

ABSTRAK

KAJIAN GEOTEKNIK KESTABILAN LERENG DAN STRATEGI MITIGASI LONGSOR DI PADUKUHAN JERING VI, SIDOREJO, GODEAN, SLEMAN, DIY

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Longsor merupakan salah satu bencana yang sering terjadi pada wilayah berlereng curam, material tanah yang mudah jenuh air, dan perubahan penggunaan lahan. Padukuhan Jering VI, Kalurahan Sidorejo, Kapanewon Godean, Kabupaten Sleman mengalami longsor pada 22 November 2024 sehingga diperlukan kajian geoteknik sebagai dasar mitigasi. Penelitian ini bertujuan mengidentifikasi karakteristik lereng, menganalisis kestabilan lereng, menyusun peta zona berpotensi longsor, dan merumuskan strategi mitigasi.

Metode penelitian terdiri dari studi literatur, survei lapangan, wawancara, pemetaan lapangan, pemetaan drone, serta uji laboratorium tanah dan air. Pengujian tanah meliputi kadar air, berat isi, kohesi, dan sudut geser dalam, sedangkan pengujian air meliputi Total Dissolved Solids (TDS) dan kekeruhan. Pengambilan sampel menggunakan purposive sampling. Analisis kestabilan lereng menggunakan metode Janbu yang disederhanakan untuk memperoleh faktor keamanan (FK), sedangkan peta zona berpotensi longsor disusun melalui metode skoring, pembobotan, dan overlay berbasis Sistem Informasi Geografis (SIG).

Hasil penelitian menunjukkan bahwa lereng 1 memiliki FK 1,584 dan tergolong stabil. Lereng 2 dan lereng 3 memiliki FK masing-masing 1,018 dan 1,028 sehingga tergolong labil, sedangkan lereng 4 memiliki FK 1,092 dan tergolong kritis. Peta zona berpotensi longsor menunjukkan kelas rendah, sedang, dan tinggi di wilayah penelitian. Strategi mitigasi yang direkomendasikan terdiri dari pemasangan *soil nailing*, drainase lereng, revegetasi, penutupan rekahan tanah, serta penguatan aspek sosial dan institusi.

Kata kunci: longsor, kestabilan lereng, metode Janbu, mitigasi longsor, zona berpotensi longsor

ABSTRACT

GEOTECHNICAL STUDY OF SLOPE STABILITY AND LANDSLIDE MITIGATION STRATEGIES IN JERING VI, SIDOREJO VILLAGE, GODEAN, SLEMAN, YOGYAKARTA SPECIAL REGION

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Landslides are one of the disasters that frequently occur in areas with steep slopes, soil materials that are easily saturated with water, and land-use changes. Padukuhan Jering VI, Sidorejo Village, Godean District, Sleman Regency experienced a landslide on 22 November 2024, therefore a geotechnical study is needed as a basis for mitigation. This study aims to identify slope characteristics, analyze slope stability, develop a landslide susceptibility zonation map, and formulate mitigation strategies.

The research methods included literature review, field surveys, interviews, field mapping, drone mapping, and laboratory testing of soil and water samples. Soil testing included water content, unit weight, cohesion, and internal friction angle, while water testing included Total Dissolved Solids (TDS) and turbidity. Sampling was conducted using purposive sampling. Slope stability analysis used the Simplified Janbu Method to obtain the factor of safety (FS), while the landslide susceptibility zonation map was prepared using scoring, weighting, and overlay methods based on Geographic Information Systems (GIS).

The results showed that Slope 1 had an FS of 1.584 and was classified as stable. Slopes 2 and 3 had FS values of 1.018 and 1.028, respectively, and were classified as marginally stable, while Slope 4 had an FS of 1.092 and was classified as critical. The landslide susceptibility zonation map indicated low, moderate, and high susceptibility classes within the study area. Recommended mitigation strategies include soil nailing installation, slope drainage construction, revegetation, crack sealing, and strengthening social and institutional aspects.

Keywords: landslide, slope stability, Janbu method, mitigation, landslide potential zone