

## LANDSLIDE EXPOSURE ANALYSIS IN THE *GANETHANNA* GRAMA NILADHARI DIVISION (GGND) OF THE KEGALLE DISTRICT

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A landslide is a common and critical disaster in Sri Lanka, devastatingly impacting human activities and the physical environment. As a developing country, identifying landslide risk and vulnerability in Sri Lanka is crucial as it can influence future development activities and disaster mitigation programs. This study analyses landslide vulnerability in the GGND within the *Mawanella* divisional secretariat division of the Kegalle district. The study's main objectives are to examine the risk and vulnerability of landslides in the Pahala Kadugannawa area and to identify existing structural and non-structural mitigation practices. Primary data were collected through interviews with different stakeholders, including exposure families and field observations, while secondary data were obtained from the Disaster Management Centre and the National Building Research Organization. Digital thematic maps were produced based on the most significant causative factors: slope, soil, and land use. A landslide hazard map for GGND was created using the Multi-Criteria Decision Analysis method, which assigned weightage to each factor and ranked them. According to this map, lands classified by landslide hazard in the *Ganethanna* are categorized as safe slopes (19%), areas with low likelihood of landslides (23%), moderate landslide hazard (22%), and areas where landslides are expected (36%). A significant portion of the land is classified as "areas where landslides are expected." The *Pahala Kadugannawa* and *Hingula* areas are highly vulnerable to landslides due to their high settlement and road densities. The NBRO and Road Development Authority are implementing both short-term and long-term mitigation measures in *Hingula*. Short-term measures include covering cracks in the upper slopes, introducing surface drainage systems, and construction of horizontal drains on the downslope of unstable zones. The long-term measures involve building a retaining wall, soil nailing, horizontal drains, and chemical blasting significantly in the lower part of the *Paramitha* International Buddhist Meditation Centre and the upper part of the tourist viewpoint. These mitigations are implemented by *Finex* Engineering Pvt. Ltd. and *RR Constructions* Pvt Ltd. under the guidance of Kegalle NBRO. The study recommends initiating reforestation, and preserving vegetation in the upper parts of the exposure area, enhancing community awareness, and conducting community-based mapping. Performing landslide hazard assessments with exposure families, local businesses, and other communities helps to identify vulnerable zones, protected areas from landslides, and safe evacuation routes. These mitigation measures help prevent human and physical environmental damage from landslides in *Ganethanna*.

**Keywords:** Landslide, vulnerability, mitigation measure