

LEGCO PANEL ON PLANNING, LANDS & WORKS

INFORMATION PAPER ON SLOPE SAFETY

INTRODUCTION

This is the eighth in a series of reports to inform Members of slope safety initiatives and obtain Members' views on further improvement. The last report was submitted to the Panel in January 2000 and discussed at the Panel meeting on 24 February 2000.

BACKGROUND

2. The 2000 Policy Objective (PO) Booklet – Slope Safety for All, has reported progress on our sustained effort on all fronts to achieve the quickest possible reduction in landslide risk to the community. As of the year 2000, through our Landslip Preventive Measures (LPM) Programme, we have reduced landslide risk arising from old substandard man-made slopes to some 50% of the risk that existed in 1977 when comprehensive geotechnical control was first established. With the concerted efforts of government departments and the continuing support and participation of the community, private slope owners in particular, the overall landslide risk has been further reduced to well below the 50% level.

3. We have successfully completed 26 slope safety initiatives proposed in previous years and are on schedule for the remaining 8. Detailed progress on our work to enhance slope safety up to September 2000 is given in the 2000 PO Booklet. A total of 21 new initiatives has also been proposed and we are working to meet the targets set for these. This information paper gives further details of the progress on our slope safety work up to February 2001.

MAINTAIN ALL GOVERNMENT MAN-MADE SLOPES

4. The responsible maintenance party for each of the 54,000 slopes in the Slope Catalogue has been identified following the completion of the project – Systematic Identification of Maintenance Responsibility of Slopes by the Lands Departments in late 1999.

5. For the 37,000 government slopes, the seven maintenance departments, namely Agriculture, Fisheries and Conservation Department, Architectural Services Department, Drainage Services Department, Highways Department, Housing Department, Lands Department and Water Supplies Department, are actively engaged in routine maintenance inspections and necessary maintenance works of slopes under their responsibility. We aim to complete the inspections and works for all government slopes by March 2002.

6. Maintenance departments are also actively carrying out the first Engineer Inspection (i.e. comprehensive inspection by professional engineer) of their slopes. So far, over 50% of the slopes have been inspected and the target is to complete the first Engineer Inspection for 95% of the government slopes by September 2002.

7. To address the rising public concern on visual appearance of slopes, we have promulgated comprehensive and practical guidelines on landscape treatment and bio-engineering for slopes and retaining walls. Maintenance departments have set up vetting committees on the use of shotcrete in slope maintenance works; the aim is to use shotcrete only where essential for safety, and to progressively improve the appearance of slopes in the course of the maintenance works.

8. We have completed a comprehensive review of maintenance of government slopes. Findings of the review affirm that the slope maintenance operations are effective, contributing to further reduction in landslide risk.

9. As part of our efforts for continuous improvement to serve the community better, further measures to enhance the slope maintenance work of departments have been identified. These include integration of existing Slope Maintenance Information Systems, reduction of maintenance interface problems, provision of additional technical guidelines on slope maintenance to supplement Geoguide 5, and improvement to contractual arrangements using separate contracts where appropriate for slope maintenance works. We will also publish an Annual Report on Government Slope Safety Works for public information.

ENSURE THAT OWNERS TAKE RESPONSIBILITY FOR SLOPE SAFETY

10. The Geotechnical Engineering Office (GEO) has carried out a

comprehensive review of the maintenance of private slopes. Some areas requiring further improvement have been identified, including:

- i) only about 40% to 45% of private slopes are in a fully satisfactory state of maintenance despite the fact that most owners/agents are concerned about slope safety;
- ii) some owners do not know that the subject slopes fall within their private lots or within their maintenance responsibility; and
- iii) some owners do not initiate maintenance actions because there is no legal requirement to do so, or because of poor building management or financial difficulties.

11. To address the poor maintenance issues identified in paragraph 10 above, we will step up publicity and public education on slope safety by distributing a model slope maintenance plan and a training video on slope maintenance for use by private slope owners or their agents. In addition, the computerized Slope Maintenance Responsibility Information System has been made available on the INTERNET to provide free and easily accessible slope information to the public. A training course on slope maintenance will also be made available on the INTERNET. To further enhance public awareness, the GEO is preparing a new TV Announcement of Public Interest on slope maintenance focussing on the actions that are routinely needed. We also plan to provide financial assistance to slope owners with financial difficulties to maintain their slopes through an expanded loan scheme on building safety, which is being arranged by the Planning and Lands Bureau.

12. There are currently no statutory requirements for private owners to inspect and maintain their slopes regularly. We believe that voluntary compliance is always preferred to statutory action and prosecution, which should be reserved as a last resort in very serious cases. We also believe the majority of owners are responsible but may lack the necessary technical understanding or incentive to act. Therefore, we will continue to step up our publicity and public education campaigns on slope safety and continue to provide advisory services to the public through the GEO's Community Advisory Unit (CAU).

13. To further assist private slope owners to take responsibility for maintenance of their slopes, the GEO plans to launch a new initiative to carry out an

annual programme of systematic audit of the maintenance of private slopes. There are about 12,000 private slopes which are of purely private responsibility in the Slope Catalogue. About 1,200 private slopes will be selected each year for the audit programme. The slopes will be selected in order of priority, with the aim to complete the first cycle of audit for all purely private slopes in 10 years. Where maintenance defects are identified, building residents will be advised to take prompt follow-up actions.

