



計劃背景

香港多雨、多山、人口稠密，山泥傾瀉對公眾構成相當程度的風險。香港亦有一段慘痛的山泥傾瀉歷史。自1977年起，改善斜坡安全一直是土力工程處的重要工作目標。經過多年的努力，我們已成功降低香港的人造斜坡山泥傾瀉風險。

可是，極端天氣近年在世界各地帶來不少山泥傾瀉災害，釀成重大傷亡和經濟損失。一旦香港遇上特大降雨事件，也有可能發生造成多人死亡及其他嚴重後果的山泥傾瀉。因此，我們需要繼續防治山泥傾瀉的工作，提高抗災能力以應對極端天氣的潛在影響。

成效顯著



「長遠防治山泥傾瀉計劃」成效顯著，國際間引以為範。

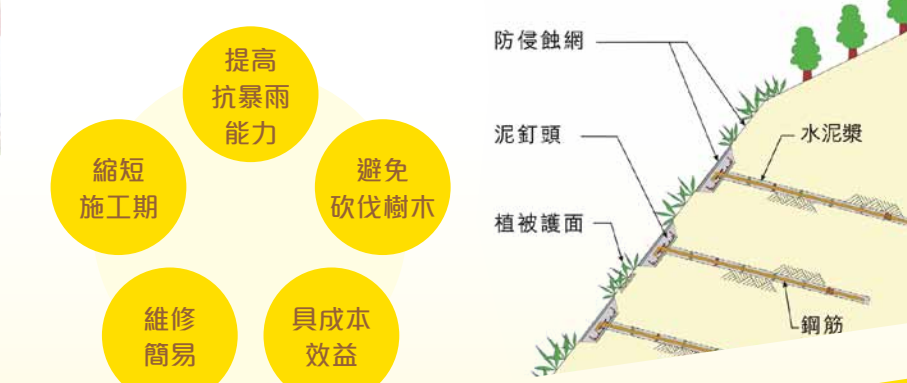


每年目標

- 鞏固150個不合乎標準的政府人造斜坡
- 為30幅有風險的天然山坡進行研究及施行必需的風險緩減工程
- 為100個私人人造斜坡進行安全篩選研究

泥釘技術

泥釘技術透過為土體加上鋼筋及灌漿增強泥土抗剪力。自90年代起，我們已廣泛應用泥釘來鞏固斜坡及擋土牆。其優點包括：



時域反射法

我們於2004年自行研發「時域反射法」，在不對泥釘造成任何破壞的情況下，測量泥釘的長度及水泥漿的質量，確保施工水平。



三維電腦模擬

我們利用先進的三維電腦模擬協助設計防治山泥傾瀉的方案及研究嚴重山泥傾瀉。



天然山坡排水隧道

我們於半山區實地地一段一幅高風險天然山坡的防治工程中採用創新方法。該項目利用地下排水隧道結合172條排水豎管來提高山坡的穩定性，榮獲工程創意獎項。



柔性防護網

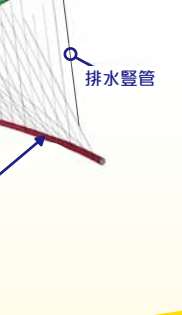
我們近年應用柔性防護網來攔截天然山坡山泥傾瀉的泥石。這種防護網更能融入自然環境，進一步減少對環境的影響。



