

## CONSULTANT/ENGINEER:

Ibex Consulting Engineers

## CONTRACTOR

Hartmann Construction Ltd

## CLIENT

Private

## Issue

The slope at Tower Close, Horsham, failed, causing material to slip onto a highway, narrowing it to one lane and posing safety risks. This also threatened a private garden above. The failure resulted from a steep gradient, unsupported soil, and saturation caused by tree removals and collapses. Anchor Systems was engaged to stabilise the slope. Ibex Consulting Engineers developed a geotechnical design specifying a tied retention system with anchors and erosion control mats to ensure long-term stability.

## Testing

- Soil Analysis: A borehole revealed the composition of the slope material.
- Site Suitability Test: A sacrificial AS-30 Vulcan earth anchor was installed and proof-tested. The anchor achieved the required load criteria, validating its suitability for the design.

### Design Parameters:

- Working load: 30 kN
- Proof load: 35 kN
- Components: Grade 316 stainless steel for corrosion resistance and longevity



## Solution

The stabilisation process involved several key steps. First, the slope was reprofiled to a more stable 45° angle, reducing the steepness that contributed to the instability. Greenax reinforced erosion control mats were then installed from the crest of the slope down to the highway. These mats were chosen for their durability and ability to prevent erosion, offering long-term protection for the soil.

Next, 27 AS-30 Vulcan earth anchors were installed to secure the slope. The anchors were arranged in three rows in a diamond formation, spaced 1.2m apart, and installed to varying depths of 3.5m, 4.0m, and 5.0m, in line with the geotechnical design. The anchors were proof-loaded to 35 kN to ensure they met the required stability criteria. In addition to the anchors, nine Vulcan anchor drains were placed at the bottom of the slope at a depth of 5m to alleviate hydrostatic pressure build-up, which could have compromised the stability of the slope.

The installation was carried out using a 5-ton excavator with a percussive breaker attachment for efficient excavation and anchor placement. The anchors were then loaded using a 12-ton hydraulic ram and a battery-operated hydraulic pump to ensure precise loading and confirm that the required proof load was achieved.

# Tower Close

## Result

The project successfully stabilised the slope and mitigated risks to the highway and surrounding property. The following outcomes were achieved:

- The anchors met the required load performance, providing long-term stability.
- The Greenax matting offered robust erosion control.
- No deviations from the original design were necessary, and no issues were encountered during installation.

The work was completed in 7 days by a two-person team. The client expressed satisfaction with the outcome, ensuring both safety and structural integrity.

