

A Study on the Impacts of SMART Tunnel Outflow on Hydraulics of Kerayong River

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Abstract. Kuala Lumpur (KL) is the capital and the main economic hub of Malaysia. Built on a confluence of Klang and Gombak Rivers, the city has historically experienced flooding due to monsoons and tropical thunderstorms. The problem has been exacerbated with the rapid development of the area and incidents of flooding within the past decade have increased. One of the solutions formulated by the Department of Irrigation and Drainage (DID) to address the flooding problem is to divert flood water away from the city with the a dual purpose Stormwater Management and Roadway Tunnel (SMART). This study is carried out in attempt to understand the hydraulic effects of the outlet of the SMART tunnel onto the receiving water body – the Kerayong River. A visual analysis is done using Geographic Information Systems (GIS) to better understand the river and its watershed. River geometry data and flow data is obtained and analyzed using US Army Corps of Engineers Hydrologic Engineering Center River Analysis System (HEC-RAS). River modeling was carried out under different flows on the river under two conditions: before river improvement works and after river improvement works. It is found that the increased discharge of $300 \text{ m}^3/\text{s}$ from the SMART tunnel has caused flooding on the floodplain before improvement works was done but was managed after river improvement works was carried out. It is also determined that the bed lining and revetment on the confluence on Kerayong and Klang river were sized appropriately for erosion control measures for the increased discharge.