

STEEL STREET/MARKETOWN EAST, NEWCASTLE

MINE SUBSIDENCE GROUTING



Client: Adco Constructions Pty Ltd
Consultant: Douglas Partners

Specialist Contractor: Menard Bachy Pty Ltd

THE PROJECT

The site project it was a proposed residential and commercial development with about total area 1.1 ha, comprises three levels of retail, plus basement car park extending across the majority of the site. The development also includes two residential towers a further nine storeys and cinema complex. There was carry out a mine subsidence assessment which came to confirm the possibility in occur mine subsidence after the site construction and during the life of the structure.

The geological conditions was identified consist in alluvial soils, overlying bedrock such as siltstone and sandstones laminates, overlying a void/mine around about the total depth 64.0m. The mine showed rubber with some voids until 72.0m depth.

MENARD BACHY'S ROLE

Were studied several options taking into account finding the best solution technically and economically viable when compared with the large volumes necessary to fill the mine.

Menard Bachy was awarded to drill and grouting a total number of 63 boreholes, 4.378lm with average length of 70m per each hole and a total of 7900m³ grout injected.

Ground conditions at the site generally comprised 25 to 30m of alluvial sand and clay underlain by the coal measures with abandoned workings at approximately 64-72m below ground level. The mine headroom had 7-8m thick and comprise open void for approximately 1-2m then coarse rubble from roof collapses grading down to finer materials at the base of the workings.

During the drilling phase, was used casing diameter 152mm, trough alluvial rock approximately 25-30m depth. Down hole hammer were used trough the rock to the abandoned mine workings at approximately 60-64m below the ground level.

The depth and height of rubble it was determined for can proceed with the grouting phase.

The grout used was with high mobility grout mix thus filling the rubble, using a specially designed manifold attached to the end of the rods. The rods was lowered within the rubble and after grout pumped under nominal pressure in order to permeate rubble. As the grouting continued, the rods were be slowly lifted so as to form a grout cone within the rubble.

The project commenced in September 2008 and was completed in 5 months.