

## MESSAGE

Hong Kong has a substantial portion of its dense urban development located on or near to steep hillsides. Coupled with the torrential summer rainfall, the challenges that Hong Kong has been facing with regard to slope safety are unique. Our comprehensive Slope Safety System and geotechnical standards, which have won high regard from the geotechnical engineering community both locally and internationally, have successfully brought about substantial improvement in the safety of slopes in Hong Kong.



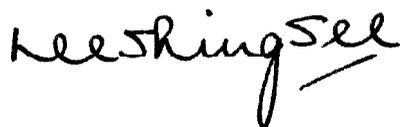
By 2000, we have reduced the overall landslide risk from old man-made slopes to less than 50% of the 1977 level, and by 2010, we will further reduce this risk to below 25% upon completion of the extended Landslip Preventive Measures (LPM) Programme. We have also set up effective Slope Maintenance Systems to ensure that all government slopes are properly maintained.

In addition to enhancing the stability of slopes, we are committed to making our slopes greener and better landscaped. We have landscaped every slope upgraded in 2001 under the LPM Programme, and will continue our commitment by landscaping all government slopes newly formed or upgraded in the years to come. We have also published guidelines for slope designers in beautifying slopes.

Private slope owners are responsible for maintaining their own slopes. The Government will continue to provide assistance through public education, public information services and community advisory services.

It is encouraging to see good achievements in making slopes safer and greener through our slope works. The concerted efforts from all responsible parties, with the support and participation of the community, have resulted in substantial progress towards achieving our targets. I appeal

for your positive response, support and action on our slope safety initiatives. Any comments and suggestions, which will help us attain an even higher standard in our services, are most welcome.

A handwritten signature in black ink that reads "Lee Shing-see". The signature is written in a cursive style with a long, sweeping underline under the "ee" at the end.

(Lee Shing-see)  
Secretary for Works

# **Slope Safety for All**

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## **Policy Objective and Key Result Areas**

# SLOPE SAFETY FOR ALL

Our Policy Objective is to meet Hong Kong's needs for the highest standards of slope safety by improving slope safety standards and technology, ensuring the safety of new slopes, improving the safety of existing slopes, enhancing slope appearance, promoting proper maintenance of slopes and providing public education, publicity, and public warnings as well as information services on slope safety.

## Overall Target

“Slope Safety” is a long-term programme of sustained effort on all fronts to reduce landslide risk to the whole community as quickly as possible. We have reduced the overall landslide risk arising from old substandard man-made slopes to less than 50% of the 1977 level by 2000. Our overall target is to further reduce this risk to less than 25% by September 2010, while continuing to ensure that all new slopes are constructed to the required safety standards.

## Progress

In the past 12 months, we continued to deliver results in all six Key Result Areas (KRAs) under this Policy Objective. We have achieved satisfactory progress towards all the targets set out in previous years.

The 10-year Extended Landslip Preventive Measures (LPM) Programme has been progressing well with some 250 substandard government slopes upgraded and over 300 private slopes safety screened in the past 12 months. We also completed the safety improvement works for some 200 slopes affecting public housing estates in September 2001. We have achieved good progress in beautifying our slopes with landscaping applied to all 250 slopes upgraded under the LPM Programme, and to demonstrate our continued commitment in this respect, we have created a

new KRA to accommodate all the new initiatives and targets relating to the appearance and aesthetics of slopes scattered under various KRAs.

We also achieved the following progress in our six KRAs.

## **1 Improve slope safety standards, technology, and administrative and regulatory frameworks**

In the past 12 months, we have completed a number of key tasks in improving slope safety standards, technology and the regulatory framework. We have published “Technical Guidelines on Landscape Treatment and Bio-Engineering for Man-Made Slopes and Retaining Walls” which provides guidance on beautifying slopes. The publication has won the Grand Award in “Outstanding Green Project Awards 2000” in recognition of its wide application to enhancement of the built environment through greening and landscaping slopes. We have also completed the Highway Slope Manual; a report on improvements to slope engineering practice based on investigation of landslides in 1999; a review of the mobility of landslide debris; and a report on the origin, distribution and significance of weak clay-rich seams in weathered rock. Our work in publishing guidelines on practice and procedures for natural terrain hazard study and a new reinforced fill design guide for Hong Kong has been progressing satisfactorily and has been on schedule.

To enhance the administrative and regulatory frameworks, we have completed a comprehensive review of statutory geotechnical control of private slopes and developments and we have been following up the identified improvement measures. We have also made good progress in establishing a Register of Geotechnical Engineers with the aim to introduce legislation to the Legislative Council in the 2001-2002 legislative session.

## **2 Ensure safety standards of new slopes**

We have maintained an effective quality management system for geotechnical control through compliance with International Organisation for Standardisation 9001. We have instituted a Checking Certificate System for all new government slopes to further improve

the reliability of the geotechnical control system. We have conducted more frequent inspections of active construction sites to check and ensure adequate supervision of geotechnical works.

