Geotechnical Engineering Office
Civil Engineering and Development Department

CEDD Website : www.cedd.gov.hk
Hong Kong Slope Safety Website : hkss.cedd.gov.hk
Enquiry : 2760 5800 (Advice on slope maintenance)
1823 (Enquiry or complaint on slope safety)

QUICK GUIDE TO SLOPE MAINTENANCE

Who is responsible for maintaining slopes?

Owners' Legal Responsibility



Owners are responsible for properly maintaining the slopes, retaining walls or natural terrain hazard mitigation measures under their responsibility, as stated in the lease documents, to ensure they remain in good condition.

Check Lease Documents to Confirm the Maintenance Extent

Lease documents at the Land Registry state the extent of land which owners must maintain, sometimes even including areas outside the lot boundaries.



Public Resources Can Help

Check your slope maintenance responsibility using the Slope Maintenance Responsibility Information System (SMRIS) provided by the Lands Department.

(Website: www.slope.landsd.gov.hk)

Lands Department
The Government of the Hong Kong Special Administrative Region
SMRIS
Slope Maintenance Responsibility Information System

Why do we need slope maintenance?

Regular Maintenance vs Poor Maintenance



Regular and proper maintenance can ensure slope safety.



Poor maintenance may lead to slope failure and cause serious damage.

How to maintain slopes?

Five Types of Maintenance Inspections

1 Routine Maintenance Inspections

2 Engineer Inspections for Maintenance

3 Regular Checks of Buried Water-carrying Services

4 Regular Monitoring of Special Measures

5 Special Follow-up Review for Mitigation Measures Involving Flexible Barrier

Maintenance Manual

Maintenance Manual is prepared by the design engineer and serves as an important part of maintenance management. It details the slope information and maintenance requirements. If it is not available, the engineer responsible for Engineer Inspection for Maintenance should prepare one.

MAINTENANCE FOR MAN-MADE SLOPES AND RETAINING WALLS

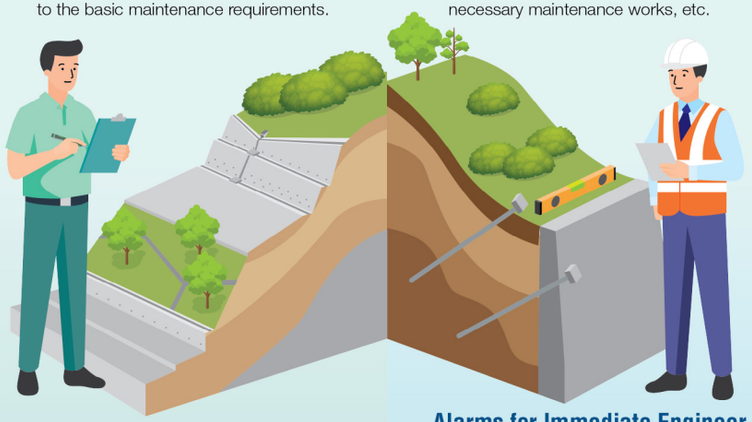
To ensure the stability of man-made slopes and retaining walls, regular inspections and proper maintenance are essential. Two major types of maintenance inspections are: Routine Maintenance Inspections carried out by property management personnel and Engineer Inspections for Maintenance carried out by a professionally qualified geotechnical engineer.

Routine Maintenance Inspections

Purpose: Ensure man-made items (e.g. drainage channels and surface covers) on slopes function well according to the basic maintenance requirements.

Engineer Inspections for Maintenance

Purpose: Assess slope condition, prepare or update the Maintenance Manual, and recommend the necessary maintenance works, etc.



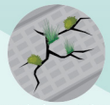
Core Inspection Items



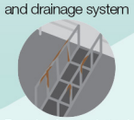
Clearance of blockage of drainage system



Repair of damaged slope surface cover and drainage system



Removal of vegetation that has caused damage of slope surface cover and drainage system



Repair of rusted steel slope furniture

Alarms for Immediate Engineer Inspection for Maintenance



Widening Cracks



Bulging Walls



Signs of Pipe Leakage



Settling Ground

Inspection Personnel: Property Management Staff or Maintenance Staff

Such inspections do not demand professional geotechnical knowledge.

Recommended Frequency: Annually

Inspection Personnel: Registered Professional Engineer (Geotechnical)

Must be carried out by a professionally qualified geotechnical engineer.

Recommended Frequency: Every 5 Years

MAINTENANCE FOR NATURAL TERRAIN HAZARD MITIGATION MEASURES

Types of Mitigation Measures

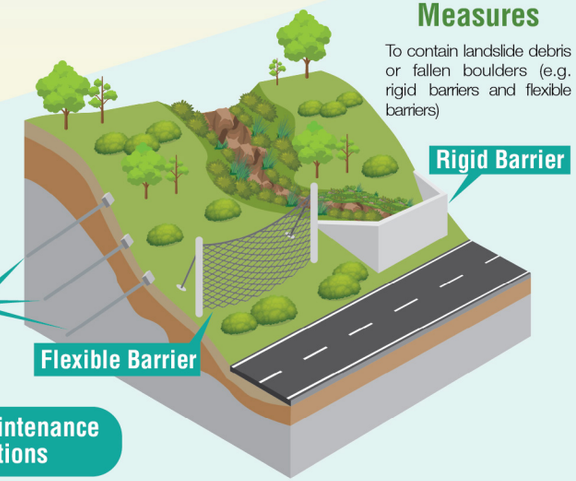
Stabilisation Measures

To prevent failure (e.g. soil nails, rock dowels, rock bolts, concrete buttresses, raking drains and retaining walls)

(Routine Maintenance Inspections for soil nails, rock dowels, rock bolts and concrete buttresses less than 3m high are normally not required)

Defence Measures

To contain landslide debris or fallen boulders (e.g. rigid barriers and flexible barriers)



Maintenance Requirements

Routine Maintenance Inspections



Inspection Personnel: Property Management Staff or Maintenance Staff

Such inspections do not demand professional geotechnical knowledge.

Recommended Frequency: Annually

To ensure continued satisfactory performance of the measures, preferably complete the annual inspections before the wet season, and inspect Defence Measures and clear any significant volume of debris accumulated after a heavy rainstorm.

Core Inspection Items for Defence Measures



Clear debris



Repair damaged sections



Unblocking weepholes



Trimming trees affecting flexible barriers

Engineer Inspections for Maintenance



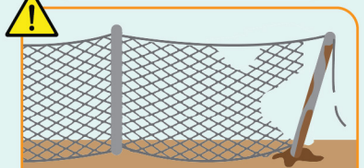
Inspection Personnel: Registered Professional Engineer (Geotechnical)

Must be carried out by a professionally qualified geotechnical engineer.

Carry out if specified in the Maintenance Manual

If unusual conditions or problems are spotted, please seek advice from a professionally qualified geotechnical engineer.

Special Follow-up Review for Flexible Barriers



A Special Follow-up Review by a geotechnical engineer should be arranged when severe damage to flexible barriers, overturning of posts, slackening of upslope wire ropes or severe rusting of main components are observed.