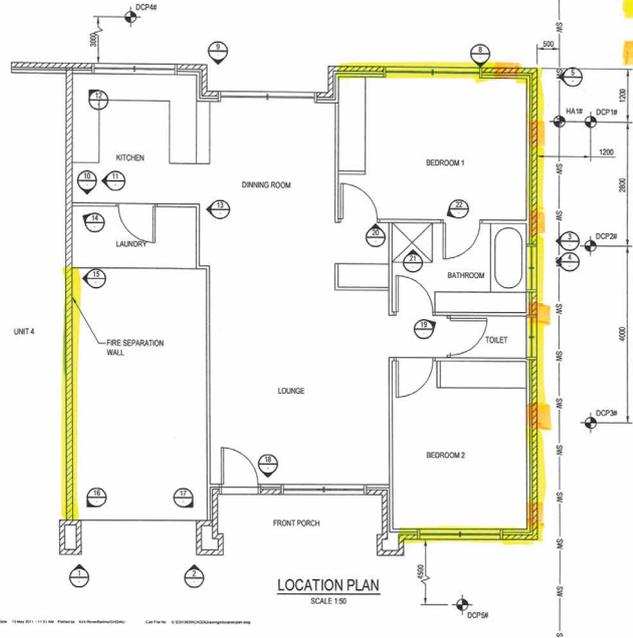


House On Weak Ground Re-supported

- INDUSTRY**
Residential
- STRUCTURE**
House
- PROBLEM**
Weak ground
- LOCATION**
Yamba, NSW, Australia
- DURATION / YEAR**
2 days / 2012
- TECHNOLOGY**
Uretek PowerPiles & Uretek Deep Injection
- BUSINESS UNIT**
Mainmark Australia



Summary

This house on very weak soils required substantially increased ground support. Working in conjunction with civil engineers, GHD, we applied PowerPiles in combination with Deep-Injection of structural expanding resins.

The structure was fully re-supported by Uretek PowerPiles (UPP) and Uretek Deep-Injection.

Objectives

The objective was to fully re-support this single storey, rendered masonry veneer duplex with a tiled roof. It was supported on a slab-on-ground footing system, 400mm deep x 300mm wide edge beams founded approximately 300mm below the surface.

The technology to be applied was required to avoid underground services including 1. A stormwater pipe along the eastern boundary of the site just 500mm away from the building, at a depth of 1000mm; and 2. A 225mm diameter sewer pipe.

The objective of ground strengthening required soil investigations. Five dynamic cone penetrometer tests and one hand auger excavation to depth of approximately 1200mm revealed that the site should be classified “P” (Problem Site) due to the “very loose

to loose” soil encountered to a depth of 2000mm. The hand auger results showed Silty Sand, dark grey and the water table at 700mm below ground level.

Solution

Six 2000mm long Uretek PowerPiles “Type 300” were installed beneath the existing footings to provide support through the weak soils and to increase the bearing capacity of the supporting soils. The elements were installed at approximately 2000mm centres beneath the eastern wall footing.

Uretek Deep-Injection was then applied by injecting at 500mm and then 1000mm below surface along the eastern footing, to ensure uniform support and further improve the supporting soils.

An average lift of 4mm to 5mm was achieved to confirm support by way of positive uplift on the structure. Thus the house was completely re-supported. The home owners were very satisfied and the GHD Engineers were impressed with the performance of the new PowerPile technology.

Pictured above: 1. Fully self-contained Operations Rig on site. 2. Penetration created with small driving machine. 3. 2,000mm UPP element being installed. 4. The 6 PowerPile positions are marked in orange; the Deep-Injection areas in yellow.