

ANALISA TINGGI MUKA AIR BANJIR TERHADAP ELEVASI JALAN DESA KELEBUK

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ABSTRAK

Jalan Desa Kelebuk di Kecamatan Bengkalis, Kabupaten Bengkalis, merupakan jalur utama yang kerap mengalami genangan banjir akibat curah hujan tinggi dan pasang air laut. Penelitian ini bertujuan untuk menganalisis tinggi muka air banjir maksimum dan membandingkannya dengan elevasi jalan yang ada, serta memberikan rekomendasi teknis untuk penanganan banjir di wilayah tersebut. Metode yang digunakan meliputi analisis hidrologi dengan distribusi Log Pearson Tipe III untuk menentukan curah hujan rencana, perhitungan debit limpasan menggunakan metode rasional ($Q = C \times I \times A$), serta pengukuran elevasi jalan menggunakan alat sipat datar (waterpass). Data curah hujan diambil dari stasiun hujan BMKG selama 5 tahun terakhir. Hasil penelitian menunjukkan bahwa tinggi muka air banjir maksimum di lokasi penelitian mencapai 1,456 meter, sedangkan rata-rata elevasi jalan hanya 1,32 meter. Selisih sebesar 0,14 meter (14 cm) menyebabkan sebagian ruas jalan tergenang saat banjir. Selain itu, kapasitas saluran drainase eksisting tidak mencukupi untuk menampung debit limpasan kala ulang 5 tahun, sehingga meningkatkan risiko kerusakan jalan dan terganggunya mobilitas warga. Berdasarkan temuan tersebut, disarankan peninggian elevasi jalan minimal 0,30 meter di titik rawan banjir serta perencanaan ulang sistem drainase agar mampu menampung debit air secara optimal. Penelitian ini diharapkan menjadi referensi dalam pengambilan keputusan teknis di bidang infrastruktur jalan dan pengendalian banjir di Desa Kelebuk.

Kata Kunci: Desa Kelebuk, Drainase, Elevasi Jalan, Metode Rasional, Tinggi Muka Air Banjir.

ANALYSIS OF FLOODWATER LEVEL AGAINST ROAD ELEVATION IN KELEBUK VILLAGE

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ABSTRACT

Kelebuk Village Road, located in Bengkalis District, Bengkalis Regency, is a primary route that frequently experiences flooding due to high rainfall and tidal events. This study aims to analyze the maximum floodwater level and compare it with the existing road elevation, as well as to provide technical recommendations for flood mitigation in the area. The methods used include hydrological analysis to determine design rainfall using the Log Pearson Type III distribution, runoff discharge calculation using the Rational Method ($Q = C \times I \times A$), and road elevation measurement using a leveling instrument (waterpass). Rainfall data were obtained from the BMKG station over the past five years. The results of the study show that the maximum floodwater level in the study area reaches 1.456 meters, while the average road elevation is only 1.32 meters. The difference of 0.14 meters (14 cm) causes parts of the road to become inundated during flooding. Moreover, the capacity of the existing drainage channels is insufficient to accommodate the design runoff for a 5-year return period, increasing the risk of road damage and disrupting community mobility. Based on these findings, it is recommended to raise the road elevation by at least 0.30 meters at critical points and to redesign the drainage system to handle the design discharge properly. This research is expected to serve as a reference for infrastructure planning and flood control strategies in flood-prone areas like Kelebuk Village.

Keywords: *Drainage, Floodwater Level, Road Elevation, Rational Method, Kelebuk Village.*