



**YellowScan**

**Designed to Innovate.**

## SUCCESS STORY

# Geotechnical Engineering

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*Flying low and slow with the surveyor and processing with high scan angles achieved more than 400 points/m<sup>2</sup> – providing incredible detail of surface topography including cliff faces, inside caves and beneath overhangs.*

Zack Wasson, CEO and Founder



UAV USED  
DJI M600



SOLUTION  
Surveyor

## Business need.

Diodrone's client is responsible for managing geotechnical risks along a 170km long rural road which travels through remote and rugged terrain and is prone to landslides and rock fall. The client conducts routine inspections and geotechnical risk assessments as part of their geotechnical management plan.

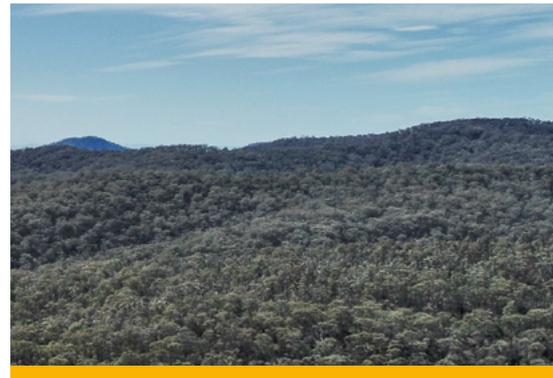
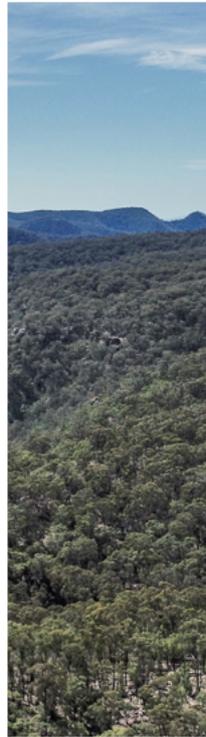
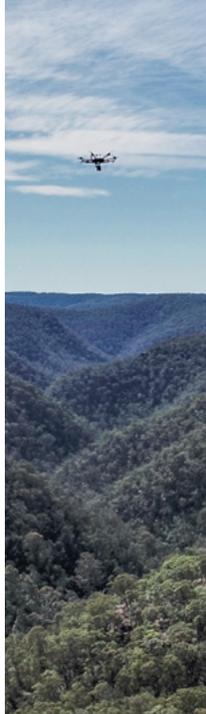
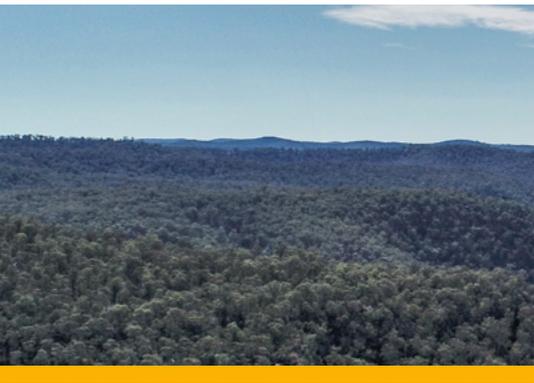
However, the rugged nature of the area - dense vegetation and large sandstone escarpments - limits the ability to use conventional inspection methods. Only the slope areas immediately adjacent to the roadway were assessed, leaving the majority of the slope largely unassessed and the risk profile uncertain.

## Solution.

The YellowScan Surveyor was utilised to survey the slopes on both sides of the valley from creek to crest. In four days, an area of 400ha of mountainous terrain was covered, exceeding 250m of vertical relief in some places.

**DIODRONE**  
reality capture for digital engineering

Company: Diodrone  
Website: [www.diodrone.com](http://www.diodrone.com)  
Country: Australia

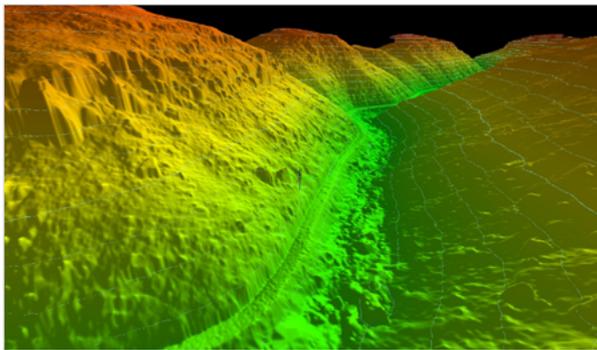


## SUCCESS STORY

# Results

### Acquisition.

4 days operating along 5km of road length and capturing an 800m corridor width with up to 250m of vertical relief. Pre-programmed flights were optimised to increase point density and data capture along cliff faces and within caves.



Digital Terrain Model of the area (DTM)

### Mission parameters.

- Number of flights: 27
- Survey size: 400ha
- Flight speed: 4m/s
- Flight altitude: 50m AGL

### Results.

The high-resolution LiDAR point cloud was then classified for ground points with extensive manual refinement to ensure that boulders, erosion gullies and other geological features were retained in the ground classification and evident in the resulting digital terrain model (DTM).

The resulting deliverables provided geotechnical engineers with a high-fidelity DTM for use in rockfall modelling as well as identifying the location and extent of boulders, landslide debris, erosion gullies and overhanging rock formations - essentially providing a heatmap of potential rockfall sources throughout the assessment area.

The data reduced uncertainty and improved the geotechnical engineer's confidence in the risk profile enabling and optimised decision making.

### Benefits.

- High density data
- Detailed DTM beneath dense vegetation
- 50mm RMSE
- Variable scan angle to optimise point density in caves and steep terrain

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