We have successfully developed and set up a computerised District Information System to enhance the effectiveness of auditing the design of new slopes on Hong Kong Island in December 2000 and extension of this system to cover the remainder of Hong Kong has been progressing well for completion by June 2002.

### **3 Rectify substandard government slopes**

In the past 12 months, we have upgraded 250 substandard government slopes and made safety improvements to some 200 slopes affecting public housing estates and 95 government roadside slopes. We have adopted an integrated approach to government road and development projects by ensuring that all appropriate slopes were identified at the Preliminary Project Feasibility Study stage for inclusion into public works projects for upgrading.

We have placed equal importance on enhancing the built environment by landscaping every slope upgraded in 2001 under the Landslip Preventive Measures Programme.

### **4 Maintain all government man-made slopes**

We have completed a comprehensive review of maintenance of government slopes. The review indicated that effective Slope Maintenance Systems have been set up in maintenance departments to ensure that all government slopes were properly maintained. The state of maintenance of government slopes has improved significantly and good progress has been made in routine maintenance inspections, Engineer Inspections and implementation of the necessary maintenance works.

The computerised Slope Maintenance Responsibility Information System has been completed and a bilingual Chinese and English version launched on the Internet (<http://www.slope.landsd.gov.hk/smris/>) for free access by the public. The owner(s) of each private slope and the maintenance department(s) of every government slope have been clearly identified.

## **5 Ensure that owners take responsibility for slope safety**

In the past 12 months, we have completed safety-screening of 309 private slopes and initiated necessary actions on the private owners to rectify substandard slopes. We have also completed screening studies of underground services affecting some 500 slopes, and served Section 27C Orders under the Buildings Ordinance, where necessary, for investigation and repair of suspected leaking services.

We completed a review on the maintenance of private slopes in December 2000. The review indicated that the majority of private slope owners were aware of the importance of slope maintenance and their responsibility in maintaining their own slopes. However, more assistance was needed to help them identify maintenance defects in their slopes. We will step up our advisory services to private owners on slope maintenance defects and necessary follow-up actions.

## **6 Promote public awareness and response in slope safety through public education, publicity, information services and public warnings**

We have successfully increased the awareness of slope safety among members of the public through sustained publicity and public education. The Hong Kong Slope Safety Website (<http://hkss.ced.gov.hk>) has become an important source of reference for geotechnical practitioners, slope owners and their agents, academics and students in obtaining slope and related information. We have been maintaining good partnership with various organisations in enhancing public education on slope safety through seminars, talks and exhibitions. The Community Advisory Unit has been pro-actively helping private slope owners to arrange for maintenance and upgrading of their slopes with notable success. We have been conducting seminars and exhibitions in schools to further enhance students' interest and knowledge in slope safety following the production of an educational tool-kit on the subject.

Progress on each previously announced initiative under the above KRAs is set out in the "Detailed Progress" section of this report.

## **Looking Forward**

To achieve our overall target this year, we will undertake the following initiatives and targets under each of the KRAs for the coming year.

# 1

## Improve slope safety standards, technology, and administrative and regulatory frameworks

Continuous improvement in technical standards and geotechnical control is needed to meet changing public expectations on slope safety. We will enhance our geotechnical control strategy on building and infrastructure developments, publish geotechnical standards and guidance documents, investigate serious landslides and carry out research and development to apply the latest technology to improve slope safety. In so doing, we will take into account technical advice from local and international experts, and in particular from the Slope Safety Technical Review Board, which was set up in 1995 to advise the Government on technical aspects of slope safety. The Board currently comprises Professor N. R. Morgenstern of Canada, Dr. S. Lacasse of Norway and Professor C. F. Lee of Hong Kong.

We will assess our performance in respect of this KRA against the following indicator –

- The percentage of new standards and guidelines completed within scheduled time. Our target is 90%.

We will pursue the following initiatives and targets to deliver results in this area –

Initiative *	Target
To investigate serious landslides in 2000 and derive improvement measures <i>(Civil Engineering Department (CED))</i>	To complete examination of all reported landslides which occurred in 2000 and produce a report on improvements to slope engineering practice by December 2001
To introduce the use of digital technology in geotechnical field mapping <i>(CED)</i>	To apply geographic information system, digital photogrammetry and mobile computing techniques for landslide investigations and natural terrain studies by December 2002

\* the bracketed information denotes the agency with lead responsibility for the initiative

<b>Initiative</b>	<b>Target</b>
<p>To introduce a risk management strategy to combat natural terrain landslide hazards (CED)</p>	<p>To formulate a natural terrain landslide risk management strategy for trial implementation by April 2002</p>
<p>To improve the technology in slope improvement works (CED)</p>	<p>To develop effective non-destructive means for measuring the lengths of installed soil nails by December 2002</p>
<p>To enhance experience sharing amongst geotechnical practitioners (CED)</p>	<p>To publish and maintain in the Hong Kong Slope Safety Website (<a href="http://hkss.ced.gov.hk">http://hkss.ced.gov.hk</a>) an up-to-date list of geotechnical publications and technical papers on geology and geotechnical engineering in Hong Kong for free public access in 2002</p>
<p>To integrate the updated Housing Department's estate-based slope records into the Housing Department Intranet System (Housing Department)</p>	<p>To update and digitise all the existing slope data into the format complying with the Housing Department Intranet System by mid-2002</p>

