



Geotechnical Engineering Office
Civil Engineering and
Development Department

Keep Your Slopes Safe

Maintain Your Slopes



CEDD Homepage : <https://www.cedd.gov.hk>

Hong Kong Slope Safety Website : <https://hkss.cedd.gov.hk>

Enquiry : 1823

Why is slope maintenance important?

Lack of maintenance of slopes and retaining walls (collectively known as slopes) is one of the major contributory factors to many landslides in Hong Kong.

Many landslides are triggered by water ingress into slopes and by soil erosion during heavy rain. Therefore, man-made slopes generally have drainage provisions and protective surfacing to prevent water ingress and soil erosion. These measures need regular inspection and maintenance to ensure their functionality and to prevent deterioration. In addition, leakage of buried water-carrying services could also trigger landslides. As such, buried water-carrying services should also be regularly inspected and maintained.

If a slope is not properly maintained, it will deteriorate and landslides may occur and cause injury to persons or damage to properties. If this happens, you may have to incur great expense for remedial works, and claims for damage or compensation from victims.

Who is responsible?

As defined in the Building Management Ordinance, the responsibility for maintenance of land, including slopes, rests with the owner, or the party assigned with such responsibility. Ownership is conferred by a lease document issued by the Lands Department (LandsD). Private owners may also be liable under specific lease conditions for the maintenance of slopes adjoining their lot. The public can access to these lease documents and records of owners at the Land Registry. LandsD maintains a Slope Maintenance Responsibility Information System (SMRIS) (<http://www2.slope.landsd.gov.hk/smr/s/>) which provides the public with a preliminary reference on maintenance responsibility of slopes registered in the Catalogue of Slopes. If in doubt, private owners are recommended to seek advice from estate surveyors or lawyers.

How to keep slopes properly maintained?

Any slopes should be maintained in good condition in accordance with "Geoguide 5 - Guide to Slope Maintenance" published by the Geotechnical Engineering Office (GEO). An abridged version entitled "Layman's Guide to Slope Maintenance" was also produced to assist the private owners to understand and discharge their duties. All relevant GEO's publications can be downloaded from the Hong Kong Slope Safety Website (<http://hkss.cedd.gov.hk>). Slope owners should arrange regular maintenance inspections and works in accordance with the recommendations made in the guidance documents.



Routine Maintenance Inspections

Private owners should arrange for Routine Maintenance Inspections (RMI) at least once a year to establish the need for Routine Maintenance Works (RMW). Such inspections can be carried out by any responsible person, including property management staff. Any recommended maintenance works are preferred to be completed before the onset of the wet season. Typical RMW are illustrated in Figure 1. In addition to RMI, owners should arrange to inspect the drainage channels and remove any debris after a rainstorm or a typhoon.

During the above maintenance inspections, particular note should be paid on anything considered to be unusual or abnormal, such as signs of leakage, spillage or overflow of drainage channels (Figure 2), widening of cracks (Figure 3), loosening or falling of rock debris from rock slopes (Figure 4), settling ground or platforms at slope crest, and bulging or distortion of retaining walls. If these defects are observed, private owners should arrange immediately for an Engineers Inspection (EI) for Maintenance.



Engineer Inspections for Maintenance

Private owners should appoint a professionally-qualified geotechnical engineer, such as a Registered Professional Engineer (Geotechnical) (RPE(G)), to carry out Engineer Inspections (EI) for Maintenance at least once every 5 years. The inspecting engineer will advise on the maintenance conditions of the slope, possibility of any inherent design or construction deficiencies (e.g. surface drainage channels with insufficient capacity), need for a stability assessment, and the extent and details of any required improvement works (e.g. whether rock mesh is required for mitigating rock fall from rock slopes). Private owners should ensure that the recommendations of the inspecting engineer have been implemented. The list of RPE(G) can be downloaded from the website of the Engineers Registration Board (<http://www.erb.org.hk/>).



