

Liberty Industrial's proposed solution was unlike anything previously attempted in Australia at the time

When Liberty Industrial demolished Australia's Sydney Harbour Control Tower, remote controlled excavators proved central to the outcome.



# Another way to a successful result

**L**iberty Industrial carried out the deconstruction of Australia's landmark Sydney Harbour Control Tower for Barangaroo Delivery Authority as part of the city's multi-billion dollar Barangaroo Precinct Development Project, in a job that was shortlisted in the Urban Category of the 2017 World Demolition Awards.

The project involved an 87 m (285 ft) high redundant harbour control tower comprising a reinforced concrete column topped by a stainless steel and glass observation and operations room.

Barangaroo Delivery Authority appointed Liberty to remove the Harbour Control Tower following the proposal of a method designed to minimise the impact on residents, businesses and visitors to the neighbouring headland park. Liberty's method also enabled continued use of a huge below ground event space.

## LIMITED FOOTPRINT

The original design solution suggested by the client relied on urban demolition techniques such as scaffolding protection, heavy crane lifts or concrete sawing, which would have caused major disruption to the surrounding community.

Mindful that the site is very close to a residential area with many heritage-listed buildings and is in the middle of a public space, Liberty proposed an alternative methodology designed to limit the footprint of the site and ensure as little disruption as possible.

The contractor also proposed a deconstruction method unlike any other performed in Australia to date. It involved erecting a circular mast climbing platform system in combination with Brokk remote controlled demolition excavators. Working from the platform's deck, excavators fitted with hammer and pulveriser attachments would work on the concrete core of the

structure and push the debris inside the tower shaft. The rubble would then be collected from an opening at the base of the tower and transported off site for recycling.

A comprehensive environmental monitoring programme was implemented to monitor dust, noise, vibration and meteorological data, which included measuring wind speed, wind direction and rainfall to ensure compliance with strict regulatory approval conditions.

Environmental factors such as noise, vibrations and dust were constantly monitored and reviewed against the authorised levels set by the project's authorities.

The first stages of the project consisted in erecting the circular mast-climbing platform system and assembling a 20 m (65 ft) high "dust-proof wall" separating the works from the surrounding underground event space at the base of the tower. Following adequate engineering assessment, the base of the tower was cut out to create a catchment area to receive the demolition materials. All asbestos containing materials were then removed from inside the tower.

The first demolition works consisted of removing equipment and machinery such as the elevator and associated services, and the steel stairs. The purpose was to clear the inside by removing all items with a potential to obstruct the path of the debris directed into the shaft.

With no means to access the top of the tower from the inside, access for personnel would be via the mast-climbing platform, which was equipped with a men and materials hoist. The control and operations room at the top of the tower was then deconstructed by hand, working from inside the building and outside on the mast-climbing platform's

deck. Following the removal of the control room's steel structure and equipment, the remote control excavators were loaded onto the platform and started demolishing the tower's core and slabs.

## PERSONAL SAFETY

Liberty said that the environmental impact of these machines is incredibly low in terms of noise, dust and vibration in comparison with classic demolition tools and equipment such as handheld jack hammers and concrete saws. They also provide a major improvement in terms of personal safety as they are remote controlled, considerably reducing the risk of direct personnel exposure.

Progressively, the tower diminished in height, and the platform followed, lowering itself to constantly provide an adapted work area around the tower core.

Once the tower reached street level, leaving only 20 m (65 ft) left in the underground event space to be demolished, the mast-climbing platform was dismantled and replaced with a mobile crane fitted with a concrete pulveriser before the tower was demolished until the foundations were exposed.

The tower's concrete foundation was then fractured and removed, with project resource recovery exceeding 98% of all materials. ■

View of Sydney Harbour including the Control Tower