# 2

## Ensure safety standards of new slopes

In the course of building and infrastructure developments in Hong Kong, many new man-made slopes are formed every year. The design and construction of these new slopes to standards recognised by the geotechnical profession is one of the key elements in ensuring their long-term safety and creating a quality environment for our community. Our comprehensive geotechnical control system audits the adequacy of the design and construction of all geotechnical works including slope works, site formation, earth retaining structures and deep excavations by the private sector, public authorities and government departments. We maintain an effective quality management system for geotechnical control through compliance with International Organisation for Standardisation (ISO) 9001. We have instituted a Checking Certificate System for all new government slopes to further improve the reliability of the geotechnical control system.

We will assess our performance in respect of this KRA against the following indicators –

- Success in maintaining the geotechnical control process for all new slopes in compliance with the ISO 9001 quality assurance requirements. Our target is to have not more than three non-conformances found during independent surveillance audits.
- Success rate (the percentage of audited slopes which performed satisfactorily during the year) in preventing major landslides in slopes audited as conforming to the required safety standards. Our target is 99.8%.

We will pursue the following initiatives and targets to deliver results in this area –

<b>Initiative</b>	<b>Target</b>
To enhance the effectiveness of site auditing of new geotechnical works <i>(Civil Engineering Department (CED))</i>	To develop a site auditing system using mobile computing technology by December 2002

<b>Initiative</b>	<b>Target</b>
To enhance the standard of supervision of geotechnical works <i>(CED)</i>	To increase the number of inspections of active construction sites by the Geotechnical Engineering Office from 1 300 to 1 700 per year

# 3

## Rectify substandard government slopes

Prior to the establishment of the Geotechnical Engineering Office in 1977, there was very limited geotechnical control of slope formation both in the private and public sectors. The stability of many old slopes is therefore in doubt. Of the 37 000 old slopes in the Government Slope Catalogue, about 70% (i.e. 25 000) are government owned and about 10 000 of these affect developments and major roads. We will maintain an on-going Landslip Preventive Measures Programme up to the year 2010 to upgrade substandard slopes selected through systematic screening in accordance with a risk-based priority system. Slopes with higher risks will be upgraded first, thereby achieving maximum risk reduction in the shortest possible time and progressively reducing the risk from slopes which affect the community directly.

We will assess our performance in respect of this KRA against the following indicators –

- The number of substandard government slopes upgraded. Our target is 250 in 2001-2002.
- Success rate (the percentage of upgraded government slopes which performed satisfactorily during the year) in preventing major landslides in upgraded government slopes. Our target is 99.8%.

We will pursue the following initiative and targets to deliver results in this area –

Initiative	Target
To reduce the landslide risk posed to the public <i>(Civil Engineering Department (CED))</i>	<ul style="list-style-type: none"><li>● To upgrade 250 government slopes close to buildings and major roads under the Landslip Preventive Measures Programme in 2002</li><li>● To publish the Annual Report on Government Slope Safety Works for the Year 2001 by April 2002</li></ul>

# 4

## Maintain all government man-made slopes

Regular maintenance is essential to the continued stability of all man-made slopes. We will regularly maintain all government man-made slopes and carry out enhanced maintenance using prescriptive measures to achieve quick improvement to the stability of older slopes. To this end, we have clearly and systematically identified the maintenance responsibility of all man-made slopes, government or private, and made the information readily available to the public. Every government slope now has a maintenance department responsible for the necessary maintenance. We are also systematically inspecting and repairing public drains and water supply pipes which may affect slope stability.

We will assess our performance in respect of this KRA against the following indicators –

- The percentage of government slopes in an improved state of maintenance. Our target is 85% by September 2002.
- The percentage of government slopes having received a comprehensive inspection by a professional engineer on a five-year cycle. Our target is 95% by September 2002.

We will pursue the following initiative and target to deliver results in this area –

Initiative	Target
<p>To improve government slopes not covered by the Landslip Preventive Measures Programme to reduce the landslide risk posed to the public</p> <p><i>(Agriculture, Fisheries and Conservation Department/ Architectural Services Department/ Drainage Services Department/ Highways Department/Housing Department/Lands Department/ Water Supplies Department)</i></p>	<p>To improve the stability of 300 government slopes by prescriptive measures by March 2003</p>

# 5

## Ensure that owners take responsibility for slope safety

To reduce the landslide risk posed by private slopes, private owners must take up their responsibility to maintain private man-made slopes and to upgrade those which are substandard. We will continue to carry out safety-screening of private man-made slopes to establish prima facie evidence for serving Dangerous Hillside Orders to private owners under the Buildings Ordinance requiring them to upgrade their substandard slopes. We will also continue to take statutory action under the Buildings Ordinance to require private owners to inspect and repair private underground drains and water pipes which may affect the stability of adjacent slopes. We will step up our advisory services to private owners on slope maintenance defects and necessary follow-up actions. Together with public education, publicity and information services and community advisory services outlined in KRA 6, we will ensure that private owners take care of their own slopes, thereby achieving a major reduction in the landslide risk posed by private slopes.