14. A programme of systematic audit of only 10% of the private slopes (i.e. 1,200) each year on a 10-year cycle would serve to remind private owners of their primary responsibility for regular maintenance of their slopes without relieving them of their duties. There will be added incentives for private owners to maintain their slopes in order to avoid subsequent government actions arising from the audit. Implementing such a programme will not require excessive Government resources.

15. Apart from 12,000 purely private slopes, there are another 5,000 slopes in the Slope Catalogue that are partly private and partly Government. For slopes of mixed private/Government responsibility, the present arrangement is for the relevant Government maintenance department to inspect the whole slope and to advise the GEO and Buildings Department of any need to initiate maintenance actions by the private owner. The effectiveness of this mechanism will be reviewed in due course.

IMPROVE SLOPE SAFETY STANDARDS, TECHNOLOGY, AND THE ADMINISTRATIVE AND REGULATORY FRAMEWORK

16. In 2000, we completed a number of publications which have been prepared with the principal objective to improve slope safety standards, technology and appearance. These publications include the Highway Slope Manual and Technical Guidelines on Landscape Treatment and Bio-Engineering for Man-made Slopes and Retaining Walls. The publications have been made available to geotechnical practitioners and other interested parties both within government and in the private sector to share the results of our research and development work and experience with the profession. The Technical Guidelines has received a Grand Award on 16 February 2001 in the Outstanding Green Project Awards 2000 organized jointly by the Leisure and Cultural Services Department, the Hong Kong Institute of Landscape Architects, and the Society for Horticultures, Hong Kong.

17. For improving the administrative and regulatory framework in slope safety, geotechnical control of private slopes and developments has been enhanced in the past five years by a number of legislative amendments to the Buildings Ordinance (BO). Further measures will be introduced to strengthen statutory and administrative geotechnical control. These include setting up a Register of Geotechnical Engineers (RGE) under the BO to undertake the design and supervision of geotechnical works, and setting up a programme of systematic audit of maintenance of private slopes and initiating necessary actions from private owners (see paragraph 13 above).

18. The RGE proposal has received widespread support from the building industry including the professional institutions, contractors and real estate developers. The major outstanding issue is the professional qualification requirement for RGE. The Hong Kong Institution of Engineers is preparing recommendations to the Buildings Department on this issue. As soon as this is resolved, we intend to introduce the necessary legislation to the Legislative Council.

ENSURE SAFETY STANDARDS OF NEW SLOPES

19. Since 1977, the GEO has deployed dedicated teams to check the design of new slopes and has stepped up inspection of active construction sites to ensure that geotechnical works are adequately supervised. To enhance the effectiveness of the checking of new slopes, the GEO has set up a computerized District Information System for all sites on Hong Kong Island in December 2000. This System will be extended to cover the remainder of Hong Kong by June 2002.

RECTIFY SUBSTANDARD GOVERNMENT SLOPES

20. We have been making good progress in the upgrading and improvement of old substandard government slopes. In 2000, we completed upgrading works for 250 high priority slopes under the LPM Programme. In addition, the study and necessary improvement works for 96 slopes affecting public housing estates have been completed and the works on another 125 slopes will be completed by September 2001. Other works completed in 2000 include improvement to some 90 roadside government slopes not covered by the LPM Programme to reduce landslide risk to road users, and another 300 government slopes will be improved by March 2002.

21. As part of our efforts to improve the environment, we will landscape every slope upgraded under the LPM Programme in 2001 and beyond. Landscape architects have been employed to provide the necessary specialist advice and landscape training to GEO staff.

PROMOTE PUBLIC AWARENESS AND RESPONSE IN SLOPE SAFETY THROUGH PUBLIC EDUCATION, PUBLICITY, INFORMATION SERVICES AND PUBLIC WARNINGS

22. In order to further improve the effectiveness of our public education, we have engaged consultants to review the public education strategy on slope safety. The review, which is scheduled to be completed in March 2001, is aimed at identifying the best and most effective approach to promulgating knowledge on slope safety matters including slope maintenance.

23. The GEO continues to inspect squatter villages on steep terrain to identify huts at risk, recommend clearance, and to advise occupants to seek safe shelter during heavy rain. We also advise on simple maintenance measures that the villagers can take to improve the safety of slopes near their huts. From October 1999 to September 2000, GEO inspected about 5,000 huts. We plan to inspect another 5,000 huts by September 2001.

24. Following a debris flood from a natural hillside in Sham Tseng San Tsuen during Typhoon Sam in August 1999 which caused one fatality and destroyed several squatter huts, the GEO has developed new guidelines for making clearance recommendations for squatters living close to stream courses and these guidelines are now being implemented.

MANAGE NATURAL TERRAIN LANDSLIDE RISK

25. We continue with studies of natural terrain landslides and development of a strategy to keep natural terrain landslide risk at an “as low as practically achievable” level. We aim to contain the increase in overall natural terrain landslide risk arising from new developments, through requirement for study and mitigation of natural terrain hazards as part of new developments in close proximity to natural

hillsides. Procedures are in place for trial implementation by the GEO to address the issue at land-use planning, land disposal, and design and construction stages of new developments. For existing developments, our strategy is to take action where significant hazards become evident, e.g. through the occurrence of natural terrain instability as detected from field observations and interpretation of aerial photographs.

Works Bureau
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