

Stabilisation of Subsided Ground

INDUSTRY

Residential

STRUCTURE

House

PROBLEM

Ground Subsidence

LOCATION

Swansea, Australia

DURATION / YEAR

1 day / 2014

TECHNOLOGY

TAM Geotek AC

BUSINESS UNIT

Mainmark Australia



Summary

Mainmark corrected the recurring subsidence that caused a dangerous potholing. Originating from mine subsidence, the pothole had recurred due to voiding of non-cohesive soils approximately 7m to 8m below the ground surface within old and abandoned coal workings. Correction was effected by acrylic resin injections.

Objectives

The objective was to stabilise the ground to nullify or greatly reduce the likelihood of further subsidence. This was to be effected by the filling of the existing network of voiding and the plugging of the collapsed mine workings, preventing a recurrence of the sink holes and associated subsidence, at a depth of between 7m and 8m below local ground level.

Solution

The original pothole was likely to have been caused by a localised collapse in mine workings at a level of approximately 8m below the surface. A previous attempt had been made to remediate the sink hole by the use of concrete fill.

The soil below the pothole was suspected to be a loose sand material, which had the potential to migrate via a small localised zone of voiding above the original drift, which may not have been fully stabilised by the concrete backfill.

Mainmark technicians carried out a trial application in a relatively small test section of the affected ground. When this proved successful, they proceeded to inject the whole problem area, using a combination of urea silicate and acrylic resin, Tam GeoTek AC. The soil was injected at between 7m and 8m depth.

The chemical grouts were injected via four drilled and speared injection points. This equated to grouting 25 cubic metres of solid material into the target zone.

The injection of the grout nullified the likelihood of additional non-cohesive soil migrating into the drift. Consequently the subsidence and the pothole problem are considered very unlikely to recur.