

# Measuring mud flow

Maptek™ I-Site™ provided a solution for measuring mud movement over time in a physically unstable area of Indonesia.

The subdistrict of Porong, Sidoarjo in East Java is considered to have the biggest mud volcano in the world. An incident in 2006 highlighted the dangers.

Mud flows have the potential to become a natural disaster.

Land stability in the mud flow area is unpredictable, and it is dangerous for surveyors to set up instruments and to walk around.

When the tripod is set up on dry land there is no guarantee that it will stay stable and level as the land could suddenly sink. A similar risk faces surveyors walking around on the dry mud. The mud flow area is quite extensive and relatively flat.

Currently a reinforced earth dam contains the area, covering around 2km x 2.6km. Movement was previously measured by GNSS and Total Station. This approach provided too little data sampling, and therefore did not adequately represent movement over time.

The Maptek™ I-Site™ approach provides comparable data over time with high accuracy and greater density.

Several factors influence the overall contour of the continuous mud flow, characterised by unpredictable timing and volume.

Periods of heavy rain at certain times exacerbate the flow. Water from below the flow, or from rain above, could take any path. Predicting drainage patterns is not possible.

## I-Site solution

Since 2016 the I-Site 8820 laser scanner has been used to successfully scan the mud flow area every four months.

Some survey points already existed around the location. The I-Site 8820 laser scanner was set up on a tripod, with coordinate location derived by GNSS.

The vehicle mounted stop-go method is also used to collect survey data. The elevated position provides greater coverage of the scene.

Electromagnetic anomalies led to unexpected challenges during scanning. Since GPS/compass was unreliable, all registration was conducted within I-Site Studio to correct for anomalies and provide accurate data.

Conducting surveys with I-Site Drive would provide another boost in survey productivity.

Mounting the I-Site laser scanner on top of the vehicle reduces the safety risk to operators.

The I-Site 8820 makes a huge difference to the survey process, especially in terms of time. It is more efficient for collecting data and is much safer for the surveyor. The laser scanning approach also ensures proper data coverage of the entire area.

*Thanks to  
Bapel-BPLS, PT ASABA*

