

Progress Report of WCoEs 2017 - 2020

Reporting period: 1 January 2018 to 31 December 2018

1. Short Title of WCoE :

DEVELOPING MODEL POLICY FRAMEWORKS, STANDARDS, AND GUIDELINES ON LANDSLIDE DISASTER REDUCTION

2. Name of Institution (Name of leader and email):

CENTRAL ENGINEERING CONSULTANCY BUREAU (CECB)

Team Leader: Eng. A A Virajh Dias, BSc(Civil)Eng, PGDip, CEng., MIESL, MASCE, MTIEMS(Norway)

Affiliation: Additional General Manager, Natural Resources Management & Laboratory Services

Contact: No 11, Jawatta Road, Colombo 5, Sri Lanka; Tel: +94 11 2505688

Fax: +94 11 2598215 ; Email: aavirajhd@yahoo.com

3. List of core members

Eng.(Ms) S. S. I. Kodagoda [BSc(Hons)Eng,MEng(Geotech)],,CEng,; Deputy General Manager

Ms H.M.J.M.K. Herath [B.Sc. (Geology Special)] - Engineering Geologist

Eng.(Ms) M A S N Mallawarachchi [BSc Eng(Hons)] - Civil Engineer

Dr J S M Fouze [BSc Eng., MPhil.,Ph.D.(Geotech)] - Deputy General Manager

Ms Nimesha Katuwala, [B.Sc.(Hons) Computational Chemistry], Env. Scientist

Mr P V I P Perera, [BSc(Environmental Management), MSc] - Env. Scientist

Eng. Kumari Weerasinghe, BSc(Hons)Eng.,MEng(Geotech);- Geotech Engineer (Model Studies)

4. Progress report of activities up to 31 December 2018

a. IPL - 155; 2012 - 2020: Team Leader - Eng. A. A. Virajh Dias

DETERMINATION OF SOIL PARAMETERS OF SUBSURFACE TO BE USED IN SLOPE STABILITY ANALYSIS IN TWO DIFFERENT PRECIPITATIONS ZONES OF SRI LANKA – On Going Project

Nearly 30 more samples were tested under the same conditions as recorded before. However, the results do not conclude a strong interdependence of e_0 and E_{50} with the shear strength characteristics. Therefore, more sample are still required to obtain better representation of a detailed study or an evaluation of the interdependence of sub coefficients parameters of residual soils under two different precipitation zones. .

Type of samples: residual form soil; highly plastic clays to silty sand

Precipitation: moderate (1500mm to 2500mm)

Project statues: Project to be continued until 2020

b. IPL -199 ; 2015 2020 : Team Leader – Mr. Ishastha Perera

THE EFFECT OF ROOT SYSTEMS IN NATURAL SLOPE EROSION PROTECTION IN THE HILL COUNTRY OF SRI LANKA.- – On Going Project

This study reports the observed details and patterns of native species which roles played by composite growth of different minor species in ground surfaces. It is understood that a collective species contribute to this end but cannot justify the truth through the setting and functions of each type of vegetation and their positioning. Thus results of the study can be directly used for practical application in critical slopes. The project need to be extended and expected to do more collaboration researches.

New area was studied: Haputale – Nuwara Eliya road (via Boralanda)

Number of case studied recorded – 07 nos

Observation samples: high precipitation (> 4000mm) no failure records in cutting slope of 75 degree due to fine and composite roots netting; grass and other native plants

Other records: Newly adopted structural control measures with R/F concrete nets and vegetative provisions are noticed in some places along the road trace.

c. IPL -200; 2015-2020 : Team Leader – Ms. H M Janaki M K Herath

AN ASSESSMENT OF THE ROCK FALL SUSCEPTIBILITY BASED ON CUT SLOPES ADJACENT TO HIGHWAYS AND RAILWAYS – ON GOING PROJECT

The main target of this research is to carry out appropriate improvements for rock fall hazard assessment by introducing appropriate Rock fall Hazard Rating System (RHRS). This method is indicating various judgment matrices but it does not clearly define a method of assigning individual weights by prioritizing the significance. These research findings have been published in the ICL Publications such as the Proceedings of WLF2, WLF3 and the WLF4. The updated finding was published *as* “ Pairwise Comparisons of Geological Evidences in Rockfall Hazard Rating System (RHRS)for the Evaluation of Road Based Potential Slope Failures in Sri Lanka” by *H.M.J.M.K. Herath, J.A.D.N.A. Jayasooriya, A.A. Virajh Dias at the first CECB Symposium, Colombo, 28th November, 2018.*

