NURAIN NAZIRAH NAZRIYAUDDIN BACHELOR OF SURVEYING SCIENCE AND GEOMATICS (HONOURS) JULY 2024

FLOOD HAZARD ASSESSMENT AND MAPPING USING GEOSPATIAL AND KERNEL DENSITY ANALYSIS IN MALAU, KEDAH

NURAIN NAZIRAH BINTI NAZRIYAUDDIN
2022830652

SCHOOL OF GEOMATICS SCIENCE AND NATURAL RESOURCES
COLLEGE OF BUILT ENVIRONMENT
UNIVERSITI TEKNOLOGI MARA MALAYSIA

JULY 2024

FLOOD HAZARD ASSESSMENT AND MAPPING USING GEOSPATIAL AND KERNEL DENSITY ANALYSIS IN MALAU, KEDAH

NURAIN NAZIRAH BINTI NAZRIYAUDDIN

2022830652

Thesis submitted to the Universiti Teknologi MARA Malaysia
in partial fulfilment for the award of the degree of the
Bachelor of Surveying Science and Geomatics (Honours)

JULY 2024

AUTHOR DECLARATION

I declare that the work on this project/dissertation was carried out in accordance with the regulations of Universiti Teknologi MARA (UiTM). This project/dissertation is original, and it is the result of my work, unless otherwise indicated or acknowledged as referenced work.

If my project/dissertation be found to violate the conditions mentioned above, I voluntarily waive the right of conferment of my degree of the Bachelor of Surveying Science and Geomatics (Honours) and agree be subjected to the disciplinary rules and regulations of Universiti Teknologi MARA.

Name of Student	: Nurain Nazirah binti Nazriyauddin
Student's ID No	: 2022830652
Project/Dissertation Title	: Flood Hazard Assessment And Mapping Using Geospatial And Kernel Density Analysis in Malau, Kedah
Signature and Date	:

Approved by:
I certify that I have examined the student's work and found that they are in accordance with the rules and regulations of the School and University and fulfils the requirements for the award of the degree of Bachelor of Surveying Science and Geomatics (Honours).

Name of Supervisor	: Dr. Nazirah binti Md. Tarmizi
Signature and Date	:

ABSTRACT

Floods are among the deadliest natural disasters, causing extensive loss of life, significant economic damage, and a wide array of adverse consequences. However, the pressing issue is the increasing threat posed by more frequent and severe floods to vulnerable communities. Accurately mapping and comprehending flood hotspots and areas prone to flooding remains a challenge. Understanding the causes and dynamics of these hotspots is vital for effective disaster risk reduction. This research focuses on understanding flood challenges, creating precise maps of flood-prone areas, developing smart strategies to reduce risks and to help flood victims. The aim is to assess a flood hazard and mapping using geospatial and kernel density in Malau, Kedah. The research is dedicated to developing flood hazard assessment using Web-Based GIS and kernel density. This entails creating a flood hazard mapping with GIS capabilities, enabling the assessment and analysis of data related to flooding in the designated geographic area. The research methodology involves a comprehensive approach. It begins with a literature review, defining the problem and objectives. Data collection includes geospatial, socio-economic, and victim-related data. A web-based GIS platform is being developed for visualisation. The vulnerability assessment framework is adopted, integrating GIS tools for spatial analysis. The methodology emphasises risk communication, validation, and ethical considerations. The result of the flood victim's analysis is a comprehensive and actionable dataset that is completed and ready for use by NGOs and other community organizations. This dataset includes detailed information on the affected population, the extent of the flood, and the specific needs of the victims. By providing this information, the analysis helps these organizations efficiently allocate resources, plan relief operations, and deliver aid to those most in need.

Keyword: Flood, Natural disaster, Flood-prone areas, Flood Hotspots, Flood Victims, Web-Based GIS, Relief Operations

TABLE OF CONTENTS