

GARDEN ISLAND

DISMANTLING A PIECE OF SYDNEY'S NAVAL HISTORY

AT A GLANCE

CLIENT	LIBERTY INDUSTRIAL
PROJECT	GARDEN ISLAND DISMANTLING AND SALVAGE OPERATION
LOCATION	GARDEN ISLAND NAVAL BASE SYDNEY, AUSTRALIA
SECTOR	DEFENCE
DATE	APRIL – OCTOBER 2014

CRANES	1 X M2480D, 1 X M120RX
ENGINEERS	2
INSTALLATION CREW	8
MAINTENANCE CREW	2

In 2014, Marr Contracting was approached by Brookfield Multiplex Services and their client, the Australian Government's Department of Defence, for support in developing a crane methodology for dismantling an historic crane on Sydney Harbour.

Our design solution, which included salvaging parts of the 61-metre high, 250 tonne capacity hammerhead crane at the Garden Island Naval Base, formed the basis for a Government tender. The project was subsequently awarded to our partner on the project – Sydney-based demolition contractor, Liberty Industrial.

THE CHALLENGE

Working in a confined space on an operational naval base created a number of challenges. As a working naval dock, the site still needed to be accessible to naval ships entering Garden Island, and the logistics of getting trucks with oversized loads in and out of the site also needed to be taken into consideration during the planning stage of the project.

Additional challenges including working in a restricted work area which was exacerbated by the limited load capacity on the existing wharf structure. Working at the edge of Sydney Harbour, the site was also prone to difficult weather conditions, which proved especially difficult in terms of the demolition operation.

As some components of the crane were classified as heritage items with historical significance to the community, it was imperative that these items – including the main hook assembly, a 25 tonne hook platform and trolley, and the driver's cabin – were not damaged or structurally altered during the salvage operation.

OUR SOLUTION

Using one of our M2480D Heavy Lift Luffing (HLL) tower cranes as the main lift crane and a M120RX as the access and support crane, the hammerhead crane was dismantled in about 70 sections weighing up to 65 tonnes.

To overcome the challenge of the restricted working space and load capacity on the existing wharf, we designed a piled foundation embedded into the seabed which allowed the cranes to operate from a free-standing base without placing any load on the wharf.

Prior to dismantling the crane, spray painting and paint stripping works were carried out to stabilise any flaky paint and prevent the release of hazardous lead chromate paint from the crane's coating. The hammerhead crane was then dismantled in large sections, which were rigged to the M2480D and separated from the remaining structure by oxy cutting from a workbox rigged to the M120RX. Once separated from the main structure, the sections were lowered to the ground for dismantling and transportation to an offsite recycling facility.

A detailed methodology was developed for the dismantling operation including the fabrication of a specialised frame for the crane's enormous 25.7 tonne hook assembly to ensure it's original condition was maintained.

THE RESULT

The six-month project was successfully completed with all heritage items safely recovered and removed from the site and no disruptions to the operation of the Australian Navy fleet.

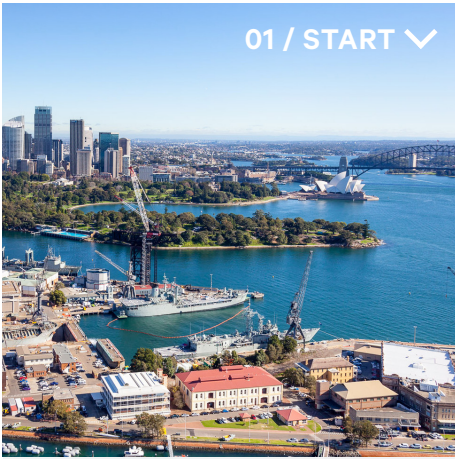
According to Liberty Industrial's Project Manager, Todd Solomon, "We were able to engineer an efficient alternative design solution that reduced the proposed number of lifts from the planned 250 lifts to 70. Safety was paramount; reducing the number of lifts required greatly reduced our personnel's exposure to working at heights and minimised the safety risks involved with carrying out the works."