We will assess our performance in respect of this KRA against the following indicators –

- The number of private slopes subject to safety-screening study. Our target is 300.
- The number of Dangerous Hillside Orders issued by Buildings Department on which remedial actions have been taken. Our target is 200.

We will pursue the following initiatives and targets to deliver results in this area –

Initiative	Target
To require owners of private slopes to rectify their substandard slopes <i>(Civil Engineering Department (CED)/Buildings Department (BD))</i>	To complete safety-screening studies of 300 man-made private slopes in 2002 and, where necessary, serve orders on the owners to rectify deficiencies

<b>Initiative</b>	<b>Target</b>
<p>To provide assistance to private owners to maintain their slopes (CED)</p>	<p>To step up advisory services to private owners on slope maintenance defects and necessary follow-up actions in 2002</p>
<p>To require owners to inspect and repair private underground drains and water pipes which may affect the stability of slopes (BD)</p>	<p>To complete screening studies of underground services affecting 500 slopes in 2002 and, where necessary, serve orders on the owners to rectify deficiencies</p>

# 6

## **Promote public awareness and response in slope safety through public education, publicity, information services and public warnings**

Through publicity and public education, private owners are becoming highly aware of their slope maintenance responsibilities. But as laymen, many of them may not possess the required information, knowledge or expertise in slope improvement or maintenance works. We will provide the public with comprehensive slope information including maintenance responsibility, and provide an advisory service on how to tackle slope safety issues. We will step up public education and enhance our public communication channels on slope safety matters through wider use of information technology and the Internet. We will continue to issue Landslip Warnings and to post warning signs. To minimise the adverse consequences of landslips to the community, we will continue to educate the public on personal safety precautions to be taken during heavy rainstorms. We will also inspect squatter villages near streamcourses to identify huts subject to natural terrain landslip risk, recommend clearance and advise the occupants to seek safe shelter during heavy rain.

We will assess our performance in respect of this KRA against the following indicators –

- The level of public awareness of the slope safety problem in Hong Kong as revealed by independent annual opinion survey. Our target is 70%.
- The percentage of slope owners who understand their maintenance responsibilities as revealed by independent annual opinion survey. Our target is 75%.
- The level of public awareness about the appropriate safety precautions that should be taken during heavy rainstorms as revealed by independent annual opinion survey. Our target is 65%.
- The number of squatter villages (subject to natural terrain risk near streamcourses) inspected and residents warned of potential danger. Our target is to inspect 90 villages.

We will pursue the following initiatives and targets to deliver results in this area –

Initiative	Target
<p>To enhance private owners' acceptance of their responsibility for slope safety through the work of the Community Advisory Unit <i>(Civil Engineering Department (CED))</i></p>	<p>To stage nine roving exhibitions on slope safety by December 2001 and meet private owners and owners' corporations to advise them on slope safety issues</p>
<p>To identify squatter huts at high risk from landslides so that clearance actions can be initiated <i>(CED)</i></p>	<p>To inspect the areas near streamcourses and subject to natural terrain landslip risk in 90 major squatter villages in the New Territories by September 2002, make clearance recommendations and advise residents on safety precautions</p>
<p>To enhance the response of the public to Landslip Warnings <i>(CED)</i></p>	<p>To prepare new warning messages to enhance communication with the public during Landslip Warnings by April 2002</p>
<p>To enhance public education on slope safety <i>(CED)</i></p>	<ul style="list-style-type: none"> <li>● To set up a Slope Safety Island in the Hong Kong Slope Safety Website (<a href="http://hkss.ced.gov.hk">http://hkss.ced.gov.hk</a>) for free dissemination of educational materials on slope safety by July 2002</li> <li>● To conduct three seminars in schools on slope safety in 2002</li> </ul>

Our hilly terrain coupled with dense building and infrastructure developments in the past 50 years has resulted in some 54 000 man-made slopes formed in Hong Kong. Slopes are seen everywhere and have become part of the living environment. Apart from maintaining the highest standards of slope safety through the various initiatives described in KRAs 1 to 6, we continue to put special emphasis on making the appearance of engineered slopes as natural as possible, blending them with their surroundings and minimising their visual impact on the built environment. The strategy adopted is to set up guidelines on good practice in landscape treatment and bio-engineering for slope works, to improve the technology in “greening” slopes and to enhance the aesthetic aspects of upgraded and newly formed government slopes. For private slopes, we rely on the co-operation of slope owners or their maintenance agents to beautify their slopes to maintain a visual harmony with the surroundings; we will also provide assistance and advice where possible.

We will assess our performance in respect of this KRA against the following indicator –

- The level of public satisfaction on the appearance of slopes as revealed by independent annual opinion survey. Our target is 65% in 2002.

