

Date of Submission	<u>14 November 2015</u>
--------------------	-------------------------

IPL Project Proposal Form 2016

1. **Project Title:** Evaluation On Social Research Approach In Determining “Acceptable Risk” And “Tolerable Risk” In Landslide Risk Areas In Malaysia
2. **Main Project Fields:** Capacity Building - Collating and Disseminating Information/ Knowledge
3. **Name of Project leader:** Ir. Dr. Che Hassandi Bin Abdullah

Affiliation: Director of Slope Engineering Branch, Public Works Department, Malaysia

Contact: Cawangan Kejuruteraan Cerun, Tingkat 12, Blok F, Jalan Sultan Salahuddin, 50582, Kuala Lumpur.

No Tel: *603-2610 8888, No Fax: +603-2692 7010, email: slopes@jkr.gov.my

Core members of the Project; Names/Affiliations: Ir. Hj. Zainal Arsad Bin Md Amin, Sakinah Binti

Dahrawi Edrus, Wardatun Ahmar Binti Abdul Manan

4. **Objectives:** The main objective of the project is to enable slope designers and urban planners to come up with better decision making on hillside developments and policies. Thus, the study will extract and analyze historical landslide data in Malaysia and plot cumulative frequency (F) versus number of deaths (N) to propose “acceptable risk” and “tolerable risk” for suggested area. Besides that, this study will demonstrate the applicability of the developed F-N curves and the associated “acceptable risk” and “tolerable risk” criteria for assessing the risk level of a newly proposed development. Other than that, to ascertain the willing to pay (WTP) of stakeholders to mitigate landslide risks through various instruments such as landslide insurance and levies imposed towards slope management. This study also will investigate and to assess the public perception, expectation and tolerability of landslide risk areas in Malaysia and for enhancing the government understanding of public attitude towards landslide risk and facilitating landslide risk management and policy decision making.
5. **Background Justification:** Societal risk is often given the highest priority in risk assessment because human life should be regarded as invaluable. The societal risk can be evaluated by plotting cumulative frequency (F) versus number of deaths (N) in a log-log scale, known as F-N curve. The “acceptable” and “tolerable” risk criteria are normally defined in the F-N curve. Similar F-N curves can be plotted to assess economic and environmental losses. Successful development of the F-N curves with well-defined “acceptable” and “tolerable” risk criteria could be a huge stride towards a more established landslide risk assessment and management practice in Malaysia. It can be used to guide the design and approval of proposed development, and to prioritize treatment and monitoring efforts for existing development that is susceptible to landslide.
6. **Study Area:** This study will be conducted at three (3) locations which are at Cameron Highlands in Pahang, Kundasang in Sabah and in Kuala Lumpur.
7. **Project Duration:** Eight (9) months starting January 2016.

8. **Resources necessary for the Project and their mobilization Personnel, Facilities, and Budgets:** A multi-discipline project team that comprises of geotechnical engineers, economist, sociologist and statistician will be assembled to implement this study. Other facilities such classified and restricted information include airborne data, land survey, geographical information, topography maps and landslide inventory maps are necessary in this study.
9. **Project Description:** Previous study was carried out in Klang Valley and the data achieved is format and rough indication of what to be expected from the public. However, to enhance the results to be applicable for better understanding of acceptable and tolerable risk, further study of landslide prone areas should be studied. The areas suggested for further study are at Cameron Highlands in Pahang, Kundasang in Sabah and Kuala Lumpur. The project shall have two approaches: Technical and Social Research Approaches. The technical approach will present historical landslide data that can determine frequency and severity of landslide incidents. While, social research approach is implementing survey questionnaires and interviews among residents to collect information about public's perception on landslide "acceptable risk" and "tolerable risk" criteria.
10. **Work Plan/Expected Results:** To meet the objective of the study, appropriate scope of works shall be carried out. Mainly, literature review will be established indicating the state of the art of this study and information on similar studies done locally and abroad. A desk study of available must be recorded concurrently with the compilation of historical landslide data, evaluate, filter and summarize the data. The scope of the study shall focus on suggested areas, with particular focus on landslide-prone areas. Flatter, lowland areas in the area will also be studied. The project will develop a feasible analyze historical landslide data to determine frequency and severity of each landslide incident. Then, plotting of cumulative frequency (F) versus number of deaths (N), F-N curves will be carried out. Besides that, survey questionnaires will be given out to collect information about public's perception on landslide "acceptable risk" and "tolerable risk" criteria. Furthermore, interviews and surveys will be conducted among residents. Afterward, F-N charts will be developed with "acceptable risk" and "tolerable risk" criteria while the risk criteria are determined by evaluating the existing landslide risk level in the region, and the survey data collected from the respondents. Based on the estimate results, the impacts of structural and non-structural landslide mitigation measures on policies can be determined. Lastly, database from the study will be organized which will include explanation of the model selection, survey results and analysis, parameter, relationship and determinant identification, existing levels of F-N relationships at the selected study areas and also framework and simulation of model application in specific policy domains.
11. **Deliverables/Time Frame:** the study shall be completed within eight (9) months starting January 2016.
12. **Project Beneficiaries:** This study will be of benefits to slope designers, planners, local governments and legislators to come up with better decision making on hillside developments and policies.