



ABSTRACT

Dike Ring DKI-D is a conceptual design for the flood protection measures along the current coastline and rivers within the coastal zone proposed by National Capital Integrated Coastal Defence (NCICD). This Dike Ring is part of Stage A implementation model of the NCICD Master Plan which aims to offer the National Capital region protection from flooding from the main water system until permanent protection measures (stages B and C) are in place by improving the existing protection system.

This research aims to find the probability of failure of the Dike Ring DKI-D using reliability and risk-based approach for flood defence system. The result of analysis can be used as reference in selecting design options as well as upgrading activities.

According to the results, the probability of flooding of the system at construction level is 0.945, while at design level is 1. This means the risk of flooding in this area is very high.

The probability of flooding is mainly caused by failure due to overtopping. Base dike concept at Pluit is identified as the weakest link of the system. According to the analysis, it can be concluded that Dike Ring DKI-D conceptual design cannot completely protect the area from flooding, therefore further protection measures is considered to be needed.

Keywords: NCICD, coastal defence, dikes, probabilistic design