

URBAN GEOLOGICAL PROBLEMS IN RATNAPURA CITY, SRI LANKA

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Ratnapura city is situated in the wet lowlands of Sri Lanka. Urban area spreads over 20 square kilometers with a population of 46300. The inhabitants of the city face natural hazards like periodic flooding, land instability and number of other geo-environmental problems created by their activities. During high rainfall periods, more than 20% of the urban area is flooded as approximately 273 square kilometers of drainage basin accumulates around the city. According to government authorities, more than 15% of the urban area is under landslide risk.

The scope of the study is to investigate the present hazards of Ratnapura city, their causative factors and to suggest feasible preventive and mitigatory measures. The investigation was carried out using available literature survey, maps, aerial photographs and field observations.

Ratnapura city is surrounded by hillocks and Kalu Ganga that are strongly responsible for the present urban environmental hazards and as a result for slow development of the city. Flooding is the major hazard affecting the Ratnapura city as annual floods submerge over 15% of the Central Business District (CBD). High outflow of Kalu Ganga near Ratnapura town due to regular high precipitation is the major reason. Present CBD of Ratnapura city has expanded to adjacent sloppy lands and it triggers the land instability which is further aggravated by structural geological conditions and secondary deposits like colluvium/weathered overburden on slopes. Also the environmental geological problems of the city are worsened by increasing population and poor land use practices especially in constructions near CBD and agriculture in the periphery of the city.

In order to overcome the present situation, suitable mitigatory measures are crucial. Land use planning is an effective mid and long term remedial measure. Recently established administrative center at Hidellana must be further developed to facilitate the increasing population and to avoid geographical barriers of geologically unstable Ratnapura city. Appropriate building construction practices like piled apartments to suit sloppy lands and flood plains should be encouraged if the present town is going to be further developed.

The engineering geological hazard map of the city area shows several geological factors which should be considered when contemplating land use in future constructions and agricultural work. The planners must consider the geology related hazard map prior to any ground-based development work in the city. However the development of Hidellana area must be encouraged as a new town because the area is geologically more favorable and stable than the present Ratnapura city.