

Date of Submission	02.08.24
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IPL Project (IPL-264) Annual Report Form

**Period of activity under report
from 1 January 2023 to 31 December 2023**

1. **Project Number and Title:** IPL-264 :Study on Suitable Tools for Modeling and Analysing Rain Induced Slope failure in Sri Lankan Residual Soil

2. **Main Project Fields**

Slope behavior modeling

3. **Name of Project Leader** Ms.S S I Kodagoda- B. Sc.(Civil Engineering), M. Eng. (Geotechnical Engineering), C Eng, MIESL

4. **Affiliation::** Civil Engineer/Additional General Manager - Natural Resources Management and Laboratory Services (NRM & LS),

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Core members of the Project:

Ms. H M. J. M. K Herath- B. Sc. (Geology Special), M. Sc. (Water Resources Management)

MIMM

Mr. H. M. M. S. Jayaweera–B. Sc. (Geology Special),

Mr. T. S. Wickramasooriya– B.Sc(Civil Eng); CEng, MIESL

Mr. A. A. Virajh Dias –B.Sc(Civil Eng); CEng, PG.Dip; MASCE,MIESL

Ms. M A D C Lakmali. B tech(Civil Eng), PG Dip (Geotech Eng), AMISL (new member was added.)

5. **Objectives** (5 lines maximum)

The objective of this research is to find out the applicability of available slope stability analysis tools for rain induced slope failure in Sri Lankan residual soil.

6. Study Area

Mountainous area of Sri Lanka covering the Central, Sabaragamuwa, and Western province

7. Project Duration-Original Duration: (January 2022-December 2023)

Proposed Duration-(January 2022-December 2024)

8. Report

1) Progress in the project (30 lines maximum)

Sampling site was selected in Mathugama area belonging to Western Province. Preliminary investigations were carried out to verify that the slope consist of a homogeneous soil for simplifying the analytical procedure and to reduce uncertainties. Slopes were prepared and a rain of 100mm/Day was simulated. Behavior was observed. Subsurface investigation was done. Insitu testing were carried out to derive shear strength parameters. Undisturbed samples were selected for testing for shear strength parameters at the laboratory. The slopes were modelled and analysed using available tools.

For initial anlysis the following methods were used.

Morgenstern-price method
Spencer Method
Bishop Method
Janbu Method
Ordinary Method

The results were compared with the field observations with related to slope failure. Sensitivity analysis was carried out.

2) Planned future activities or statement of completion of the Project (15 lines maximum)

- a. Carry out the analysis with some other tools using other methods
- b. Physical slope failure for simulated rain in other locations in Western, Sabaragamuwa and Central Province
- c. Model and analysis with available methods and tools for samples in b
- d. Comparison of results of analysis with field observations
- e. Building up recommendations on suitable methods of analysis for rain induced slope failure in Sri Lankan residual soil

3) Beneficiaries of Project for Science, Education and/or Society (15 lines maximum)

The landslide professionals, academics, researchers, planners and people residing in landslide prone areas in Sri Lanka specially in Western, Sabaragamuwa and Central Province

4) Results (15 line maximum, e.g. publications)

Suitability of the methods were ranked according to the sensitivity.

Analysis Method	Suitability Ranking According to the Sensitivity
Morgenstern-price method	4
Spencer Method	3
Bishop Method	2
Janbu Method	1
Ordinary Method	5

Above results were presented and discussed in a technical discussion held at NRMLS, CECB.

Note:

- 1) If you will change items 2-7 from the proposal, please write the revised content **in Red**.
- 2) Please fill and submit this form to **ICL Network** <icl-network@landslides.org>
- 3) Reporting year must be one or two years (Maximum).