

立法會

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Panel on Development

Meeting on 28 September 2021

Updated background brief on the Landslip Prevention and Mitigation Programme

Purpose

This paper provides background information on the Landslip Prevention and Mitigation Programme ("LPMitP") and summarizes the major views and concerns expressed by members of the Panel on Development ("DEV Panel") on the subject since the 2015-2016 legislative session.

Background

2. Following a number of landslide disasters in the 1970s, the former Geotechnical Control Office (now the Geotechnical Engineering Office ("GEO") of the Civil Engineering and Development Department) was set up in 1977 to tackle the slope safety problem. To manage slope safety work, the Administration maintains records of man-made slopes in Hong Kong in its Catalogue of Slopes. It also implemented the Landslip Preventive Measures ("LPM") Programme for over 30 years, from 1977 to 2010¹, to deal with man-made slopes at relatively high risk in the Catalogue.

¹ The LPM Programme was launched in 1977. In response to the Kwun Lung Lau landslide of July 1994, the then Works Branch conducted a Slope Safety Review which recommended, inter alia, speeding up the upgrading of substandard slopes and maintenance of slopes. This led to the 5-year accelerated LPM Programme from 1995 to 2000. A territory-wide review conducted between 1994 and 1998 registered more than 40 000 sizeable man-made slopes which had not been previously included in the Catalogue of Slopes. In view of the additional number of slopes identified in 1998, the Administration drew up an expanded 10-year LPM Programme to deal with the high-risk man-made slopes for commencement in 2000 and completion in 2010.

Landslip Prevention and Mitigation Programme

3. In late 2007, the Administration launched a rolling LPMitP to dovetail with the LPM Programme which was due for completion in 2010. Under LPMitP, which has an expanded scope covering also natural hillside catchments, the most deserving man-made slopes and natural hillside catchments are selected for studies each year in accordance with a risk-based priority ranking system. The necessary landslip prevention and mitigation works, as identified by the studies, are implemented under the programme. The then pledged annual outputs of LPMitP were (i) to upgrade 150 government man-made slopes; (ii) to conduct safety-screening studies for 100 private man-made slopes; and (iii) to implement risk mitigation works for 30 natural hillside catchments.

4. The Administration completed a review of LPMitP in 2015. Based on the review, LPMitP was found to be in satisfactory progress and delivering the pledged outputs in an effective manner. The Administration considered that the pledged annual delivery targets of LPMitP were appropriate in balancing the need to contain landslide risk against public disturbance, and having regard to the capacity of the geotechnical engineering profession and workforce. For the sake of public safety, the Administration considered it necessary to continue with the implementation of LPMitP, with the pledged annual outputs mentioned in paragraph 3 above remained unchanged.

5. In addition to implementing LPMitP, the Administration also endeavors to enhance the prevailing slope engineering design standard and preventive measures to strengthen the slopes against extreme rainfall events, in order to reduce the probability of occurrence of severe landslides.² Meanwhile, the Administration has continued to undertake regular maintenance of government slopes to prevent deterioration, provide public education to maintain public awareness of landslide risk, and issue landslip warning during heavy rainfall to warn the public of the likelihood of landslides.

² The relevant measures include: (i) enhancement of slope drainage design standard and improvement of slope surface drainage system to cater for the possible increase in precipitation due to extreme rainfall events; (ii) use of soil nails to enhance the robustness of slope; (iii) construction of flexible and rigid barriers to contain debris flow and thus minimizing the impact to adjacent facilities; (iv) use of unmanned aerial hydroseeding technique to revegetate landslide scars on natural hillside as well as identification of landslides on aerial photographs using artificial intelligence in order to enhance the effectiveness of evaluating landslide risk; and (v) use of innovative technology to regulate the regional groundwater.

Views and concerns expressed by members

6. The major views and concerns expressed by members of DEV Panel on LPMitP at the meetings of the Panel on 10 November 2015 and 26 May 2020³ are summarized in the ensuing paragraphs.

Effectiveness of the Landslip Prevention and Mitigation Programme

7. Members expressed concern about how the Administration would identify problematic slopes and apply new technologies in enhancing the effectiveness of its work in slope safety management. They also considered that the Administration should maintain public awareness of landslide risks and alert the public to the likelihood of landslides at appropriate places.

8. The Administration explained that under LPMitP, the most deserving natural hillside catchments (e.g. those close to residential areas) were selected for studies each year in accordance with a risk-based priority ranking system. The necessary landslide prevention and mitigation works, as identified by the studies, would be carried out in accordance with the priorities on the ranking list. To enhance the effectiveness of the Government's work in slope safety management through technology application, the Administration had been conducting on an ongoing basis researches in respect of the latest technologies and overseas practices for enhancing slope safety. In addition, the Slope Safety Technical Review Board ("SSTRB")⁴ conducted annual reviews to benchmark the work carried out under LPMitP and other aspects of the slope safety system against international best practices. The Administration also attached great importance to delineating the responsibilities of slope maintenance and providing public education to maintain public awareness of landslide risk. To alert the public to the likelihood of landslides at appropriate places, the Administration had uploaded information about the natural hillside catchments with previous failure on the slope safety websites. Warning signs would continue to be erected at appropriate places, which included slopes already included in the list for implementation of risk mitigation works and slopes in respect of which Dangerous Hillside Orders ("DHOs") had been issued to the private owners concerned.

