

EARTHQUAKE VULNERABILITY MAPPING OF RESIDENTIAL BUILDINGS BASED ON THE GEOLOGICAL AND BUILDING FOOTPRINT CHARACTERISTIC IN PIYUNGAN AND PRAMBANAN SUB-DISTRICT SLEMAN REGENCY, 2013

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ABSTRACT

Piyungan and Prambanan sub-district is one of the earthquake prone areas. It was proved, in the earthquake event of May 27, 2006 in Yogyakarta, Two of Sub-District was badly damaged. This research was conducted to determine the earthquake vulnerability condition of residential buildings using rapid visual screening of building for potential seismic hazard procedure. The method used in this research was integration between remote sensing, geographic information system and field observation. There are four lithological units in the study area based on the geologic data. Those lithological units are Recent Merapi Volcano Deposite (Qmi), Alluvium from denudational processes in Semilir and Nglanggran Formation (Qa), Nglanggran Formation (Tmn) and Semilir Formation (Tmse). Semilir Formation is dominated by alternately breccia pumice and breccia-tuff. Nglanggran Formation is dominated by volcanic breccia and lava flow, Recent Merapi Volcano deposits and Alluvium from denudational processes in Semilir and Nglanggran Formation. Based on the interpretation of Quickbird imagery can be seen that the roof type of residential buildings in Prambanan and Piyungan Sub District are dominated by regular "kampung" type i.e. 89.50%, while the buildings structure are dominated by reinforced masonry with rigid diaphragm (RM2) i.e. 92.08%. The RM2 type have high score of rapid visual screening of building for potential seismic hazard i.e. above the value 1.75. This score shows that RM2 type has low level of earthquake vulnerability. From the results also shown that all of the building structure types except wood structure (W1), if located in moderate to high level of hazard indicated by unconsolidated surface material like alluvium and located in dense area tend to have moderate until high degree of buildings.

Keywords : Buildings vulnerability, lithology, buildings structure