



Development of Flood Damage Estimation Functions: A Case Study at Upper Gin River Basin

S.P.S.P. Kulathunga¹, N.D.P. Ransara², and G.H.A.C. Silva ^{3*}

¹*Dept. of Civil and Environmental Engineering, Faculty of Engineering, University of Ruhuna*

²*Sri Lanka Land Reclamation & Development Corporation*

³*Dept. of Civil and Environmental Engineering, Faculty of Engineering, University of Ruhuna*

Abstract

Flood damage estimation and providing compensation for victims are important post flood procedures. In Sri Lanka the common practice is to conduct post flood survey and estimate flood damage. This consumes more time and the collected information may not be reliable and often questioned by many flood-victims. As a solution, a GIS based flood damage estimation models is proposed which has been widely used in many flood prone areas across the globe. Such a system would generate a swift damage estimation and well organized outputs. The objective of this study is to prepare GIS and Hydrological/Hydrodynamic based flood damage estimation model for Tawalama area that often confronts with flood due to overspill of the Gin River. The developed methodology would be a good resource for the relevant authorities to estimate actual flood damage for future flood scenarios. The flood catastrophe in May 2003 was recognized as the most disastrous event during the last century and has been considered for the development of the flood-damage estimation model.

Available 2003 flood extent which was generated through Hydrological Engineering Centre (HEC), a public domain software has been used and the flood depths were extracted by overlaying the topographic layer with the flood extent. Subsequently, an on site questionnaire survey was conducted to gather damage related information. Flood-compensation data from Tawalama D.S. office were compared with the flood damage parameters. Finally depth-damage functions for the flood affected Tawalama area were developed. The outputs of this study along with inundation duration and flood arrival time can be used as input data for a Flood Impact Assessment (HEC-FIA) model. The FIA model can provide structural damage report as individual and aggregated, agriculture damage report, detailed life loss report and consequence summary report for the area.

Keywords: *Flood damage, GIS, HEC-FIA, Tawalama*

* amila@cee.ruh.ac.lk