9. The Panel noted that based on the review of LPMitP conducted in 2015, there remained about 17 600 substandard man-made slopes with

³ At the meetings held on 10 November 2015 and 26 May 2020, the Panel discussed the review of LPMitP and Government's preparedness for increasing landslide risk due to climate change respectively.

⁴ Appointed by the Director of Civil Engineering and Development, SSTRB was established since 1995 to advise the Government on technical aspects of the slope safety system. The tenure of each Board is 4 years. The current Board is the seventh Board, which commenced in July 2018.

moderate risk or affecting squatter dwellings, and 2 800 vulnerable natural hillside catchments that would pose a hazard to the community. Members were concerned whether the pledged annual outputs of LPMitP to upgrade 150 government man-made slopes and implement risk mitigation works for 30 natural hillside catchments were sufficient. There was a suggestion that the Administration should consider allocating more resources to increase the pledged outputs of LPMitP.

10. The Administration advised that the pledged annual output of upgrading 150 government man-made slopes and carrying out mitigation works for 30 natural hillside catchments would be able to deal with approximately the worst 1% of both the remaining man-made slopes and natural hillside catchments. The Administration considered that the pledged annual delivery targets of LPMitP were appropriate in balancing the need to contain landslide risk against public disturbance, and having regard to the capacity of the geotechnical engineering profession and workforce. Nevertheless, the Administration would stay vigilant in monitoring the landslide risk trend and reviewing the appropriateness of the pledged delivery targets in view of the challenges of climate change. This matter would also continue to be addressed in the reviews conducted by SSTRB.

Maintenance responsibilities for private slopes

11. While LPMitP targets mainly at slopes in public areas, the maintenance of private slopes is the responsibility of the owners. In view that private slope owners might face financial or technical difficulties in maintaining their slopes, members enquired about the assistance provided by the Government to these owners. Some members suggested that the Administration should consider carrying out maintenance works on private slopes and recover the costs of works from the private slope owners afterwards.

12. The Administration emphasized that the responsibility of proper maintenance of private slopes rest with the owners. When a private slope is found to be dangerous, the Buildings Department ("BD") would serve a DHO to require the slope owner to investigate and if necessary to rectify the slope. To help private slope owners comply with DHOs, the Government had been providing both financial assistance and technical advice to them.⁵ There was also an established mechanism for BD to carry out the required works in default of the owners to comply with the relevant DHOs and recover the costs

⁵ The relevant schemes include the Building Safety Loan Scheme administered by BD that aims at assisting owners to improve the safety of their building and slopes, and the Integrated Building Maintenance Assistance Scheme administered by the Hong Kong Housing Society and the Urban Renewal Authority which provides financial assistance to owners for carrying out maintenance or improvement works of slopes for which they are responsible.

of works, as well as supervision charge and surcharge from the owners afterwards.

13. With regard to the provision of technical assistance, GEO had set up a Community Advisory Unit to proactively provide community advisory services to private slope owners, and help them fulfil their slope maintenance responsibilities and comply with DHOs promptly and effectively. The Unit offered free-of-charge technical advice and assistance in regard to the related geotechnical works, including advice on the procedures in engaging qualified engineers and contractors to carry out slope maintenance works. The Unit had also published a guide entitled "Simple Guide to Dangerous Hillside Orders" which provided a simple step-by-step approach for private slope owners to fulfill the requirements of DHO promptly and effectively.

14. Expressing concern that some DHOs had been long overdue,⁶ members called on the Administration to formulate policies/measures to clear the backlog of outstanding DHOs in a more effective and efficient way.

15. The Administration advised that where a DHO had not been complied with after a specified period, BD would issue a reminder and, if appropriate, warning letter to the slope owner to comply with the DHO before instigating prosecution. Prosecution would be initiated if the owner failed to comply with the DHO without a reasonable ground. BD might also consider engaging its consultants and contractors to carry out the required works in the owners' default, and recover the costs of works, as well as supervision charge and surcharge from the owners afterwards.

Council question

16. A question relating to landslide prevention and LPMitP was raised at the Council meeting of 27 April 2016. The relevant hyperlink is in the **Appendix**.

Latest development

17. At the meeting of the DEV Panel on 28 September 2021, the Administration will brief members on the progress of LPMitP and the relevant application of innovation and technology.

⁶ The concern was expressed by members at the meeting of the Panel on 10 November 2015. Members noted that up to end-February 2015, the number of outstanding DHOs was 745, of which 91 had an overdue period of 10 years or more.

Relevant papers

18. A list of relevant papers with their hyperlinks is in the **Appendix**.

Council Business Division 1
Legislative Council Secretariat
20 September 2021

Landslip Prevention and Mitigation Programme

List of relevant papers

Date of meeting	Committee	Papers/Minutes of meeting
10 November 2015	Panel on Development	Administration's paper on "Review of Landslip Prevention and Mitigation Programme" [Paper] Minutes of meeting [Minutes] Follow-up paper [Paper]
26 May 2020	Panel on Development	Administration's paper on "Government's Preparedness for Increasing Landslide Risk due to Climate Change" [Paper] Updated background brief on "Government's efforts on landslide prevention" [Paper] Minutes of meeting [Minutes]

Hyperlink to relevant Council question:

Date	Council question
27 April 2016	Question No.11 on "Measures to prevent landslides"