FLOOD DAMAGE ANALYSIS FOR KG. DATUK DAGANG, KLANG

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5.2 Enhanced Executive Summary

Geographical Information System (GIS) application in flood management are largely utilised by the authorities around the world. GIS operations improve the efficiency of flood disaster monitoring and management in tropical countries like Malaysia. In this study, Geographic Information System (GIS) method is selected over other approaches namely; Penning-Rowsell & Chatterton and Narabeen Lagoon Floodplain Risk Management Plan. The study area, Kg. Datuk Dagang is located in area of South Klang. This area is near to the Klang River and has high potential of flooding. The focus of this study is to estimate flood damage at Kg. Datuk Dagang, Selangor on buildings and roads using Geographic Information System (GIS). This study has managed to quantify for flood damage costs for the lengths of inundation of 100 m through 300 m from the river. It is proven that the damage costs increase proportionally with the increase of the lengths of inundation.

5.3 Introduction

5.3.1 Background of Study

Malaysia has an equatorial climate with constant high temperatures and a high relative humidity. The climate is influenced by the northeast and southwest monsoons. The northeast monsoon, prevailing between November and February, brings heavy rainfall predominantly to the east coast of Peninsular Malaysia and to Sabah and Sarawak. Rain bearing winds also come with the southwest monsoon from April to September through rainfalls. There are, in addition, two transitional periods between the monsoons (inter monsoon) when convectional thunderstorms are common. The annual average rainfall is 2420 mm for Peninsular Malaysia, 2630 mm for Sabah and 3830 mm for Sarawak, with heavier precipitation recorded in the east coast of Peninsular Malaysia and the coastal regions of Sabah and Sarawak. The west coast of Peninsular Malaysia on the other hand is affected from September to November during the inter monsoon period when convectional thunderstorms become prevalent. Such storms bring short but very intense rainfall which severely overloads the drainage systems, causing localized "flash" floods. As reported by Hamzah (2005) reports that Malaysia experiences major flood event since 1926 until now.

Major floods, even extraordinary floods, are a part of the natural environment. They have always occurred and few regions of the world can claim to be free of their threat. Floods are one of the most destructive of natural disasters and it has rendered many millions of people homeless for the past three decades. Humanity has lived with floods for centuries but the impact of floods was never felt to the same extent in the past as is experienced now. It is certain today that floods resulting in significant inundation cause larger disasters than they were in earlier times. With increasing flood levels and rise in property values the cost of damage is increasing relatively with time. Flood occurrences seem to be getting more frequent in recent years especially in some cities like Kuala Lumpur, Selangor, Penang and Kuching where rapid urbanization is taking place. The Department of Irrigation and Drainage in Malaysia has estimated that about 29000 sq.km, or 9% of the total land area and more than 4.82 million people (i.e. 22% of the population) are affected by flooding annually. The damage caused by flooding is estimated to be about RM915 million (Ghani, Zakaria & Falconer, 2009).

Nowadays, country is entered into the new era of information technology. Thus it is necessary to adopt more systematic approach and

5.4 Brief Literature Review

5.4.1 Flood Damage

Flood damages can be classified into direct and indirect damage. Direct damages are those which occur due to the physical contact of the flood water with humans, property or any other objects. Indirect damages are damages which are induced by the direct impacts and may occur – in space or time – outside the flood event. Examples are disruption of traffic, trade and public services. Usually, both types of damages are further classified into tangible and intangible damage, depending on whether or not these losses can be assessed in monetary values (Smith and Ward, 1998).

Flood damages estimation is crucial for many purposes such as flood relief work, estimation of financial supports for affected people and evaluation of flood insurance (Dutta and Herath, 1998).

There are three (3) reliable existing flood damage estimates that have been established in UK by Penning-Rowsell & Chatterton, flood loss estimates using GIS approach by Dutta, Herath and Musiake and flood damage estimates as presented in Narabeen Lagoon Floodplain Risk Management Plan by the Department of Land and Water conservation in Australia. These three flood damage estimations are based on certain parameters which suit the conditions in countries where they are currently being adopted.

5.4.2 Penning Rowsell and Chatterton

Penning Rowsell and Chatterton, in Blue Manual present an alternative technique developed in the UK. This manual displays procedures to assess damages to building properties and equipments without relying on the availability of a flood for examination. They state that unit damages vary among residential, industrial and commercial developments. On the other hand, the manual also describes distinctively a procedure for the collection of information to provide the data for the establishment of the stage damage-curve for various property types. From several sample surveys and through years of data collection, the damage to urban areas is decidedly quantified according to the level of inundation (1977).