FACULTY OF ENGINEERING

DEPARTMENT OF WATER RESOURCES AND MINING ENGINEERING

FINAL YEAR PROJECT

ASSESSMENT OF THE EFFECTIVENESS OF LOW IMPACT DEVELOPMENT PRACTICES AS FLOOD MTIGATION MEASURE FOR NAMASUBA WATERSHED

BY

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BU/UP/2016/540

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A final year project Report submitted to the Department of Mining and Water Resources Engineering as a partial fulfilment of the requirements for the award of a Bachelor of Science degree in Water Resources Engineering.

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ABSTRACT

Flooding of urban areas is a worldwide problem as cities grow and the amount of impermeable surfaces increase generating more surface runoff. In Kampala, the capital city of Uganda, flooding occurs in some parts of the city especially in Namasuba suburb along Entebbe road, which has been flooding every rainy season consecutively for a number of years now. The project aimed to mitigate floods, in addition to minimizing the adverse effects of the floods to people and the natural environment. The main objective of the study was to assess the effectiveness of Best management practices as flood mitigation measure. The procedure comprised of field study, data collection, modelling and analysis. The modelling and analysis were done with the help of Storm Water Management Model (SWMM). It was concluded that the major cause of the floods were the soil properties, high percentage of imperviousness, drains blockages resulting from garbage being thrown into the system and silt build-up that accumulates overtime. Additionally, implementing design LIDs scenario 3 which assumes that 50% of the roof runoff enters the Rain Barrels via vegetative swales, 50% of the roof runoff and 50% of the pavement runoff runs into the Rain Gardens, 50% of the pavement runoff flows through the Permeable Pavement, and all eventually enter the urban rainwater system would improve the drainage systems' rainfall events' handling capacity to more than 10yrs return period without flooding through reducing and delaying the peak flow downstream.

Keywords: LIDs, SWMM, drainage system, floods, and GIS.

DECLARATION

I **BASEKE LYDIA CAROLINE BU/UP/2016/540** hereby declare that this final year project report is my own research work and has not been previously submitted to any institution of higher learning for any kind of award to achieved.

Signature: ……

Date: ……/……/……

APPROVAL

This is to certify that this final project report has been written under the guidance of my supervisor and is to be handed in to the department of Mining and Water Resources Engineering Busitema University.

SUPERVISOR: NAME: MR. OKETCHO YORONIMO.

SIGNATURE: ……

DATE: ……/……/……

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ACRONYMS

DEM-Digital Elevation Model

DWRM- Directorate of Water Resources Management

GIS- Geographical Information Systems

KCCA- Kampala City Council Authority

LID- Low Impact Development

MWE- Ministry of Water and Environment

NEMA-National Environmental Management Authority

NGO- Non-Government Organization

AHP-Analytical hierarchy process

MCDA-Multicriteria decision analysis

BMPs- best management practices

SWMM- Storm water management model