World Academy of Science, Engineering and Technology
International Journal of Geotechnical and Geological Engineering
Vol:13, No:06, 2019

Landslide Study Using Unmanned Aerial Vehicle and Resistivity Survey at Bkt Kukus, Penang Island, Malaysia

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Abstract : The study area is located at Bukit Kukus, Penang where the construction of twin road project in ongoing. A landslide event has occurred on 19th October 2018, which causes fatal deaths. The purpose of this study is to figure out the causes of failure, the estimated volume of failure, and its balance. The study comprises of unmanned aerial vehicle (UAV) sensing and resistivity survey. The resistivity method includes spreading three lines of 200m length resistivity survey with the depth of penetration in the subsurface not exceeding 35m. The result of UAV shows the current view of the site condition. Based on resistivity result, the dominant layer in the study area consists of residual soil/filling material with a thickness of more than 35m. Three selected cross sections from construction drawing are overlain with the current cross sections to understand more on the condition of the subsurface profile. By comparison, there is a difference between past and present topography. The combination of result from the previous data and current condition shows the calculated volume of failure is 85,000 m^3, and its balance is 50,000 m^3. In conclusion, the failure occurs since the contractor has conducted the construction works without following the construction drawing supplied by the consultant. Besides, the cause of failure is triggered by the geology condition, such as a fault that should be considered prior to the commencement of work.

Keywords : UAV, landslide, resistivity survey, cause of failure
Conference Title : ICGAGE 2019 : International Conference on Geophysical Applications for Geotechnical Engineering
Conference Location : Oslo, Norway
Conference Dates : June 24-25, 2019