We will pursue the following initiatives and targets to deliver results in this area –

Initiative	Target
To improve the aesthetic aspects of upgraded government slopes <i>(Civil Engineering Department (CED))</i>	To landscape 250 slopes upgraded in 2002 under the Landslip Preventive Measures Programme

<b>Initiative</b>	<b>Target</b>
<p>To improve aesthetic aspects of newly formed government slopes  <i>(Agriculture, Fisheries and Conservation Department/ Architectural Services Department/ CED/Drainage Services Department/Highways Department (HyD)/Home Affairs Department/ Housing Department/Territory Development Department/Water Supplies Department (WSD))</i></p>	<p>To landscape every newly formed government man-made slope constructed in 2002</p>
<p>To improve aesthetic aspects of private slopes  <i>(CED)</i></p>	<p>To produce a layman’s guide on landscape treatment for man-made slopes and retaining walls by July 2002</p>
<p>To improve the technology in greening slopes  <i>(CED/HyD/WSD)</i></p>	<p>To conclude trials of growing new vegetation mixes and applying new planting techniques on steep slopes by December 2003</p>

**Slope Safety for All**

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**Detailed Progress**

# 1

## Improve slope safety standards, technology, and administrative and regulatory frameworks

To achieve results in this area, various initiatives have been undertaken in the past years. Details are set out below –

Initiative *	Target #	Present Position +
<p>To improve the technology, priority classification systems and performance measurement methods used in slope improvement works and the slope safety system</p> <p><i>(Civil Engineering Department (CED))</i></p>	<ul style="list-style-type: none"> <li>● To complete a review of the mobility of landslide debris by March 2001</li> <li>● To produce a report on the origin, distribution and significance of weak clay-rich seams in weathered rock by September 2001</li> </ul> <p><i>(2000)</i></p>	<ul style="list-style-type: none"> <li>● A review of the mobility of landslide debris was completed in March 2001.</li> <li>● A report on the origin, distribution and significance of weak clay-rich seams for use by practitioners was completed in September 2001.</li> </ul> <p><i>(Action Completed)</i></p>
<p>To introduce a risk management strategy to combat natural terrain landslide hazards</p> <p><i>(CED)</i></p>	<p>To publish guidelines on practice and procedures for natural terrain hazard study by December 2001</p> <p><i>(2000)</i></p>	<p>The guidelines on practice and procedures for natural terrain hazard study are being finalised for publication.</p> <p><i>(Action in Progress: On Schedule)</i></p>

\* the bracketed information denotes the agency with lead responsibility for the initiative

# the bracketed information denotes the year in which the target was set

+ the bracketed information denotes the status of the target

<b>Initiative</b>	<b>Target</b>	<b>Present Position</b>
To enhance the geotechnical control of building developments <i>(Buildings Department/ CED)</i>	To review the Buildings Ordinance and introduce legislation to the Legislative Council by the 2001-2002 legislative session to establish a Register of Geotechnical Engineers <i>(2000)</i>	Review of the Buildings Ordinance and preparation for introducing legislation to the Legislative Council to establish a Register of Geotechnical Engineers is in progress. <i>(Action in Progress: On Schedule)</i>
To investigate serious landslides in 1999 and derive improvement measures <i>(CED)</i>	To complete by December 2000 a report on improvements to slope engineering practice based on investigations of landslides in 1999 <i>(1999)</i>	A report on improvements to slope engineering practice based on investigations of landslides in 1999 was completed in December 2000. <i>(Action Completed)</i>
To introduce improved means of site characterisation <i>(CED)</i>	To conclude a trial of practical means of automatic acquisition of ground water information by December 2000 <i>(1999)</i>	Field trials were completed and a report on the findings for reference by the profession was completed in December 2000. <i>(Action Completed)</i>
To publish a new reinforced fill design guide for Hong Kong <i>(CED)</i>	To publish the new design guide by December 2002 <i>(1999)</i>	Drafting of the new design guide is in progress. <i>(Action in Progress: On Schedule)</i>
To produce a Highway Slope Manual <i>(CED)</i>	To publish the Highway Slope Manual by December 2000 <i>(1998)</i>	The Highway Slope Manual was published in November 2000. <i>(Action Completed)</i>

Initiative	Target	Present Position
To review and amend the Buildings Ordinance to enhance the geotechnical control of building developments <i>(CED)</i>	To complete a comprehensive review of statutory geotechnical controls in private slopes and developments by December 2000 <i>(1998)</i>	A comprehensive review on statutory geotechnical controls of private slopes and developments was completed in December 2000. <i>(Action Completed)</i>

# 2

## Ensure safety standards of new slopes

To achieve results in this area, various initiatives have been undertaken in the past years. Details are set out below –

