

EVALUASI DAN REKAYASA LERENG DI PADUKUHAN JERING, KALURAHAN SIDOREJO, KAPANEWON GODEAN, KABUPATEN SLEMAN, DAERAH ISTIMEWA YOGYAKARTA

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INTISARI

Kapanewon Godean memiliki bentang alam khas berupa dataran aluvial di kawasan rendah dan perbukitan denudasional di kawasan yang lebih tinggi. Dataran aluvial terbentuk dari proses pengendapan sedimen oleh aliran air, sementara perbukitan denudasional merupakan hasil proses pelapukan, erosi, dan pengikisan permukaan bumi. Perbukitan di Godean mengalami perubahan signifikan akibat aktivitas manusia seperti konstruksi, pertambangan, dan ekskavasi, terutama untuk memenuhi kebutuhan perumahan bagi Masyarakat Berpenghasilan Rendah (MBR). Namun, aktivitas tambang ilegal yang tidak terencana, khususnya di Padukuhan Jering, sering kali merusak lingkungan dan meningkatkan risiko ketidakstabilan lereng, sehingga berpotensi memicu longsor. Untuk itu, diperlukan analisis kerawanan longsor dan analisis kestabilan lereng berdasarkan nilai Faktor Keamanan (FK) guna mengidentifikasi area rawan longsor.

Penelitian ini dilakukan dengan metode survei, pemetaan, metode *purposive sampling*, pengujian laboratorium sifat fisik dan mekanik batuan, dan metode deskriptif dan kuantitatif untuk analisis rawan longsor dan kestabilan lereng. Analisis kerawanan longsor dilakukan dengan metode *scoring* berdasarkan Peraturan Menteri Pekerjaan Umum No.22/PRT/M/2007 tentang Pedoman Penataan Ruang Kawasan Rawan Bencana Longsor dan analisis kestabilan dilakukan dengan menggunakan aplikasi *Rocscience Slide 6.0* dengan metode Janbu yang disederhanakan untuk mengetahui nilai faktor keamanan.

Hasil penelitian menunjukkan bahwa lereng yang berada dekat dengan pemukiman termasuk kedalam klasifikasi daerah tingkat kerawanan longsor sedang dengan nilai berkisar antara 1,85 – 2,35. Pada daerah yang memiliki kerawanan longsor sedang, dilakukan perhitungan nilai faktor keamanan yang diuji di tiga lereng. Dihasilkan perhitungan nilai FK berturut – turut sebesar 3,664; 3,957; 6,297 yang ketiganya termasuk kedalam klasifikasi lereng stabil. Dari hasil analisis tersebut kemudian direkomendasikan arahan pengelolaan berupa pemasangan geogrid pada lereng guna memperkecil potensi longsor serta menjaga kestabilan lereng.

Kata Kunci : Lereng, Longsoran, Faktor Keamanan, Geogrid

***EVALUATION AND SLOPE ENGINEERING IN PADUKUHAN JERING,
KALURAHAN SIDOREJO, KAPANEWON GODEAN, SLEMAN REGENCY,
SPECIAL REGION OF YOGYAKARTA***

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ABSTRACT

Kapanewon Godean, features a distinctive landscape comprising alluvial plains in low-lying areas and denudational hills in higher regions. The alluvial plains are formed through the deposition of sediment by water flows, while the denudational hills result from processes of weathering, erosion, and surface degradation. The hills in Godean have undergone significant changes due to human activities such as construction, mining, and excavation, particularly to meet housing demands for Low-Income Communities (MBR). However, unregulated illegal mining activities, especially in Padukuhan Jering, often damage the environment and increase the risk of slope instability, potentially triggering landslides. Therefore, landslide hazard analysis and slope stability analysis based on the Safety Factor (SF) values are necessary to identify landslide-prone areas.

This study employs survey and mapping methods, purposive sampling, laboratory testing for physical and mechanical properties of rocks, and descriptive and quantitative methods for landslide hazard and slope stability analysis. The landslide hazard analysis is conducted using the scoring method based on the Indonesian Ministry of Public Works Regulation No. 22/PRT/M/2007 concerning Guidelines for Spatial Planning in Landslide-Prone Areas. Slope stability analysis is performed using the Rocscience Slide 6.0 application with the simplified Janbu method to determine the safety factor values.

The findings indicate that the slope adjacent to the residential area falls within the classification of medium landslide susceptibility, with Safety Factor values ranging from 1.85 to 2.35. In areas classified as medium-risk for landslides, Safety Factor values were calculated for three slopes, yielding values of 3.664, 3.957, and 6.297, all of which fall within the stable slope classification. Based on these results, the study recommends the installation of geogrid as a slope stabilization measure to mitigate landslide risk and enhance slope stability.

Keywords: *Slope, Landslide, Safety Factor, Geogrid*