-429

Ground Investigation - Summary

Alexandra Dock, Belfast Harbour
Overwater Ground Investigation

Client: Belfast Harbour Commissioners

Client's Representative: RPS Consulting Engineers

Site operations: Phase 1 – August to September 2013

Phase 2 – January 2014



Marine drilling spread (spud-leg barge equipped with cable percussion boring and rotary drilling rigs) used on the project.

Pictured here at Campbeltown Harbour, completing site investigation project there for marina upgrading works (Causeway Geotech, August 2013). The barge was towed across to Belfast immediately after completion of this contract to commence works at Alexandra Dock.

Causeway Geotech were appointed by Belfast Harbour Commissioners to complete ground investigation works to provide geotechnical information for the input to the design and construction of the proposed new cruise ship terminal and berthing facility. The site is located in the vicinity of Alexandra and Thompson Docks, off the Queens Road, Belfast Harbour. Overwater boreholes were located adjacent to the Victoria Channel.

Phase One: August to September 2013

Phase One works, completed over August to September 2013, comprised a work scope of ten overwater boreholes (by cable percussion boring with rotary follow-on drilling) put down off a floating, spud-leg barge ("Agem One") equipped with single moonpool, manoeuvred into position by dedicated tug boat. Marine surface sediment sampling by grab sampling techniques was also carried out at this time. Five landside boreholes were completed by means of cable percussion boring and rotary coring by Geobor S triple-tube wireline coring.

Works were carried out under the supervision of a Site Engineer from Causeway Geotech who liaised with the Client's Representative from RPS Consulting Engineers accordingly.

Overwater boreholes were put down to completion depths of up to 36.5m below riverbed level.

Landside boreholes were completed at depths of up to 33.7m below ground level.



Lowering the vibracoring rig off multicat workboat at one of the sampling points (Phase 2 works in January 2014).



Marine spread (spud-leg barge loaded with cable percussion boring rig and rotary drilling rig) set-up over borehole location – centre of picture. Existing cruise ship terminal to left hand side of picture.

Phase Two: January 2014

Phase Two works, completed in January 2014, comprised a work scope of twenty sampling points where marine sediment samples were obtained for the purposes of environmental testing.

The works were carried out using a specialist pneumatic vibracoring rig loaded onto a multicat workboat. At each location, the multicat was anchored in position and the rig was lowered onto the seabed using the multicat's hiab crane.

The vibracore samples penetrated to depths of up to 4m below existing riverbed level, recovering samples of organic clays ("Belfast Sleafch") and estuarine deposits of silts and sands.

The samples were subsequently dispatched to a specialist environmental testing laboratory to have testing for disposal at sea criteria conducted.

Site operations were completed over a period of two days under the supervision and direction of two engineers from Causeway Geotech.

Project Summary – Alexandra Dock Cruise Ship Terminal GI

- combined land and marine ground investigation
- floating spud-leg barge used for drilling spread
- no shifts lost through demurrage or other factors
- cable percussion boring, wireline coring and vibracore sediment sampling carried out
- completed within the Client's deadlines for issue of tender information
- ZERO INCIDENTS