

Aduldet Kongkaew 2012: Urban Physical Structure and Drainage Flooding in Tambon Muangpak Municipality. Master of Science (Development Planning Geography), Major Field: Development Planning Geography, Department of Geography. Thesis Advisor: Miss Sujitra Charoenhirunyingyos, D.Tech.Sc. 79 pages.

The research had 3 main objectives which were to analyze the urban physical characteristics that were risky to flooding, to analyze the structure of urban areas and settlements which were risky to drainage flooding, and to develop a 3D model to visualize the relationship between the urban structure and the drainage flooding in Tambon Muangpak Municipality. The research was a qualitative research focusing on the interpretation of satellite images together with direct field surveys. Geographic information system was applied to analyze data, and ArcGIS was used for creating the 3D model.

The research findings revealed that the physical characteristics of Tambon Muangpak Municipality that led to flooding were its basin topographic formation surrounded by several natural rivers. Regarding the urban structure, it was found that there were 5 roads lying in gridiron pattern obstructing the flow of natural rivers. The 5 roads comprised of national highway no. 304, Sueb Siri road, Vudhiprapai road, Nivatwatthanakit road and Nimitmongkhol road. Besides its urban structure, the road-linear settlement pattern has caused Tambon Muangpak Municipality in high risks for drainage flooding. After cross-checking with the 3D model, it was confirmed that the urban areas locating in lowland. The central areas that accommodated residential lands located in a large basin surrounding by national highway no. 304 and Sueb Siri road. Therefore; it could be concluded that the urban physical structure had an influence on drainage flooding in Tambon Muangpak Municipality in 2010.

According to the research findings, it is recommended that the master plan's specifications should be revised by slowing down the urban growth in the areas having high risks for flooding and drainage flooding. To do so, Tambon Muangpak Municipality should develop geo-informatics system for urban development planning in order that the growth of urban areas can be monitored and evaluated efficiently.

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Thesis Advisor's signature