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DEBRIS FLOW SUSCEPTIBILITY AREAS IDENTIFICATION IN BUKIT KACHI, SINTOK, KEDAH USING FLOW R SOFTWARE

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DECLARATION

I declare that the work on this project/dissertation was carried out in accordance with the regulations of Universiti Teknologi MARA (UiTM). This project/dissertation is original, and it is the result of my work, unless otherwise indicated or acknowledged as referenced work.

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I certify that I have examined the student's work and found that they are in accordance with the rules and regulations of the School and University and fulfils the requirements for the award of the degree of Bachelor of Surveying Science and Geomatics (Honours).

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ABSTRACT

Debris flow is acknowledged as one of the most devastating environmental hazards all around the globe due to the high number of deaths and infrastructure damages caused by its characteristics such as high velocity and unpredictable occurrence. Debris flow can happen in the valley or on the mountain slope, demolishing everything in its path when poorly sorted material that has been saturated with water surges downslopes due to gravity and deposits as fans on the mountain floor. This study aims to identify the debris flow of susceptible areas in Bukit Kachi, Sintok, Kedah by using Flow R Model. DEM was used as the main data source obtained from TanDEM-X. It was used to process the selected factors contributed to the occurrence of debris flow which were slope, plane curvature, and flow accumulation using surface and hydrology tools in ArcGIS toolboxes. Other than that, this study took into account worldwide susceptibility distribution from a macro perspective and chose factors or parameters based on the literature review of the previous study. Then, all the factors were used as input for sources area in Flow R software to run for the output of debris flow susceptibility area with the involvement of propagation calculation. The propagation of debris flow is simulated using a spreading algorithm and an energy calculation. For the result, about 209376m² area susceptibility to debris flow from 35227008m² of the total acreage of the study area. 0.6% from the total acreage of the study area will be affected by debris flow and some of the area near to the community recreational area. The final output of this study is a map of debris flow susceptibility areas that will help the community, authorities, or any agencies in mitigating the risk as well as improving a community's resilience and achieving sustainable development goals 13.1 which target to strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.

Keywords: Debris Flow, Digital Elevation Model (DEM), Slope, Plane Curvature, Flow Accumulation, Flow R.

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