

Collins Wharf 2 and 3

Docklands, VIC

Innovative solutions and collaboration to overcome tough ground conditions and protect surrounding structures.



The project

The Collins Wharf Two and Three Project in Melbourne's Docklands precinct involved piling and core retention walls for two residential apartment developments built on a outstretch of land along the Yarra River. This work followed Keller's successful foundation delivery of the adjacent building, Collins Wharf One.

The challenge

The main challenge with this project was the potential impact of the foundation construction on the existing sea wall and timber wharf structure. The main concerns were that common techniques such as precast could induce lateral ground displacements, causing the sheet pile wall to deflect and damaging the existing timber wharf structure. Inclinoimeters were installed along the north and south of the site to monitor ground movements during the works. Due to this concern, the piling pad areas closest to the north and south were constructed to reduced bearing capacities. It was this restriction that led to the use of the multi technique approach.

The solution

Keller designed and developed a foundation solution that involved driving open-ended circular hollow tubes close to the sensitive sea wall to reduce pressure on the existing sea wall, and pre-drilled precast piles close to the timber wharf piles. A low ground bearing pressure frame was sourced from Keller's sister company, Austral Construction, which allowed the 23m open-ended circular hollow tube sections to be lifted into position, without imposing significant bearing pressures around the piling area. The sequencing of the piling works was based around a plan agreed with FSG, aimed at minimising ground movements. Sheet piles were installed initially, surrounding the large rafts and corners of the site close to the existing timber piles, and the remaining precast, CFA and open-ended circular hollow tube piles were installed north to south to minimise ground pressures near the sea wall. Keller's detailed consideration of these complex structural problems, and innovative construction solutions are the reason why they are the go-to for challenging project like this.

Project facts

Owner(s)

Lend Lease Developments

Keller business unit(s)

Keller Australia

Main contractor(s)

Hickory

Solutions

Heavy foundations

Excavation support

Markets

Residential

Techniques

CFA piles

Sheet piles

Driven precast piles

Driven steel piles