

## INTISARI

Bandara Domine Eduard Osok yang terletak di Kota Sorong merupakan bandara komersial terbesar di Provinsi Papua Barat. Kegiatan penerbangan di Bandara Domine Eduard Osok yang terus meningkat setiap tahunnya menunjukkan bahwa kawasan tersebut adalah objek yang vital bagi penduduk sekitar dan pendatang. Lokasi bandara yang dekat dengan perairan menimbulkan permasalahan pada sistem drainase eksisting seperti *backwater* dan tergenangnya area *runway strip*. Berdasarkan masalah-masalah tersebut, penelitian ini menganalisis dan mendesain ulang sistem drainase pada Bandara Domine Eduard Osok dengan tujuan mengatasi terjadinya genangan pada fasilitas-fasilitas bandara.

Perancangan sistem drainase dan analisis kapasitas saluran pada penelitian ini dilakukan menggunakan perangkat lunak EPA SWMM 5.2 dengan model aliran dinamis dan debit rencana kala ulang 25 tahun, debit rencana tersebut dihitung menggunakan metode rasional. Pertimbangan pemilihan debit kala ulang 25 tahun antara lain faktor keselamatan penerbangan, tingkat kesibukan bandara, serta antisipasi peluapan ketika air pasang.

Saluran drainase yang baru menggunakan beton pracetak tipe *u-ditch* dengan beberapa ukuran, menyesuaikan beban aliran pada tiap-tiap ruas saluran. Pada saluran interseptor digunakan *u-ditch* dengan lebar 1,4 x 1,4 m sedangkan untuk saluran kolektor dan konveyor digunakan *u-ditch* dimensi 1,6 x 1,6 m dan 1,8 x 1,8 m. Hasil analisis menunjukkan hanya terjadi genangan pada 2 titik di lahan terbuka pada sisi selatan bandara, di mana kedua titik tersebut bukan terdapat pada landasan pacu dan/atau *runway strip*. Sehingga, hasil analisis memenuhi persyaratan keselamatan penerbangan.

**Kata kunci:** drainase, EPA SWMM, bandara.

## ABSTRACT

*Domine Eduard Osok Airport located in Sorong is the largest commercial airport in the West Papua Province. The ever-increasing yearly aviation activity at Domine Eduard Osok Airport shows that the area is a vital object for both local residents as well as visitors. The airport's proximity to bodies of water has caused issues to the existing drainage system, such as backwater and water stagnation of the runway strip area. Based on these issues, this research aims to analyze and to re-design the drainage system of Domine Eduard Osok Airport with the aim of resolving water stagnation of the airport's facilities.*

*Drainage system design and channel capacity analysis in this research is conducted using the EPA SWMM 5.2 software implementing a dynamic flow model and design rainfall with a 25-year return period, calculated using the rational method. The rationale for using a design rainfall with a 25-year return period considered various factors, including aviation safety, airport activity rates, and the anticipation of high tide overflow.*

*The newly redesigned drainage channel utilizes precast concrete u-ditch in construction in various sizes, depending on flow loads on each channel segment. The dimension of the u-ditch used for the interceptor channel is 1,4 meters by 1,4 meters. Meanwhile, the dimension of the u-ditch used for the collector and conveyor channels are 1,6 meters by 1,6 meters and 1,8 meters by 1,8 meters respectively. The results of the analysis shows that water stagnation occurs only at 2 locations on the open field located on the southern side of the airport. Both of these locations are not located at critical locations, namely the runway and the runway strip, and is therefore deemed compliant to airport safety regulations.*

**Key words:** *drainage, EPA SWMM, airport.*