Initiative	Target	Present Position
To enhance the standard of supervision of geotechnical works <i>(Civil Engineering Department (CED))</i>	To increase the number of inspections of active construction sites by the Geotechnical Engineering Office from 950 to 1 300 per year <i>(2000)</i>	A total of 1 598 inspections of active construction sites were conducted from April 2000 to March 2001, which was 23% more than the 2000 target. <i>(Action Completed)</i>
To enhance the effectiveness of checking new slopes <i>(CED)</i>	To extend the computerised District Information System established for Hong Kong Island to cover all sites in Kowloon, the New Territories and outlying islands by June 2002 <i>(2000)</i>	Setting up of the information layers to cover sites in Kowloon, the New Territories and outlying islands is in progress. <i>(Action in Progress: On Schedule)</i>
To improve the reliability of the geotechnical checking system <i>(CED)</i>	To institute a Checking Certificate System for all new government slopes by September 2001 <i>(2000)</i>	The Checking Certificate System for all new government slopes was instituted in August 2001. <i>(Action Completed)</i>

<b>Initiative</b>	<b>Target</b>	<b>Present Position</b>
<p>To enhance the effectiveness of checking of new slopes by setting up a computerised District Information System <i>(CED)</i></p>	<p>To set up the System for all sites on Hong Kong Island by December 2000 <i>(1999)</i></p>	<p>The computerised District Information System for Hong Kong Island was set up and in use since December 2000. <i>(Action Completed)</i></p>

# 3

## Rectify substandard government slopes

To achieve results in this area, various initiatives have been undertaken in the past years. Details are set out below –

Initiative	Target	Present Position
To reduce the landslide risk posed to the public <i>(Civil Engineering Department (CED))</i>	To upgrade 250 government slopes close to buildings and major roads under the Landslip Preventive Measures (LPM) Programme in 2001 <i>(2000)</i>	About 80% of the slope upgrading works have been completed by September 2001. We are on programme to complete the upgrading works for the remaining government slopes in 2001.  <i>(Action in Progress: On Schedule)</i>
To improve the aesthetic aspects of upgraded government slopes <i>(CED)</i>	To landscape every slope upgraded under the LPM Programme in 2001 <i>(2000)</i>	About 80% of the landscaping works under the LPM Programme have been completed. We are on programme to complete the remaining works by end-2001.  <i>(Action in Progress: On Schedule)</i>
To upgrade slopes affecting public housing estates to reduce the landslide risk to residents <i>(CED/Housing Department)</i>	To complete by September 2001 the study and necessary improvement works for about 200 slopes affecting public housing estates <i>(1999)</i>	The study and necessary improvement works for 221 slopes affecting public housing estates were completed by September 2001.  <i>(Action Completed)</i>

Initiative	Target	Present Position
<p>To upgrade roadside government slopes not covered by the LPM Programme to reduce the landslide risk posed to road users</p> <p><i>(Highways Department)</i></p>	<p>To improve in 2000 the stability of 95 government slopes by prescriptive measures</p> <p><i>(1999)</i></p>	<p>Ninety-five roadside government slopes were improved by prescriptive measures in 2000.</p> <p><i>(Action Completed)</i></p>
<p>To adopt an integrated approach to government road and development projects to ensure that slopes affecting or affected by the projects are upgraded to current safety standards as part of the implementation of the project</p> <p><i>(All project departments)</i></p>	<p>To ensure all appropriate slopes are identified at the Preliminary Project Feasibility Study (PPFS) stage for inclusion into public works projects for upgrading</p> <p><i>(1999)</i></p>	<p>Procedures have been instituted to ensure all appropriate slopes are identified at the PPFS stage for inclusion into public works projects for upgrading.</p> <p><i>(Action Completed)</i></p>
<p>To accelerate the LPM Programme for the upgrading of large substandard government slopes to cope with the increased number of slopes identified through the new slope cataloguing exercise, and extend the Programme up to 2010</p> <p><i>(CED)</i></p>	<p>To increase the current LPM output by 40% by upgrading 250 man-made slopes per year from 1999 onwards</p> <p><i>(1998)</i></p>	<p>Upgrading works for 250 substandard government slopes under the LPM Programme were completed in 2000.</p> <p><i>(Action Completed)</i></p>

# 4

## Maintain all government man-made slopes

To achieve results in this area, various initiatives have been undertaken in the past years. Details are set out below –

Initiative	Target	Present Position
<p>To improve the maintenance of government slopes</p> <p><i>(Agriculture, Fisheries and Conservation Department (AFCD)/ Architectural Services Department (Arch SD)/ Drainage Services Department (DSD)/ Highways Department (HyD)/Housing Department (HD)/ Lands Department (Lands D)/Water Supplies Department (WSD))</i></p>	<p>To complete the routine maintenance inspections and necessary maintenance works on the additional slopes identified through the new slope cataloguing exercise by March 2002</p> <p>(2000)</p>	<p>Routine maintenance inspections and necessary maintenance works to about 75% government slopes were completed in September 2001. We are on programme to complete the works on the remaining slopes by March 2002.</p> <p><i>(Action in Progress: On Schedule)</i></p>
<p>To improve government slopes not covered by the Landslip Preventive Measures Programme to reduce the landslide risk posed to the public</p> <p><i>(AFCD/Arch SD/DSD/ HyD/HD/Lands D/ WSD)</i></p>	<p>To improve the stability of 300 government slopes by prescriptive measures by March 2002</p> <p>(2000)</p>	<p>From October 2000 to September 2001, 210 government slopes were improved by prescriptive measures. Works on the remaining 90 slopes are scheduled for completion by March 2002.</p> <p><i>(Action in Progress: On Schedule)</i></p>

