

大嶼山嶼南路的防止山泥傾瀉計劃 一個美化環境的典範

Landslip Preventive Measures Programme in South Lantau Road, Lantau
A Success Example to Landscape Environment







前言•Foreword

香港特區政府視美化環境為重要的政策。因此，土木工程拓展署轄下的土力工程處在推行防止山泥傾瀉計劃時，會着意美化所有被鞏固的人造斜坡和擋土牆。

2001年至2004年間，本處在南大嶼山鞏固24幅人造斜坡及擋土牆時，亦致力使它們跟周圍環境融為一體，以收和諧美觀之效。

本相片集輯錄了本處美化環境的成果。特此鳴謝合樂中國有限公司和香港大學的侯智恆博士協助製作本相片集。

陳健碩



土木工程拓展署
土力工程處處長
陳健碩

2008年3月

Landscaping the environment is a major policy of the Government of the Hong Kong Special Administrative Region. Under the Landslip Preventive Measures (LPM) Programme, the Geotechnical Engineering Office of the Civil Engineering and Development Department will landscape all upgraded man-made features.

During the upgrading works for 24 man-made slopes and retaining walls carried out between 2001 and 2004 in South Lantau, the GEO made a lot of effort to ensure that they blended in well with the surrounding environment.

This photo album records the outcome of GEO's effort on landscaping the environment. We would like to acknowledge Halcrow China Limited and Dr Billy Hau of the University of Hong Kong for their contribution in producing this album.

Raymond K S Chan
Head, Geotechnical Engineering Office
Civil Engineering and Development Department
March 2008

南大嶼山 South Lantau

南大嶼山是一個寧靜怡人，風光如畫的地方。由於它的天然風貌並未受城市急速發展的影響，因而成為市民及遊客的旅遊勝地。

南大嶼山有很多舒適的海灘。當中的銀礦灣，水清沙幼，三面環山，是一個暢泳及日光浴的好去處。另一個長沙海灘，連綿兩公里，是全香港最長的泳灘。

由於擁有得天獨厚的天然環境，南大嶼山超過八成的地方已闢為郊野公園。貫穿這些郊野公園是遠足人士所熱愛的鳳凰徑。它長達70公里，沿路有很多營地、野餐和燒烤場，以及美不勝收的景點，讓郊遊人士可以享受愉快的時光。

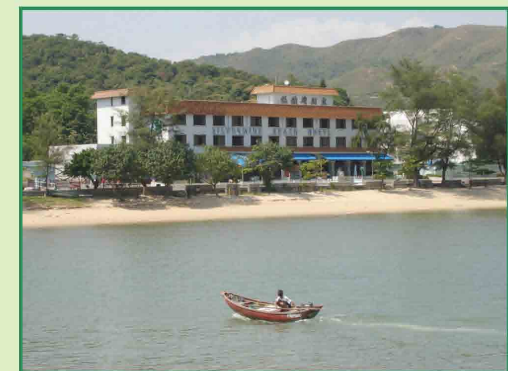
嶼南路是南大嶼山的主要道路，東起梅窩，西至石壁。沿路兩旁都是村落、田園和海灘，景色怡人，不同種類的林木隨處可見。

South Lantau is a peaceful and picturesque place, which attracts many visitors. The main attractions are its natural vistas that have not yet been affected by the rapid growth of urban development in Hong Kong.

Many pleasant beaches are located in South Lantau. With fine sand and sheltered waters, the Silver Mine Bay Beach is one of the popular beaches for swimming and sunbathing. Cheung Sha Beach, spanning 2km, is the longest beach in Hong Kong.

Country parks cover over 80% of South Lantau. The 70 km long Lantau Trail, which traverses the country parks, offers many captivating scenic spots along the way. There are also many campsites, picnic and barbecue areas for visitors.

South Lantau Road is the main local distributor in South Lantau starting from Mui Wo on the east and ending at Shek Pik on the west. Along the two sides of the road are small local villages, green fields and beaches. Various plant species can be found along the route.



防止山泥傾瀉計劃的斜坡鞏固工程 Slope Upgrading Works under the Landslip Preventive Measures Programme

90年代初期，嶼南路發生了多宗山泥傾瀉，導致該路多次長時間封閉，引起交通混亂，使乘客與居民非常不便。為免重蹈覆轍，土力工程處在防止山泥傾瀉計劃下，着手鞏固位於嶼南路梅窩至貝澳段的24幅斜坡。

早年，硬性護面在本港被廣泛採用。因此，嶼南路沿途的人造斜坡被蓋上了一塊塊硬梆梆的灰漿護面，外貌並不討好，亦跟周圍的天然景觀格格不入。有見及此，在鞏固位於嶼南路梅窩至貝澳段的24幅斜坡時，土力工程處對其外貌設計特別關注，引入園境設計及綠化措施，務求減低不協調的觀感，以改善南大嶼山的自然環境。

