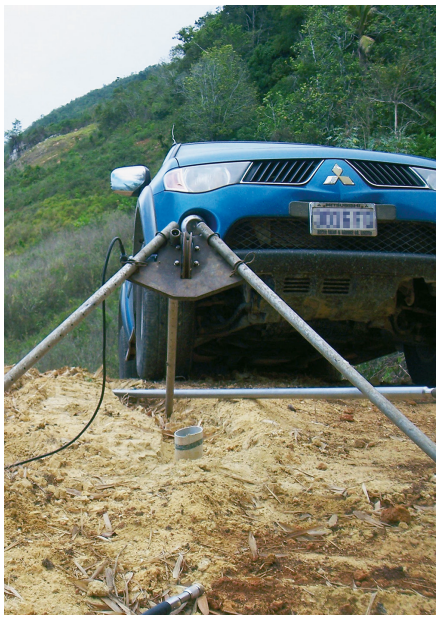
CASE HISTORY

Application:	**Geotechnical**
Technology:	**High Resolution Optical Televiewer (Hi-OPTV)®, Natural Gamma, Mini Winch**
Location:	**Slope Stability Project in Jamaica - Highway 2000, Kingston to Mandeville**

Background:

Bouygues Travaux Publics was appointed to build the Highway 2000 motorway, including duplication and upgrading to motorway standard of a 14-km-long stretch of the existing Dyke Road. This stretch of motorway connects the Jamaican capital, Kingston, to Mandeville, a bauxite mining town in the eastern part of the island. Bauxite has been extracted in the area for decades by stripping shallow red bauxite ore from the underlying Manchester limestone plateau using open-pit/open-cast techniques.



Requirement:

Robertson Geo Services (RGS) was contracted by Bouygues Travaux Publics to conduct televiewer and natural gamma surveys on 17 boreholes up to 49m in depth, around the Mount Rosser Bypass. This section of the route had a subsurface clay band that posed some engineering concerns due to the nature of the mountainous landscape where the clay band could pose a landslip risk.

Equipment:

The following probes were conveyed using a Robertson Geo Mini Winch:

Natural Gamma: to determine natural gamma levels, identifying clay bands in the formation

Hi-OPTV®: borehole wall image to delineate fractures and bed boundaries

Mini Winch: to facilitate portable logging where vehicular access was impossible

Both probes underwent calibration and conformance checking prior to deployment on site.

Operations:

The logging equipment was air freighted to Jamaica and the logging engineer flew in for the project as soon as the equipment had cleared customs. A 4x4 vehicle was provided by the client into which the portable winch was mounted. Due to the steep terrain some boreholes could not be accessed by vehicle requiring a portable set up. The boreholes were drilled to a diameter of 75mm and were presented as open boreholes in order to image the borehole walls. All equipment and probes were surface tested before operations commenced and depth was referenced to ground level.

Challenges and Solutions:

The main operational challenge was the steep terrain which was overcome by using a portable set up where necessary.

End value to client:

The natural gamma data acquired was used to map any clay bands, as clay typically exhibits high gamma levels compared to most sedimentary formations. The televiewer data was used to delineate fracture profiles and bed boundaries for the boreholes. The resulting information was used to help determine the foundations and anchoring required to secure the mountainside for the development of the highway.