

STUDI KELAYAKAN SISTEM DRAINASE, EVALUASI KONSEP
BANGUNAN HIJAU, DAN PEMELIHARAAN INFRASTRUKTUR SIPIL
PADA KAWASAN *FIELD RESEARCH CENTER* (FRC)
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INTISARI

Kawasan FRC UGM direncanakan dengan konsep bangunan hijau. Dengan adanya pengembangan kawasan tentunya mengubah tata guna lahan yang mengakibatkan area resapan berkurang. Penelitian ini diharapkan dapat mengevaluasi kelayakan teknis dan ekonomi proyek pembangunan saluran drainase dan memberikan rekomendasi tindakan untuk pemenuhan aspek *green building* serta pemeliharaan infrastruktur sipil terbangun di Kawasan FRC UGM. Tahapan yang digunakan dalam penelitian ini yaitu, pengumpulan data primer dan sekunder, pengolahan data, dan analisis data. Pengolahan data saluran drainase meliputi analisis hidrologi, debit banjir rancangan, evaluasi saluran drainase, dan analisis kelayakan teknis dan ekonomi. Sedangkan pengolahan data terkait bangunan hijau meliputi analisis penerapan pedoman GBCI pada aspek tepat guna lahan dan konservasi air, selanjutnya diberikan rekomendasi tindakan untuk pemenuhan aspek *green building* serta pemeliharaan infrastruktur sipil terbangun di Kawasan FRC UGM. Berdasarkan hasil analisis menunjukkan bahwa proyek pembangunan saluran drainase layak dilaksanakan secara teknis dan ekonomi, karena debit limpasan yang masuk ke saluran drainase FRC UGM dalam kondisi aman atau tidak meluap, dan nilai BCR > 1, NPV positif, dan IRR > suku bunga. Pada analisis implementasi *green building* pada Aspek ASD dan WAC belum terpenuhi pada beberapa kategori. Rekomendasi Teknis untuk memenuhi kategori ASD 3 yaitu penyediaan fasilitas jalur pedestrian di dalam area gedung, dan kategori WAC 3 yaitu penggunaan *grey water* untuk kebutuhan *flushing* toilet.

Kata kunci: drainase, hidrologi, kapasitas, kelayakan, *green building*.

FEASIBILITY STUDY OF DRAINAGE SYSTEMS, EVALUATION OF GREEN BUILDING CONCEPT, AND MAINTENANCE OF CIVIL INFRASTRUCTUR IN FIELD RESEARCH CENTER (FRC) GADJAH MADA UNIVERSITY

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ABSTRACT

A green building concept is applied in FRC UGM Area. However, it will be changing land use that affects reduced infiltrations. This study is expected to evaluate the feasibility study of drainage project development, to give the proceeding recommendation to compliance green building aspect, and also maintain the civil infrastructure build in FRC UGM Area. The stages used in this research were primary and secondary data collection, data processing, and data analysis. Drainage line data processing included hydrological analysis, design flood discharge, drainage line evaluation, and technical and economic feasibility analysis. Meanwhile, data processing related to green buildings included analyzing the implementation of GBCI guidelines on aspects of appropriate site development and water conservation and giving recommendations for actions to fulfill green building aspects and maintain civil infrastructure built in the UGM FRC Area. Based on the results, it showed that the drainage line building project was done technically and economically feasible as the runoff into the UGM FRC drainage line was safe or not overflow and the BCR value was more than 1, the NPV was positive, and the IRR was more than the interest rate. The analysis of the implementation of green building on ASD and WAC Aspects showed that several categories have not been fulfilled yet. Technical recommendations to meet ASD category 3 are the provision of pedestrian path facilities within the building area. Then, WAC category 3 as the use of gray water for toilet flushing needs.

Keywords: *drainage, hydrology, capacity, feasibility, green building.*