

# FLOOD RISK IDENTIFICATION AND MANAGEMENT IN THE HOROWPOTHANA URBAN ENVIRONMENT

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Horowpothana urban area and the surrounding is continuously suffering from floods due to spilling of Horowpothana tank during heavy rains. The area located in a small catchment of the Yan Oya in the Dry Zone of Sri Lanka that consists of large number of medium and small scale irrigation tanks in a 'cascade system'. All tanks in the cascade spilled out and excess water drain finally into the Horowpothana tank. As a result, it spills out, inundating the flood prone areas. Even though it was not a major scale flood, the life and property in the area are severely affected. Therefore this study conducted to define morphometric features of the drainage basin utilizing data on hydrology, land use and topography, GIS and models. Field observations were made for demarcating flood proven areas and to determine the main cause for flooding.

As indicated by basin parameters, the total area of the drainage basin is 64.89 km<sup>2</sup> and the average slope is about 0.019° while circularity ratio was 0.57. The elongation ratio of the basin is 0.89 where 109 stream segments between 1<sup>st</sup> and 3<sup>rd</sup> order were found. The drainage frequency and the drainage density were 1.67 (counts/km<sup>2</sup>) and 0.83 (per km<sup>2</sup>) respectively, while the bifurcation ratio was 4.88. The orientation of the drainage basin is towards the North East, favorably receiving high intensity of rainfall during the north-east monsoon. The cumulative rain fall can be used as a forewarning indicator of future flood events.

The morphometric and hydro-meteorological analyses proved useful in determining the impact on generating a moderate flood in the study area, inundating the Horowpothana Town. Increasing deforestation may contribute high soil erosion resulting in high siltation of tanks and channel embankments that contribute for the increasing of flood risks. Improper constructions and land-fillings have also contributed greatly to enhance floods in the region. Due to low relief and water-logging conditions of Low Humic Gley soils in the areas, the water retention period was also found to be longer. It is therefore suggested that the non-structural social measures such as public awareness and disaster management programs probably can be used as a mitigated measures. The study also attempted to develop a conceptual cascade management model through using basic water balance characteristics of the catchment in order to understand the broad aspect of flood occurrence in the study area.