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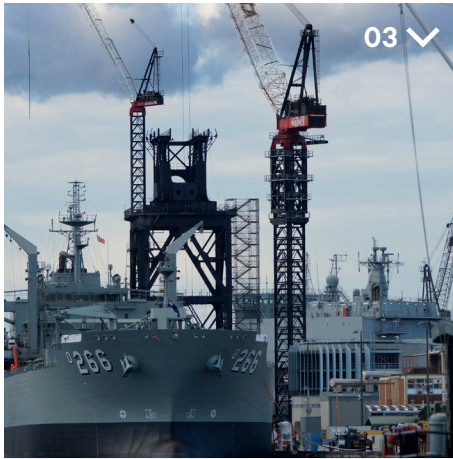
TODD SOLOMON, PROJECT MANAGER,
LIBERTY INDUSTRIAL





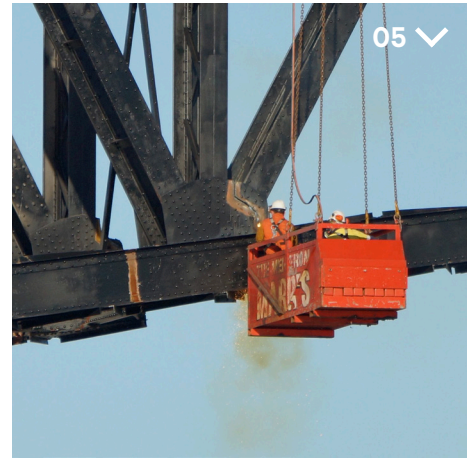
01 / START ▾

In 2014, Marr's team was approached by Brookfield Multiplex Services and their client, the Australian Government's Department of Defence, to develop a solution for dismantling an historic crane at the Garden Island Naval Base on Sydney Harbour.

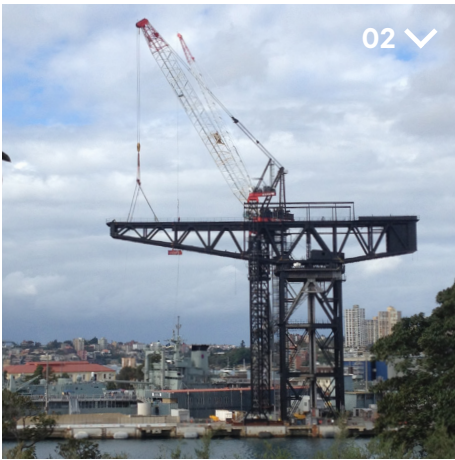


03 ▾

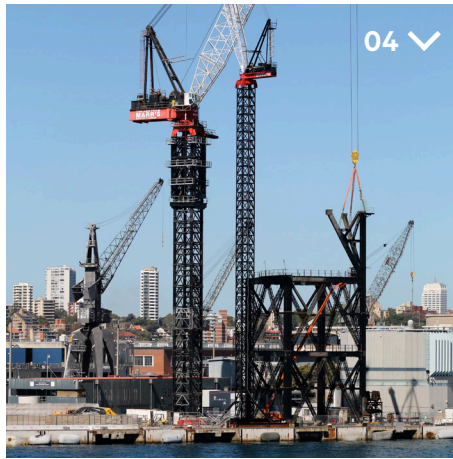
As an operational naval base exposed to difficult weather conditions, the site came with a number of challenges – a restricted working space, limited weight load capacity on the existing wharf, logistical issues with getting trucks with over-sized loads in and out of the site. We also had to ensure minimal disruption to dock operations and ensure that the heritage components of the crane were not damaged or altered during the process.



05 ▾



02 ▾



04 ▾



With the cranes in place, the hammerhead crane was dismantled in sections weighing up to 65 tonnes by oxy cutting each section from a workbook attached to the M120RX and then rigged to the M2480D before being lowered to the ground for dismantling.



Working with our partner on the project, Sydney-based demolition contractor, Liberty Industrial, the project also required us to salvage heritage-listed parts of the 61-metre high, 250 tonne capacity hammerhead crane.



To overcome the space and weight-bearing issues on the site we built an off-wharf steel structure embedded into the Harbour seabed which allowed the M2480D and M120RX tower cranes to work from a freestanding base.



06 / FINISH ▬

The project was completed within six months with all heritage items safely recovered and removed from the site. The efficient design solution successfully reduced the proposed number of lifts from the planned 250 lifts to 70.