One paper is proposed as an invited paper at the WLF5 Japan under the title of “Geological Significance of Wedge form Rock-Slope Instabilities in Roads Cuts”.

d. IPL-204; 2017-2020 : Team Leader – Eng.(Ms.) Kumari M Weerasinghe

DEVELOPMENT OF A WEB BASED LANDSLIDE INFORMATION SYSTEM FOR THE LANDSLIDES IN SRI LANKA

Individuals and institutions continuously carry out various studies on landslides, and collect landslide information at their own desired levels. Most of the collected information are kept in

possession of the collectors and seldom shared among other users. Due to the very fact, an institution or an individual who requires landslide related information for decision making or for further research often face difficulties, as the information which can be obtained are limited. Therefore, the main objective of this research is to develop a web based database on landslides for Sri Lanka by collecting information through online tools such as ‘Google alert’ (<https://www.google.com/alerts>), other available databases (www.desinventar.lk) and field verification, and organizing the data in an user friendly manner.

e. SHORT TERM MONITORING AND TECHNICAL EVALUATION OF THE STABILITY OF THE WASTE DUMP AT MEETHOTAMULLA, SRI LANKA, 2017

The Central Engineering Consultancy Bureau (CECB) was one of the organizations identified in the said TOR to implement of the short term monitoring and technical evaluation of the stability of the waste dump. Accordingly, CECB submitted a proposal to the Ministry of Megapolis and Western Development for implementing the scope of work which was declared at the above referred meeting. The specified period of the study was from 20th April 2017 to 20th June 2017 and continue until end of December 2018.

Monitoring work is continuing. One paper is submitted for the 4th Global Samit of GADRI, in Kyoto, 2019

5. Plan of future activities

Planned future activities	Expected Results	Work phases and Milestones
Conducting a 3rd E-Conference on Developing Model Policy Frameworks, Standards and Guidelines on Landslide Disaster Risk Reduction	Organize capacity building events on Road Base-Landslide risk reduction and management at various levels to integrate Landslide risk management practices	May 2019 to November 2019
Monitoring of ongoing research works and development of web based data gathering on major landslides	Organize capacity building events on Road Base-Landslide risk reduction and management at various levels to integrate Landslide risk management practices	June 2017- August 2020

6. Publication in 2018

1. " *Short Term Monitoring and Evaluation of Unstable Slopes of the Meethotamulla Waste Dump, Sri Lanka*" (Authors are: A A Virajh Dias, A M K B Athapattu , J A D N A Jayasooriya) at the 4th Global Summit of Research Institutes for Disaster Risk Reduction (4thGSRIDRR2019): 13th to 15th March 2019
2. *Strength and Elastic Deformity of Prominent Load Bearing Metamorphic Rocks in Sri Lanka*; L.K.Nimani.S. Kulathilake, H.M.J.M.K. Herath, A.A.Virajh Dias; CECB Symposium, Colombo, 28th November, 2018.
3. *Determination of Elastic Characteristics of Residual form of Lateritic Soils by Conducting the Plate Load Test (PLT)*; E.H.N. Premasiri, A.A.Virajh Dias, CECB Symposium, Colombo, 28th November, 2018.
4. *A Landslide Information System for Sri Lanka : A Tool for Decision Making'* ; K.M. Weerasinghe, A.A.Virajh Dias, H.M.J.M.K. Herath, A.M.K.B. Atapattu; CECB Symposium, Colombo, 28th November, 2018.
5. *Pairwise Comparisons of Geological Evidences in Rockfall Hazard Rating System (RHRS) for the Evaluation of Road Based Potential Slope Failures in Sri Lanka*; H.M.J.M.K. Herath, J.A.D.N.A. Jayasooriya, A.A.Virajh Dias; CECB Symposium, Colombo, 28th November, 2018.
6. *Probabilistic Flood Hazard Modeling to Evaluate Adaptation Measures: Case Study for Metro Colombo and Kolonnawa Catchments, Sri Lanka*; D.M.S.S. Dissanayake, R.J. Dahm, F.L.M. Diermanse, H. Prasad, ; CECB Symposium, Colombo, 28th November, 2018.
7. *Design of Foundations and Surrounding Soil for Reduction of Liquefaction Induced Damages in Colombo and Suburbs*; S.S.I. Kodagoda, H.M.J.M.K. Herath, M.A.D.C. Lakmali, A.A.Virajh Dias; ; CECB Symposium, Colombo, 28th November, 2018.