Initiative	Target	Present Position
<p>To improve aesthetic aspects of government man-made slopes</p> <p><i>(Works Bureau (WB)/ AFCD/Arch SD/Civil Engineering Department (CED)/ DSD/HyD/HD/ Lands D/WSD)</i></p>	<p>To effect control and update technical guidelines on the use of shotcrete in slope maintenance works to progressively improve the appearance of slopes in the course of maintenance by December 2000</p> <p><i>(2000)</i></p>	<p>Technical guidelines to control the use of shotcrete in slope works were issued in August 2000 and further guidance on improvement to the appearance of slopes in the course of maintenance were issued in December 2000.</p> <p><i>(Action Completed)</i></p>
<p>To enhance training of slope maintenance staff in the maintenance departments (i.e., AFCD, Arch SD, DSD, HyD, HD, Lands D and WSD)</p> <p><i>(CED)</i></p>	<p>To conduct three training seminars and short courses to front-line government maintenance staff in 2001</p> <p><i>(2000)</i></p>	<p>Four training seminars and short courses were provided to front-line government maintenance staff in 2001.</p> <p><i>(Action Completed)</i></p>
<p>To carry out Engineer Inspections for maintenance of government slopes in the Government Slope Catalogue</p> <p><i>(AFCD/Arch SD/DSD/ HyD/HD/Lands D/ WSD)</i></p>	<p>To complete the Engineer Inspections on 12 000 government slopes by March 2001</p> <p><i>(1999)</i></p>	<p>Engineer Inspections on 22 000 government slopes were completed by March 2001.</p> <p><i>(Action Completed)</i></p>

Initiative	Target	Present Position
<p>To enhance the capability of the six government departments responsible for the maintenance of government slopes to cope with the increased number of slopes identified through the new slope cataloguing exercise</p> <p>(WB)</p>	<p>To complete a thorough review of slope maintenance by 2000</p> <p>(1998)</p>	<p>A comprehensive review on government slope maintenance was completed in December 2000.</p> <p><i>(Action Completed)</i></p>
<p>To complete the systematic inspection and repair of all government underground drains and water pipes which may affect the stability of adjacent slopes</p> <p>(WB)</p>	<ul style="list-style-type: none"> <li>● To complete the systematic inspection and necessary repair works of underground water pipes, sewers and drains within public housing estates and affecting slopes by 2000</li> <li>● To complete the systematic inspection and necessary repair works of underground water pipes, sewers and drains within government buildings and affecting slopes by 2001</li> </ul>	<ul style="list-style-type: none"> <li>● Leakage detection and necessary repair works of the buried water-carrying services close to slopes within public housing estates were completed by the Housing Department in December 2000.</li> <li>● The Architectural Services Department has completed leakage detection and necessary repair works to over 65% of the targeted water carrying services. Additional resources have been allocated to expedite the remaining works for completion by end-2001.</li> </ul> <p><i>(Action in Progress: On Schedule)</i></p>

Initiative	Target	Present Position
	<ul style="list-style-type: none"> <li>● To complete the systematic inspection and necessary repair works of underground water pipes affecting slopes near buildings and major roads by 2002</li> <li>● To complete the systematic inspection and necessary repair works of underground sewers and drains affecting slopes near buildings and major roads by 2004 (1998)</li> </ul>	<ul style="list-style-type: none"> <li>● The Water Supplies Department has completed leakage detection and the necessary repair works to over 70% of the targeted water mains near buildings and major roads. The remaining works are in good progress. <i>(Action in Progress: On Schedule)</i></li> <li>● The Drainage Services Department has completed inspection and the necessary repair works to about 22% of the underground drains near buildings and major roads. The remaining works are in progress. <i>(Action in Progress: On Schedule)</i></li> </ul>

# 5

## Ensure that owners take responsibility for slope safety

To achieve results in this area, various initiatives have been undertaken in the past years. Details are set out below –

Initiative	Target	Present Position
<p>To require owners of private slopes to rectify their substandard slopes <i>(Civil Engineering Department (CED)/ Buildings Department (BD))</i></p>	<p>To complete safety-screening studies of 300 man-made private slopes in 2001 and, where necessary, serve orders on the owners to rectify deficiencies <i>(2000)</i></p>	<p>About 85% of the safety-screening have been completed by September 2001. We are on programme to complete the safety screening studies for 300 private slopes in 2001. <i>(Action in Progress: On Schedule)</i></p>
<p>To provide assistance to private owners to maintain their slopes <i>(CED/BD)</i></p>	<ul style="list-style-type: none"> <li>● To provide assistance to owners with financial difficulties to maintain their slopes through a revised loan scheme on building safety improvement to be set up in 2001</li> <li>● To prepare a training video and Model Slope Maintenance Plan for use by private slope owners and property management companies in 2001</li> </ul>	<ul style="list-style-type: none"> <li>● The building safety loan scheme, which includes loan provisions to cover the investigation, maintenance and upgrading works to private slopes, was set up in July 2001. <i>(Action Completed)</i></li> <li>● The training video and the Model Slope Maintenance Plan have been completed, and are being printed. <i>(Action in Progress: On Schedule)</i></li> </ul>

