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ASSESSMENT OF MANGROVE CHANNEL CHANGES FOR LANGKAWI RIVER USING GEOSPATIAL TECHNIQUE

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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.

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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).

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ABSTRACT

A major worry occurs in the setting of coastal mangrove ecosystems, which are of enormous ecological and socioeconomic importance, in the form of channel changes. Over time, these mangrove channels in Langkawi River have faced various environmental challenges, including urbanization, pollution, and natural changes. The aim of this study is to assess Mangrove Channel Changes for Langkawi River using remote sensing approaches for Pulau Tuba in the year 2018 and 2023. The objectives are to thorough examine the evolution of mangrove channels within the Langkawi River. The methodology thorough was, understanding of the channel changes in these locations by comparing satellites imagery data to detect the changes occur within the channel. Based on the first result, focused on classifying mangrove channels using supervised classification of Sentinel imagery. By applying geospatial techniques in Erdas Imagine 2015 and ArcMap, the study accurately identified and classified four distinct land cover types: forest, water body, mangrove, and open development. The percentage of each type is displayed in the land cover, and it is -4%, 50%, -2%, and 44%, respectively. The mangrove channel width provides the second finding, indicating that the maximum rate of erosion is 65 meters, and the minimum rate is 0.09 meters. Additionally, there are accretions with a minimum rate of 0.85 and a maximum rate of 26.7 meters. The risk analysis map for changes to the mangrove channel in 2024 represents the final findings. These results have potential applications in monitoring and planning for future years, as well as benefiting organizations such as LADA, JUPEM, and NAHRIM.

Keyword: Coastal mangrove ecosystems, ecological importance, channel changes, Langkawi River, Mangrove Channel Changes, remote sensing, Pulau Tuba, geospatial techniques.

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