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**Hunian Pesisir dengan Integrasi Space Syntax dan Flood-Resilient Architecture Fokus pada Ketanggapan
terhadap Risiko Banjir Rob di Tambak Lorok, Semarang**
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INTISARI

Tambak Lorok, Semarang, menghadapi paparan banjir rob, penurunan tanah, hujan ekstrem, dan kenaikan permukaan air laut. Kerentanan tersebut diperkuat oleh kondisi permukiman yang padat, beberapa jaringan jalan sempit, serta penerapan strategi adaptasi hunian yang masih bersifat parsial. Kondisi tersebut berpotensi membatasi aksesibilitas dalam proses evakuasi, ketersediaan area perlindungan aman, serta kemampuan hunian dalam merespons kondisi banjir rob yang berulang. Penelitian ini bertujuan menghasilkan alternatif desain hunian yang mendukung pergerakan dan evakuasi serta meningkatkan ketahanan terhadap banjir rob dibandingkan dengan kondisi eksisting melalui integrasi kedua pendekatan tersebut. Pendekatan *mixed-methods* diterapkan melalui tiga tahapan penelitian, yaitu praperancangan, transformasi perancangan, dan pascaperancangan. Pada tahap praperancangan, *design guideline space syntax* menghasilkan empat prinsip utama, yaitu keterbukaan konfigurasi ruang (*open plan*), keterhubungan ruang multifungsi, keterhubungan spasial antarruang, serta efisiensi sirkulasi dan organisasi ruang. Sementara itu, *design guideline flood-resilient architecture* menghasilkan intervensi pada lima aspek, yaitu penataan lanskap, sistem utilitas, struktur dan material eksternal, struktur dan material internal, serta zoning dan konfigurasi ruang. Pada tahap transformasi perancangan, intervensi *design guideline* diterapkan pada ketiga sampel S-9, S-11, dan S-13, yang menghasilkan alternatif desain dengan peningkatan nilai *measurand axial integration* dan *connectivity* serta performa adaptasi terhadap banjir rob. Pada tahap pascaperancangan, simulasi kawasan menunjukkan bahwa pergerakan agen secara umum mengikuti koridor jalur evakuasi potensial, dengan variasi arah menuju titik evakuasi Tambakrejo dan Tambak Mulyo. Pada skala hunian, evaluasi *space syntax* menunjukkan *effect size* sebesar 0,0961–0,3635 pada *measurand connectivity* dan 0,3951–0,5444 pada *measurand integration*, sedangkan evaluasi *flood-resilient architecture* menunjukkan variasi tingkat pencapaian setiap aspek sebesar 25%–100%. Berdasarkan hasil evaluasi, sampel S-11 ditetapkan sebagai alternatif desain terpilih yang pada *design development*. Secara keseluruhan, integrasi kedua pendekatan menunjukkan bahwa resiliensi hunian terhadap banjir rob dapat ditingkatkan melalui konfigurasi ruang yang mendukung pergerakan dan evakuasi serta strategi adaptasi fisik bangunan.

Kata kunci: *space syntax*, *flood-resilient architecture*, konfigurasi ruang, evakuasi, banjir rob

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ABSTRACT

Tambak Lorok, Semarang, is exposed to tidal flooding, land subsidence, extreme rainfall, and sea-level rise. This vulnerability is further exacerbated by dense settlement conditions, narrow road networks in several areas, and the partial implementation of housing adaptation strategies. These conditions may constrain accessibility during evacuation, the availability of safe refuge areas, and the ability of housing to respond to recurring tidal flooding. This study aims to develop housing design alternatives that support movement and evacuation and enhance resilience to tidal flooding compared with existing conditions through the integration of the two approaches. A mixed-methods approach was applied through three research stages: pre-design, design transformation, and post-design. In the pre-design stage, the space syntax design guidelines generated four main principles: openness of spatial configuration (open plan), connectivity of multifunctional spaces, spatial connectivity between spaces, and efficiency of circulation and spatial organization. Meanwhile, the flood-resilient architecture design guidelines generated interventions across five aspects: landscape planning, utility systems, external structures and materials, internal structures and materials, and zoning and spatial configuration. In the design transformation stage, the design guideline interventions were applied to three samples, S-9, S-11, and S-13, resulting in design alternatives with increased measurand axial integration and connectivity values, as well as adaptation performance to tidal flooding. In the post-design stage, area-scale simulation showed that agent movement generally followed potential evacuation corridors, with varying directions toward the Tambakrejo and Tambak Mulyo evacuation points. At the housing scale, the space syntax evaluation showed effect sizes of 0.0961–0.3635 for measurand connectivity and 0.3951–0.5444 for measurand integration, while the flood-resilient architecture evaluation showed achievement levels ranging from 25% to 100% across the assessed aspects. Based on the evaluation results, sample S-11 was selected as the design alternative for further development in the design development stage. Overall, the integration of the two approaches indicates that housing resilience to tidal flooding can be enhanced through spatial configurations that support movement and evacuation, together with physical building adaptation strategies.

Keywords: *space syntax, flood-resilient architecture, spatial configuration, evacuation, tidal flooding.*