

RINGKASAN

Penelitian dilakukan di PT. Serinding Sumber Makmur (PT. SSM), Desa Petai Patah, Kecamatan Sandai, Kabupaten Ketapang, Provinsi Kalimantan Barat dengan luas area WIUP sebesar 5.978 hektar. PT. SSM bergerak di bidang pertambangan bijih emas yang operasi penambangannya menerapkan sistem tambang terbuka dengan metode open pit. Kegiatan penambangan menghasilkan lereng tunggal dengan tinggi 10 m dengan sudut kemiringan 65° dan tinggi lereng keseluruhan 20 m. Penambangan bijih emas di *pit* limun perlu diteliti lebih lanjut, hal ini mengingat adanya fenomena ketidakstabilan berupa longsor pada lereng *pit* limun.

Pemetaan geoteknik dilakukan pada lereng tunggal dengan metode *scanline* disertai observasi visual untuk mengetahui kondisi bidang diskontinu di lapangan.. *Material properties* batuan sebagai parameter analisis kestabilan lereng didapatkan dari hasil pengujian sifat fisik dan sifat mekanik. *Geological Strength Index* (GSI) diperoleh berdasarkan hasil pemetaan geoteknik dan pengujian *material properties*. Nilai GSI digunakan untuk menentukan kohesi dan sudut gesek dalam. Analisis kestabilan lereng dilakukan sesuai jenis longsor yang berpotensi terjadi berdasarkan metode kinematika dan dikuantifikasikan dengan metode kesetimbangan batas.

Berdasarkan hasil analisis kinematika diketahui bahwa lereng aktual berpotensi mengalami longsor bidang dan longsor baji. Analisis longsor bidang menghasilkan nilai Faktor Keamanan (FK) 7,68 dan Probabilitas Longsor (PL) 0%. Analisis longsor baji menghasilkan nilai FK 1,01 dan PL 100%. Nilai FK longsor baji tidak memenuhi kriteria penerimaan yang ditetapkan dalam Kepmen ESDM 1827/K/30/MEM/2018 sehingga dilakukan optimasi geometri lereng. Optimasi lereng tunggal menghasilkan lereng dengan geometri tinggi 10 m dan sudut kemiringan 64° yang memiliki nilai FK longsor baji 1,58 serta PL 0%.

SUMMARY

The research was conducted at PT. Serinding Sumber Makmur (PT. SSM), Petai Patah Village, Sandai District, Ketapang Regency, West Kalimantan Province with a WIUP area of approximately 5,978 hectares. PT. SSM is engaged in gold ore mining which applies an open pit mining system with the open pit method. Mining activities produce a single slope with a height of 10 m, a slope angle of 65° and an overall slope height of 20 m. Mining of gold ore in the lemonade pit needs to be further investigated. This is due to the instability phenomenon in the form of avalanches on the slopes of the lemonade pit.

Geotechnical mapping was carried out on a single slope using the scanline method accompanied by visual observations to determine the condition of discontinuous areas in the field. Rock material properties as a parameter for slope stability analysis were obtained from the results of physical and mechanical properties tests. The Geological Strength Index (GSI) is obtained based on the results of geotechnical mapping and testing of material properties. The GSI value is used to determine the cohesion and internal friction angle. Slope stability analysis is carried out according to the type of failure that has the potential to occur based on the kinematics method and is quantified by the limit equilibrium method.

Based on the results of kinematics analysis, it is known that the current slope has the potential to experience plane failure and wedge failure. Analysis of plane failures produces a Factor of Safety (FoS) value of 7.68 and a Probability of Failure (PoF) of 0%. Analysis of the wedge failure produces a SF value of 1.01 and a PF of 100%. The value of the FoS failure does not meet the acceptance criteria set out in the Ministry of Energy and Mineral Resources 1827/K/30/MEM/2018, so an optimization of the slope geometry has been carried out. Single slope optimization produces a slope with a geometry height of 10 m and a slope angle of 64° which has a wedge failure FoS value of 1.58 and 0% PoF.