Initiative	Target	Present Position
	<ul style="list-style-type: none"> <li>To set up a training course on private slope maintenance on the Internet in 2001</li> </ul> <p>(2000)</p>	<ul style="list-style-type: none"> <li>The Internet training course on slope maintenance is being set up for launching in late 2001.</li> </ul> <p>(Action in Progress: On Schedule)</p>
<p>To enhance awareness of slope maintenance responsibilities</p> <p>(Lands Department)</p>	<p>To put the computerised Slope Maintenance Responsibility Information System on the Internet by December 2000</p> <p>(2000)</p>	<p>The computerised Slope Maintenance Responsibility Information System website (<a href="http://www.slope.landsd.gov.hk/smr/s/">http://www.slope.landsd.gov.hk/smr/s/</a>) was launched in December 2000.</p> <p>(Action Completed)</p>
<p>To require owners to inspect and repair private underground drains and water pipes which may affect the stability of slopes</p> <p>(BD)</p>	<ul style="list-style-type: none"> <li>To complete screening studies of underground services affecting 500 slopes in 2001 and, where necessary, serve orders on the owners to rectify deficiencies</li> </ul> <p>(2000)</p>	<ul style="list-style-type: none"> <li>Screening studies of underground services affecting 399 slopes were completed from January to September 2001. We are on programme to complete similar studies on underground services affecting another 101 slopes by December 2001.</li> </ul> <p>(Action in Progress: On Schedule)</p>

Initiative	Target	Present Position
	<ul style="list-style-type: none"> <li>To complete screening studies of underground services affecting 500 slopes per year and serve Section 27C Orders where necessary for investigation and repair of suspected services from 1999 onwards</li> </ul> <p>(1998)</p>	<ul style="list-style-type: none"> <li>Screening studies of underground services affecting 551 slopes were completed in 2000, resulting in seven Section 27C Orders being served.</li> </ul> <p>(Action Completed)</p>
<p>To carry out a review of maintenance of private slopes</p> <p>(CED)</p>	<p>To complete a review report by end-2000</p> <p>(1999)</p>	<p>A review report on private slope maintenance was completed and issued in December 2000.</p> <p>(Action Completed)</p>
<p>To carry out more safety screening studies of private slopes to require owners to rectify their substandard slopes</p> <p>(CED/BD)</p>	<p>To complete safety-screening studies of 300 private man-made slopes per year from 1999 onwards</p> <p>(1998)</p>	<p>Safety-screening studies of 309 private slopes were completed in 2000.</p> <p>(Action Completed)</p>

# 6

## Promote public awareness and response in slope safety through public education, publicity, information services and public warnings

To achieve results in this area, various initiatives have been undertaken in the past year. Details are set out below –

Initiative	Target	Present Position
<p>To enhance private owners' acceptance of their responsibility for slope safety through the work of the Community Advisory Unit</p> <p><i>(Civil Engineering Department (CED))</i></p>	<p>To stage eight roving exhibitions on slope safety by December 2000 and meet private owners and Owners' Corporations to advise them on slope maintenance</p> <p><i>(2000)</i></p>	<p>Eight roving exhibitions on slope safety and meet-the-private-owners sessions were held in major shopping malls throughout the territory in 2000.</p> <p><i>(Action Completed)</i></p>
<p>To enhance the response of the public to landslip warnings</p> <p><i>(CED)</i></p>	<p>To step up public education on signs of landslip danger in 2001</p> <p><i>(2000)</i></p>	<p>Leaflets on signs of landslip danger are being distributed to the public in roving exhibitions and to secondary school students. Over 5 000 leaflets have been given out so far.</p> <p><i>(Action in Progress: On Schedule)</i></p>

<b>Initiative</b>	<b>Target</b>	<b>Present Position</b>
<p>To reduce the extent of unauthorised cultivation on hillsides (CED)</p>	<p>To step up public education on the risks of unauthorised cultivation in 2001 (2000)</p>	<p>Over 6 000 leaflets and 1 400 plastic fans printed with messages to discourage unauthorised cultivation have been distributed to the public in roving exhibitions and to morning walkers in “black-spots” of unauthorised cultivation. Further publicity materials are being prepared for issue to the public.  (Action in Progress: On Schedule)</p>
<p>To review the public education strategy on slope safety (CED)</p>	<p>To complete a review report by March 2001 (2000)</p>	<p>A review report on the public education strategy was completed in March 2001.  (Action Completed)</p>
<p>To identify squatter huts at high risk from landslides so that clearance actions can be initiated (CED)</p>	<p>To inspect an additional 5 000 squatter huts by September 2001, make clearance recommendations and advise residents on safety precautions (2000)</p>	<p>In the past 12 months, over 5 000 squatter huts were inspected, clearance recommendations made, and advice issued to residents on safety precautions.  (Action Completed)</p>