

ABSTRAK

GEOLOGI DAN ANALISIS KESTABILAN LERENG TAMBANG TERBUKA DAERAH BAWAHAN SELAN, MATARAMAN, BANJAR, KALIMANTAN SELATAN

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Daerah penelitian berada di Desa Bawahan Selan, Kecamatan Mataraman, Kabupaten Banjar, Kalimantan Selatan, dan termasuk dalam Cekungan Barito. Penelitian ini bertujuan untuk mengetahui kondisi geologi, menganalisis kestabilan lereng *lowwall* tambang terbuka, serta memberikan rekomendasi penanganan lereng. Metode yang digunakan meliputi pemetaan geologi, pengukuran stratigrafi, analisis data bor, petrografi, mikropaleontologi, pengamatan diskontinuitas, klasifikasi massa batuan, dan analisis kestabilan lereng menggunakan metode *Morgenstern-Price* dengan kriteria *Generalized Hoek-Brown*. Hasil penelitian menunjukkan bahwa daerah penelitian tersusun atas Satuan batulempung Warukin dan material *disposal*. Satuan batulempung Warukin terdiri atas batulempung dengan sisipan batulempung karbonan, batulanau, batupasir, dan batubara, serta diinterpretasikan berumur Miosen Tengah-Miosen Akhir dan diendapkan pada lingkungan *lower delta plain*. Struktur geologi yang berkembang berupa homoklin dengan kemiringan lapisan dominan ke barat laut, serta diskontinuitas berupa *shear joint* dan *release joint*. Kualitas massa batuan termasuk sedang hingga baik, dengan nilai RQD 92,8-98,2%, RMR 51-65, dan GSI 61-65. Hasil analisis menunjukkan bahwa kondisi jenuh menyebabkan lereng tidak stabil, sedangkan penurunan posisi muka airtanah meningkatkan nilai faktor keamanan. Sayatan A-A' mencapai kondisi stabil pada MAT 8 m, sedangkan sayatan B-B' membutuhkan MAT sekitar 31 m. Oleh karena itu, rekomendasi utama adalah pengendalian dan pemantauan muka airtanah melalui sistem drainase, pengelolaan *sump*, piezometer, dan *sub-horizontal drain* apabila diperlukan.

Kata kunci: Formasi Warukin, *lowwall*, kestabilan lereng, muka airtanah, faktor keamanan.

ABSTRACT

GEOLOGY AND SLOPE STABILITY ANALYSIS OF AN OPEN-PIT MINE IN THE BAWAHAN SELAN AREA, MATARAMAN, BANJAR, SOUTH KALIMANTAN

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The research area is located in Bawahan Selan Village, Mataraman District, Banjar Regency, South Kalimantan, and belongs to the Barito Basin. This study aims to identify the geological conditions, analyze the stability of the lowwall slope in an open-pit mine, and provide slope management recommendations. The methods include geological mapping, measured section, borehole data analysis, petrographic and micropaleontological analyses, discontinuity observation, rock mass classification, and slope stability analysis using the Morgenstern-Price method with the Generalized Hoek-Brown failure criterion. The results show that the research area consists of the Warukin Claystone Unit and disposal material. The Warukin Claystone Unit is composed of claystone with intercalations of carbonaceous claystone, siltstone, sandstone, and coal, and is interpreted to be Middle Miocene to Late Miocene, deposited in a lower delta plain environment. The geological structure is characterized by a homocline dipping dominantly to the northwest, accompanied by shear joints and release joints. The rock mass quality ranges from fair to good, with RQD values of 92.8-98.2%, RMR values of 51-65, and GSI values of 61-65. The stability analysis indicates that saturated conditions cause unstable slopes, while lowering the groundwater level increases the factor of safety. Section A-A' reaches stable condition at a groundwater level depth of 8 m, whereas section B-B' requires approximately 31 m. Therefore, the main recommendation is groundwater level control and monitoring through drainage systems, sump management, piezometers, and sub-horizontal drains when required.

Keywords: Warukin Formation, lowwall, slope stability, groundwater level, safety factor.