

PENATAAN SUNGAI CILIWUNG PADA RUAS CAWANG - MANGGARAI DALAM UPAYA MITIGASI BENCANA BANJIR

Airlangga Mardjono
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ABSTRACT

Ciliwung River that flows from Bogor highland is one of the rivers passing several lowlands in DKI Jakarta Province. Given the topographic condition of DKI Jakarta Province with some of its area being flood plain area, Ciliwung River becomes a flood occurring potential for the Province. Flood disaster that occurred in early 2002 in DKI Jakarta Province had caused a wide inundation area (with approximately 25% area of DKI Jakarta were affected) and had caused serious casualties spanning from the losses of lives and damages properties.

This research is conducted to estimate the water surface elevation over Ciliwung River within the Cawang - Manggarai reach through the exercise of several improvement scenarios and further simulating such scenarios by using of HEC RAS version 3.1 software. From the exercised scenarios and their simulations, we can reach a conclusion of a particular scenario, which result in the lowest water surface elevation with certain designed floods. Therefore, the structural and nonstructural mitigation will be able to be identified.

The final result of this research shows that Scenario 3 of the river improvement exercises results in the lowest water surface elevation profile. Scenario 3 consists of river normalization along with revetment works over the span of the river and subsequently proposing additional opening sluice gate on Manggarai Barrage. This scenario results in 167 cm, 163 cm, 172 cm, 179 cm, 167 cm and 171 cm or 17,60%, 17,16%, 18,09%, 18,76%, 17,38% and 17,72% of maximum water level reduction respectively over cross section number S 20 to S 25, for several simulations with 100 years of designed discharge. The result of this research could be submitted as a recommendation to the relevant authority for river improvement planning against the flood disaster on Ciliwung River.

Keyword : Simulation, River improvement, Flood water surface elevation.