

**EXPLORE THE INFLUENCE OF ELEMENTS OF
URBAN FORM ON FLOODING: CASE OF JAFFNA
MUNICIPAL COUNCIL AREA**

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DECLARATION

I declare that this is my own work and this thesis does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any other University or Institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text. I retain the right to use this content in whole or part in future works (such as articles or books).

Signature:

Date:

The above candidate has carried out research for the Masters thesis under my supervision. I confirm that the declaration made above by the student is true and correct.

Name of Supervisor:

Signature of the Supervisor:

Date:

DEDICATION

This thesis is dedicated to My Affectionate Mother Late **Mrs.Komathy Jahanmohan** for her sacrifice towards her daughters.

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ABSTRACT

Flooding is a frequent natural disaster that threatens the world with different flooding types including coastal floods, local floods, riverine floods, and flash floods. Flooding is the reason for the high number of deaths and economic losses. 31% of the economic losses have been associated with flooding worldwide. Mainly, the urban areas have been experiencing urban floods/ flash floods. Same time, the physical characteristics of the cities are called urban form. Urban form is influencing flash floods in urban areas due to the process of urbanization. Based on this, this research has focused on the exploration of urban floods using urban forms in urban areas. It explores urban form elements and how they influence flooding in urban areas. According to that, nearly 12 numbers of urban form elements are identified through literature studies to find the highly influenced urban form elements. Polycentric sprawling urban form's Jaffna Municipal Council has been selected as a case study area to explore the highly influenced urban form elements. Three types of data sets were collected such as dependent variables (Flood damages), independent variables (urban form elements), and control variables for these purposes. The relevant data set was collected through secondary data collection methods including base maps of the survey department and statistical handbooks. The collected data set was analyzed using the spatial analysis tool of Arc Map 10.4. The identified urban form elements were applied to the research area, and it finds that building density is the highly influenced urban form elements. Degree of distribution, Degree of clustering, and Land use pattern/type moderately influence flooding of the study area. Based on the result, the improvised plans and regulations should be formulated for the study area relevant to building density, degree of distribution, degree of clustering, and land use changes.

Key words: - Flooding, Flash flood, Urban Form, Urban Form Elements, spatial analysis tool

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LIST OF ABBREVIATIONS

Abbreviation	Description
IPCC	Intergovernmental panel on climate change
OECD	Organization for Economic Cooperation & Development
WHO	World Health Organization
WMO	World Meteorological Organization
NWS	National Weather Service