保留具文物價值的砌石牆和石牆樹



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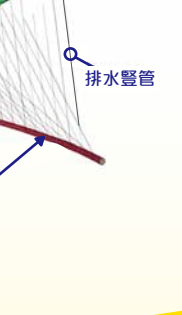
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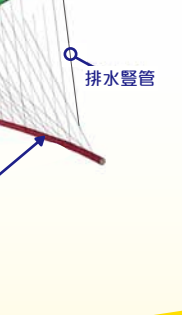
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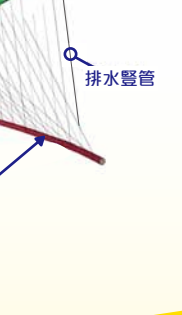
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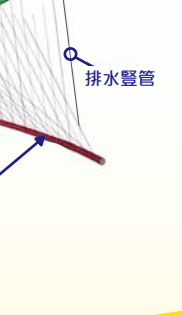
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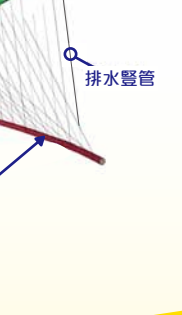
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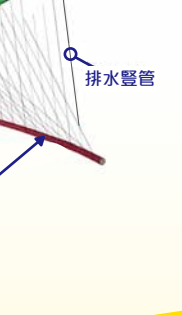
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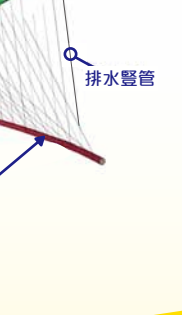
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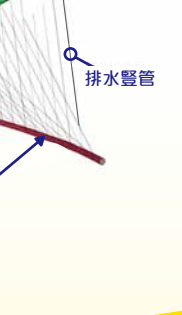
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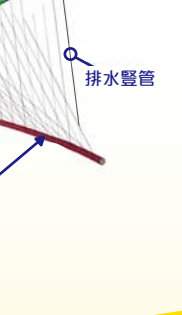
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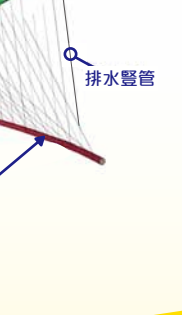
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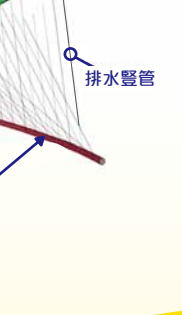
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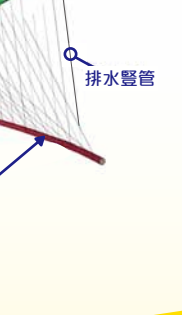
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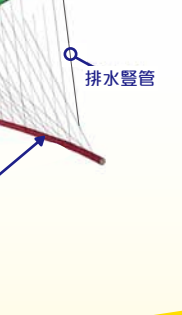
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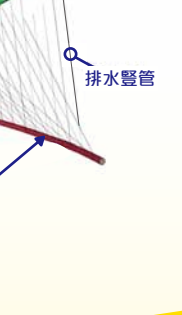
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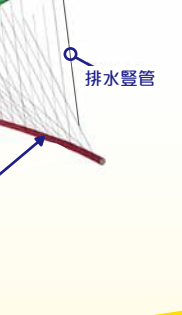
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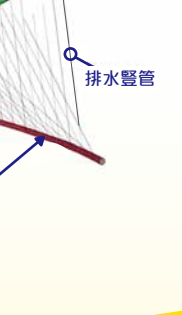
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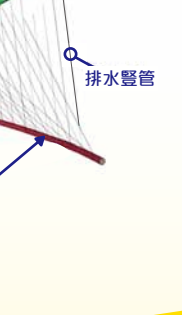
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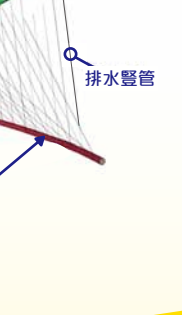
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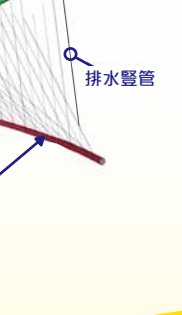
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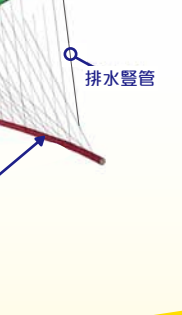
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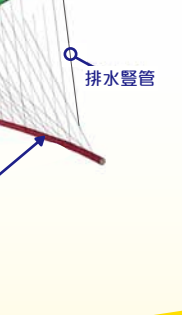
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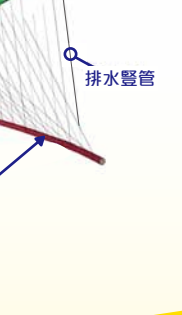
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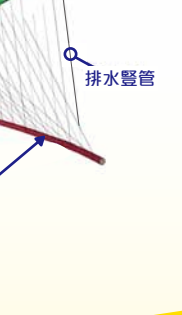
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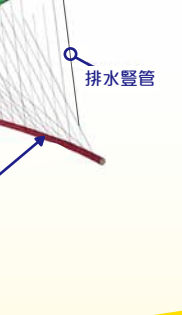
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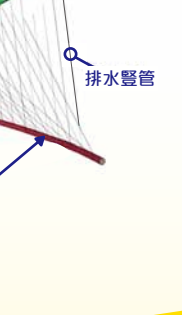
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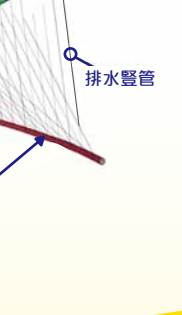
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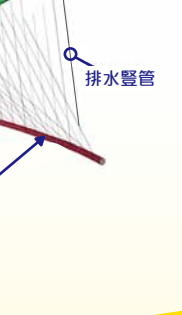
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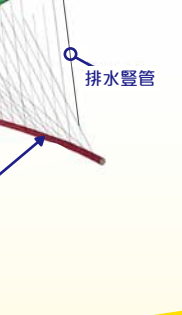
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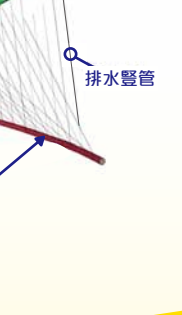
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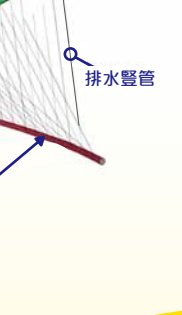
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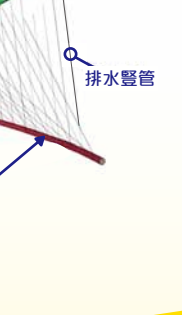
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Landscape enhancements

