

Project: Slip Remediation at Luxury Resort

Client: Confidential

Location: Mamanuca Archipelago, Fiji

Date: 2009

Heavy rain in January 2009 caused a large landslide at a luxury island resort in Fiji. RILEY was commissioned to investigate the incident and provide recommendations for stabilisation of the affected area, and practical remedial recommendations to improve overall stability of the steep slope backing on to the resort.

Investigation showed that the 40m high landslide mobilised approximately 600m³ to 800m³ of material, causing surface erosion and stripping vegetation from the lower part of the slope. Debris covered a concrete drive, cutting off access to a walkway leading to over-water villas and damaged several bures at the base of the slope, coming to rest at up to 2m high against external walls.

Given the geometry of the landslide, and the comparatively large vertical extent, a 'hard engineering' solution was considered impractical and uneconomic. A series of remedial measures, in keeping with the setting, were implemented to improve slope stability. These included:

- ❖ removal of unstable rock and soil on the slip scarp;
- ❖ re-grading of the slip area and removal of slip debris;
- ❖ construction of a stormwater cut off drain above the slip area;
- ❖ installation of counterfort drainage at the slope base;
- ❖ construction of a buttressing toe bund wall; and
- ❖ re-establishment of indigenous vegetation on the bare slip area.

Part of the vegetation management programme involved the progressive removal of Casuarina trees from the slope above the resort. The trees are regarded as invasive weeds; their roots and needle litter exude a chemical which kills indigenous vegetation, resulting in accelerated erosion of deep channels, contributing to instability.

The implementation of remedial measures has now greatly improved the stability of the landslide area and the areas to each side.



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