

**UNIVERSITI TEKNOLOGI MARA**

**GEORISK ASSESSMENT AND RELIABILITY  
DESIGN IN MITIGATION OF  
SLOPE FAILURE IN  
TROPICAL ENVIRONMENT**

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Thesis submitted in partial fulfillment  
of the requirements for the degree of  
**Master in Civil Engineering**

**Faculty of Civil Engineering**

**September 2013**

## AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the result of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification

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## ABSTRACT

This research introduces the georisk and reliability design approach to predict the sustainability of development on or near mountainous terrains. A field study was conducted on fifty two slopes to identify the most frequent factor that trigger slope instability in sedimentary slope formation. The classification level of risk also identified in this study. Parameters such as slope geology, mode of slope failure, slope geometry, slope distress, rainfall, and drainage system and slope stabilization technique slope were studied. Further parametric study was carried out using SLOPE/W to determine the internal instability factor of slope failure. The results from slopes assessment show that the weathering Grade V and Grade VI become the most favorable georisk factor of slope instability that effect the reliability of the slope. While, for the reliability of slope design, slope height, slope angle and factor of safety become the main factor that contributed to low reliability of slope. In addition, further statistical analysis found that drainage structure contributed to major instability factor of slope stability. At the end of this study the risk reliability chart and guidelines for slope design reliability were produced.

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