

RINGKASAN

PT. Sulawesi Cahaya Mineral merupakan perusahaan pertambangan bijih nikel yang sedang melakukan kegiatan eksplorasi rinci yang beroperasi di Desa Lalomerui, Kecamatan Rounta, Kabupaten Konawe, Provinsi Sulawesi Tenggara. Kegiatan penambangan rencananya akan dilakukan dengan menggunakan metode tambang terbuka dengan membentuk lereng hingga kedalaman 42 meter.

Lereng penambangan akan berpotensi longsor apabila geometri lereng yang digunakan tidak sesuai dengan karakteristik massa tanah pada lereng tambang, sehingga diperlukan adanya perancangan geometri lereng yang aman dan stabil sesuai karakteristik massa tanah dan batuan, jenis potensi longsor dan kondisi geologi setempat.

Lokasi penelitian dilakukan pada rencana pit Papa Bravo dengan penampang sayatan north-south pada lubang bor J070913/GT06/SCM yang ditargetkan hingga kedalaman 27 meter dan sayatan north-south pada lubang bor J092529/GT07/SCM yang ditargetkan hingga kedalaman 42 meter. Perhitungan pada dinding lereng penambangan yang berpotensi longsor menggunakan metode Keseimbangan Batas Bishop, Janbu, Morgenstern-Price dan Analisis Probabilitas. Permodelan dilakukan dengan pendekatan sifat fisik dan mekanik batuan hasil uji data laboratorium. Dilakukan analisis variasi kemiringan lereng dan analisis variasi kondisi muka air tanah (MAT) menurut Hoek and Bray, 1981 (kering, 8H, 4H, 2H dan jenuh), faktor seismik bernilai 0,25g dengan asumsi getaran akibat kegiatan penambangan dan beban alat mekanis diabaikan, lereng tunggal dianggap stabil jika Faktor Keamanan (FK) $\leq 1,1$ dan Probabilitas Longsor (PL) 25%-50% sedangkan lereng keseluruhan dianggap stabil apabila FK $\leq 1,2$ dan PL 15%-20% (sesuai dengan Keputusan Menteri Energi dan Sumber Daya Mineral Republik Indonesia No. 1827 K/30/MEM/2018).

Berdasarkan hasil analisis menggunakan metode keseimbangan batas dengan program *Rocscience Slide v.8.0* diperoleh rekomendasi lereng tunggal dengan tinggi 5 meter dan sudut lereng 50° , untuk lereng keseluruhan north-south pada lubang bor J070913/GT06/SCM ketinggian 27 meter dengan sudut lereng 29° dan lebar bench 5,25 meter dalam kondisi lereng agak kering (8H) sedangkan untuk lereng keseluruhan north-south pada lubang bor J092529/GT07/SCM ketinggian 42 meter dengan sudut lereng 33° dan lebar bench 3,75 meter dalam kondisi lereng agak kering (8H). Analisis menghasilkan lereng optimum dalam kondisi lereng agak kering (8H) sehingga analisis area pengaruh MAT diperlukan untuk mengontrol kestabilan akibat pengaruh MAT dengan menggunakan piezometer dan kegiatan penyaliran.

ABSTRACT

PT. Sulawesi Cahaya Mineral is a nickel ore mining company which is conducting detailed exploration activities operating in Lalomerui Village, Rounta Sub-district, Konawe Regency, Southeast Sulawesi Province. Mining activities are planned to be conducted using open-pit methods by forming slopes up to a depth of 42 meters.

The mining slope will potentially landslide when the geometry of the slope used is not in accordance with the characteristics of the soil mass in the opening hole wall, so it is necessary to design the geometry of a safe and stable slope in accordance

The research site was conducted on the Papa Bravo pit plan with a cross section of the north-south incision at the drill hole J070913/GT06/SCM that targeted to a depth of 27 meters and a north-south incision at the drill hole J092529/GT07/SCM that targeted to a depth of 42 meters. Calculations on the walls of the mining slope that could potentially an avalanche of bows use the Limit Equilibrium of Bishop, Janbu, Morgenstern-Price and Probability Analysis methods. Modelling is done by the approach of physical and mechanical properties of rock test data laboratory results. Performed analysis of slope angle variation and ground water variation according to Hoek and Bray, 1981 (dry, 8H, 4H, 2H and saturated), seismic factor of 0,25g assuming vibration due to mining activities and load mechanical equipment ignored, single slope is considered stable if the Safety Factor (SF) ≤ 1.1 and Probability of Failure (PF) 25%-50% while the overall slope is considered stable when SF ≤ 1.2 and PF 15%-20% (in accordance with the Decree of the Minister of Energy and Mineral Resources Republic of Indonesia No. 1827 K/30/MEM/2018).

Based on the results of the analysis using the limit equilibrium method with the Rocscience Slide program obtained a single slope recommendation with a 5-metre high and 50° slope angle, for the overall slope North-south on the drill hole J070913/GT06/SCM altitude of 27 meters with a slope angle of 29° and width of bench 5,25 meters in the condition of a slightly dry slope (8H) while for the overall slope of north-south on the drill hole J092529/GT07/SCM altitude of 42 meters with a angle of slope 33° and width of bench 3,75 meters in the condition of a slightly dry slope (8H). Analysis generates an optimum slope in a slightly dry slope (8H) so that the analysis of ground water influence area is necessary to control the stability of ground water influence by using piezometer and streaming activities.