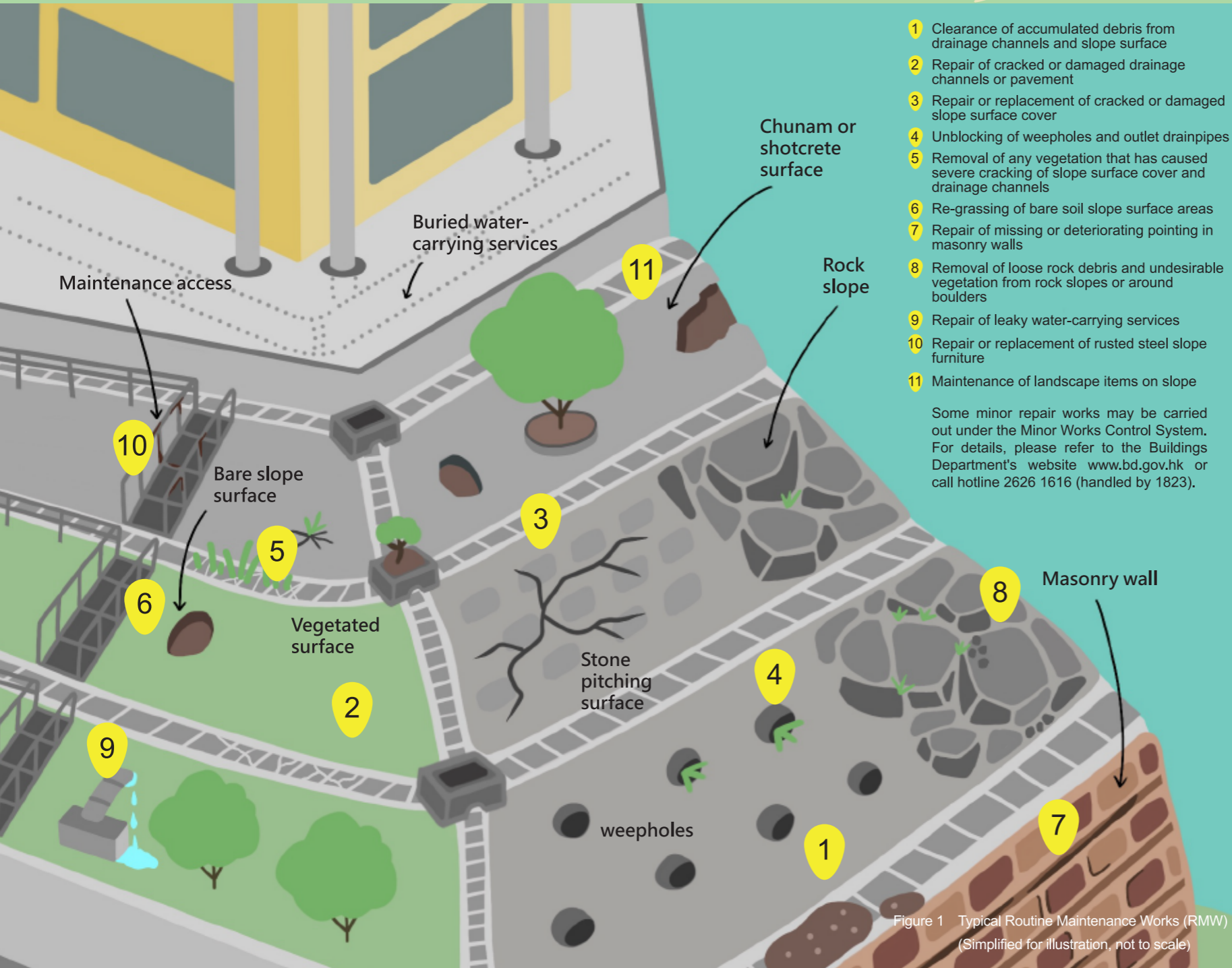
Regular checks of buried water-carrying services

Leakage from buried water-carrying services (including sewers, stormwater drains and water supply mains) that may affect the stability of slopes may not be visible on the surface. Therefore, private owners should arrange for regular checks and maintenance of buried water-carrying services in accordance with the "Code of Practice on Monitoring and Maintenance of Water-Carrying Services Affecting Slopes", which can be downloaded from the website of the Development Bureau (<http://www.devb.gov.hk>).





Typical Routine Maintenance Works



- 1 Clearance of accumulated debris from drainage channels and slope surface
- 2 Repair of cracked or damaged drainage channels or pavement
- 3 Repair or replacement of cracked or damaged slope surface cover
- 4 Unblocking of weepholes and outlet drainpipes
- 5 Removal of any vegetation that has caused severe cracking of slope surface cover and drainage channels
- 6 Re-grassing of bare soil slope surface areas
- 7 Repair of missing or deteriorating pointing in masonry walls
- 8 Removal of loose rock debris and undesirable vegetation from rock slopes or around boulders
- 9 Repair of leaky water-carrying services
- 10 Repair or replacement of rusted steel slope furniture
- 11 Maintenance of landscape items on slope

Some minor repair works may be carried out under the Minor Works Control System. For details, please refer to the Buildings Department's website www.bd.gov.hk or call hotline 2626 1616 (handled by 1823).

Figure 1 Typical Routine Maintenance Works (RMW) (Simplified for illustration, not to scale)



Figure 2 Spillage or overflow of drainage channels



Figure 3 Widening of cracks



Figure 4 Rock debris retained by rock mesh