

## INTISARI

Banjir rob selalu mewarnai daerah pesisir salah satunya Kota Pekalongan. Banjir ini terjadi akibat muka air laut melebihi muka tanah, terutama pada saat air laut pasang. Peristiwa tersebut diperkirakan akan bertambah ke area yang lebih luas dan volume debit banjir terus meningkat tiap tahunnya. Adanya pasang anomali hingga mencapai elevasi dua meter menjadikan banjir yang cukup besar pada Mei 2022 di daerah Panjang Wetan. Akibatnya, hampir seluruh wilayah terendam air dan beberapa infrastruktur mengalami kerusakan.

Penelitian ini mengkaji tentang kondisi drainase wilayah Panjang Wetan, Pekalongan Utara serta memberi rekomendasi pengendalian banjir dengan beberapa rekayasa infrastruktur. Data-data yang dibutuhkan berupa data topografi, penampang saluran, pasang surut, dan beberapa referensi penelitian sebelumnya. Analisis pada penelitian ini dilakukan dengan bantuan aplikasi HEC-RAS 6.3.1. Pemodelan dilakukan secara dua dimensi (2D) yang terdiri atas tiga skenario; kondisi eksisting, penerapan *grey infrastructure* yang memodelkan tanggul laut, dan penerapan kombinasi antara *grey* dan *blue infrastructure*. Skenario tersebut divariasikan dengan dua jenis periode pasang surut yakni saat normal (April 2022) dan ekstrim (Mei 2022).

Berdasarkan analisis tersebut dapat disimpulkan bahwa kondisi drainase di wilayah Panjang Wetan belum cukup untuk menampung limpasan. Skenario *eco infrastructure* yang diusulkan merupakan upaya pencegahan limpasan terutama saat banjir rob yang airnya berasal dari laut. Hasil simulasi menunjukkan bahwa skenario *grey* dan *blue infrastructure* dapat menahan air laut dan menambah *buffer zone* pada pantai. Untuk membangun infrastruktur tersebut, metode yang digunakan diawali dengan proses pemancangan *sheet pile* sebagai unsur *grey infrastructure*. Selanjutnya, dibangun serial groin pada pantai sembari menambah volume pasir sebagai unsur *blue infrastructure*.

**Kata Kunci:** Banjir rob, *Eco infrastructure*, HEC-RAS.

## ABSTRACT

*Tidal floods always occur in coastal areas, one of which is Pekalongan City. It is caused by the sea level exceeding the ground level, especially during high tides. These events are expected to increase to a wider area and the volume of flood discharge continues to increase every year. The anomalous tides which reached an elevation of two meters resulted in quite large floods in May 2022 in the Panjang Wetan. As a result, almost the entire area was submerged in water and several infrastructures were damaged.*

*This study examines the drainage conditions of the Panjang Wetan, North Pekalongan, and provides recommendations for flood control with several infrastructure engineering. The data needed are topographical data, channel cross-sections, tides, and several previous research references. The analysis in this study was carried out with the help of the HEC-RAS 6.3.1 application. Modeling was done in two dimensions (2D) consisting of three scenarios; existing conditions, application of gray infrastructure that models sea walls, and application of a combination of gray and blue infrastructure. This scenario is varied with two types of tidal periods, namely during normal (April 2022) and extreme (May 2022).*

*Based on this analysis it can be concluded that the drainage conditions in the Panjang Wetan are not sufficient to accommodate runoff. The proposed eco infrastructure scenario is an effort to prevent runoff, especially during tidal floods where the water comes from the sea. The simulation results show that the gray and blue infrastructure scenario can restrain seawater and increase the buffer zone on the coast. To build the infrastructure, the method used begins with the sheet pile erection process as an element of the gray infrastructure. Furthermore, a serial groin was built on the beach while increasing the volume of sand as an element of blue infrastructure.*

**Keywords:** *Eco infrastructure, HEC-RAS, Tidal flood.*