The collage consists of three images. The left image shows a man in a suit standing and pointing at a screen, addressing a group of people seated in a room. The middle image shows a group of people, some wearing red and white shirts, working in a field, possibly planting or tending to crops. The right image shows a group of people in a field, with some individuals wearing red and white shirts, engaged in an outdoor activity.

The Geotechnical Engineering Office of the Civil Engineering and Development Department is implementing a long-term rolling programme, known as the Landslip Prevention and Mitigation Programme, to reduce systematically the landslide risks of man-made slopes and natural hillsides affecting existing facilities. Over the years, we strive to contain the landslide risks in Hong Kong at a reasonably low level.

Soil nailing technique

Soil nailing improves the shear strength of the soil mass by means of steel bars and grouting. We use soil nails extensively to stabilise slopes and retaining walls since 1990s. The merits include:

- Enhance resilience against severe rainstorms
- Shorten construction period
- Avoid tree felling

Erosion control mat
Soil nail head
Cement grout
Vegetation cover
Steel bar

The three-dimensional debris mobility model to design landslide mitigation works and to study serious landslides.



Ease of maintenance



Cost effective

Time Domain Reflectometry (TDR)

In 2004, GEO successfully developed TDR as a non-destructive testing method to check the length and grout integrity of soil nails for quality control.



Flexible barrier

We have applied flexible barriers in recent years to intercept landslide debris from natural hillsides. Such barriers blend in better with the natural environment and minimise environmental impact.



We have established state-of-the-art three-dimensional debris mobility model to design landslide mitigation works and to study serious landslides.

We adopted innovative measures to stabilise a highly vulnerable natural hillside at Po Shan, Mid-levels. The construction of drainage tunnels with a total of 172 sub-vertical drains is an award-winning project.

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and wall trees of heritage value

Adopt landscape architects' input

Preserve trees and provide a vegetated slope cover

A collage of images illustrating green infrastructure. On the left, a green wall with a walkway is labeled "Blend slope works with natural landscape". On the right, a green wall is labeled "Plant native species to enhance the ecology". Below these labels are five small images: yellow flowers, a dragonfly, a pink flower, a butterfly, and purple flowers.

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土木工程拓展署轄下的土力工程處正推行「長遠防治山泥傾瀉計劃」，有系統地持續處理影響現存設施的人造斜坡和天然山坡，務求將香港的山泥傾瀉風險長遠控制在合理的低水平。