# 3. METHODOLOGY

## 3.1 General

The objectives of the present work are to study the behaviour of rainfall and runoff in the urbanized area, develop a mathematical model for the drainage system and to identify the important parameters for modelling of urban watersheds.

## 3.2 Study of Rainfall and Runoff

Two watersheds from the urban Colombo area were selected and gauges were established to continuously measure the canal stage. Canal cross sections and longitudinal sections, nature of lining etc., were compiled along with maps of the study area. Rainfall data collected at two stations at close proximity to the watersheds by the meteorology department were obtained. Canal network was modeled using the HEC RAS model to identify the tidal, and backwater effects. The canal network model was utilized to develop the rating curves at each gauging station. Study of streamflow enabled the identification of domestic water discharge and also the response of watersheds to different rainfall events.



## 3.3 Streamflow Modeling

HEC rainfall runoff model was developed by considering the drainage paths, intermittent storages and the pervious and impervious areas of each sub catchment in the watersheds. Typical sample areas were selected from each watershed for the computation of pervious and impervious component in each typical land use. Curve Number values obtained from literature were taken as initial values to calibrate the model using selected flood events. Mathematical modelling in the study used the Mean Ratio of Absolute Error as the objective function for calibration.