

ABSTRAK

EVALUASI KEAMANAN LERENG *LOWWALL* PIT X DENGAN METODE *SLOPE MASS RATING* DAN *PROBABILITY OF FAILURE* DI BARUNANG, KABUPATEN KAPUAS, KALIMANTAN TENGAH

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Daerah penelitian merupakan area pertambangan terbuka batubara yang berada di Desa Barunang, Kecamatan Kapuas Tengah, Kabupaten Kapuas, Provinsi Kalimantan Tengah. Secara regional, daerah penelitian termasuk bagian utara Cekungan Barito dan tersusun atas batuan Formasi Tanjung berumur Eosen Akhir. Litologi daerah penelitian terdiri atas batulempung, batubara, dan batupasir, dengan batubara sebagai litologi utama yang tersingkap pada lereng serta memiliki diskontinuitas berupa *face cleat* dan *butt cleat*. Penelitian ini bertujuan menganalisis kestabilan dan menentukan evaluasi geometri lereng *lowwall* menggunakan metode *Slope Mass Rating* (SMR) dan analisis kinematik *Probability of Failure* (PoF). Analisis dilakukan pada tujuh segmen berdasarkan data geologi, orientasi diskontinuitas, dan geometri lereng. Hasil penelitian menunjukkan nilai SMR sebesar 41,90–57,12 yang termasuk kelas III dengan kondisi *partially stable*. Nilai PoF longsoran tipe baji berada pada rentang 0,74–10,21%, dengan lima segmen memiliki nilai PoF lebih dari target evaluatif 5% yang mengacu pada Budetta (2020). Hasil regresi linear menunjukkan bahwa *slope dip* memiliki nilai absolut koefisien regresi lebih besar dibandingkan *slope direction*, sehingga dipilih sebagai parameter dominan dalam evaluasi. Evaluasi dilakukan melalui penurunan *slope dip* hingga menghasilkan nilai $PoF \leq 5\%$, sedangkan kelas SMR digunakan sebagai dasar penentuan alternatif penanganan struktural lereng.

Kata kunci: batubara, kestabilan lereng, *Probability of Failure*, *Slope Mass Rating*

ABSTRACT

LOWWALL SLOPE SAFETY EVALUATION IN PIT X USING SLOPE MASS RATING AND PROBABILITY OF FAILURE METHODS IN BARUNANG, KAPUAS REGENCY, CENTRAL KALIMANTAN

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The research area is an open-pit coal mining area located in Barunang Village, Kapuas Tengah District, Kapuas Regency, Central Kalimantan Province. Regionally, the research area is situated in the northern part of the Barito Basin and is composed of the Late Eocene Tanjung Formation. The lithology of the research area consists of claystone, coal, and sandstone, with coal as the main lithology exposed on the slope and characterized by discontinuities in the form of face cleats and butt cleats. This study aims to analyze slope stability and evaluate the lowwall slope geometry using the Slope Mass Rating (SMR) method and kinematic Probability of Failure (PoF) analysis. The analysis was conducted on seven segments based on geological data, discontinuity orientation, and slope geometry. The results show that the SMR values range from 41.90 to 57.12, which fall into class III with a partially stable condition. The PoF values for wedge failure range from 0.74% to 10.21%, with five segments exceeding the 5% evaluative target referring to Budetta (2020). The linear regression results indicate that slope dip has a greater absolute regression coefficient than slope direction; therefore, slope dip was selected as the dominant parameter in the evaluation. The evaluation was carried out by reducing the slope dip until the PoF value reached $\leq 5\%$, while the SMR class was used as the basis for determining alternative structural treatment measures for the slope.

Keywords: coal, Probability of Failure, Slope Mass Rating, slope stability