24幅人造斜坡的鞏固工程於2001年12月至2004年10月期間展開。由於它們大多數位處於郊野公園，這項工程是首項需要環境評估許可證的防止山泥傾瀉工程。多種美化技術及方法都用上了。當工程完成後，人造斜坡變得綠油油。更重要的是，斜坡上的植物得以自然演替。

這輯相片集展示了嶼南路的斜坡在防止山泥傾瀉計劃下一連串美化斜坡外觀的成功事例。

In the early 1990s, a number of landslide incidents occurred along South Lantau Road. The landslides resulted in the numerous closures of the road, which created a chaotic traffic situation causing inconvenience to passengers and local residents. To prevent recurrence of the situation, the GEO embarked on the upgrading works on 24 roadside features along the Mui Wo to Pui O section of South Lantau Road under the Landslip Preventive Measures Programme.

In the early days, provision of hard surface protection to slopes was a common practice in Hong Kong. Along the two sides of South Lantau Road,

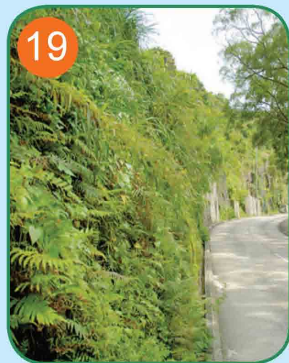
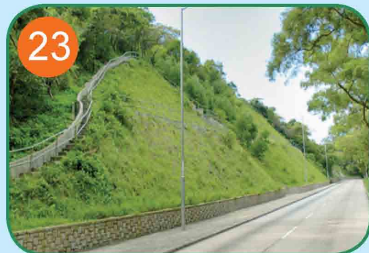


● 斜坡位置

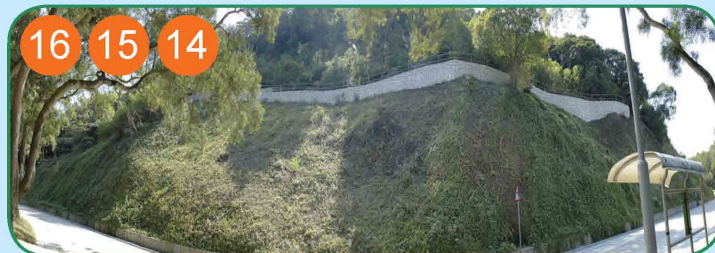
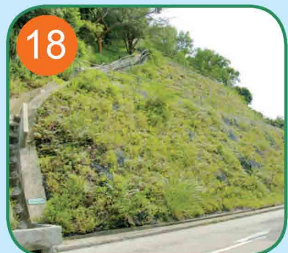
hard surfaced features were in prominence. The appearance of these features was quite out of place with the natural environment in South Lantau. In view of this, the GEO paid special attention to the landscape design when upgrading the 24 features in order to reduce their visual impact and enhance the natural environment of South Lantau.

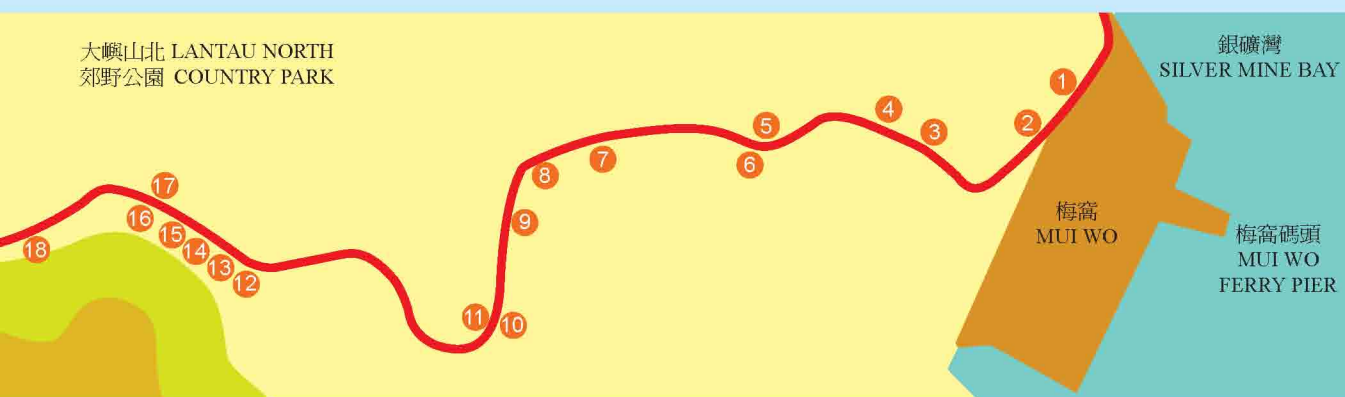
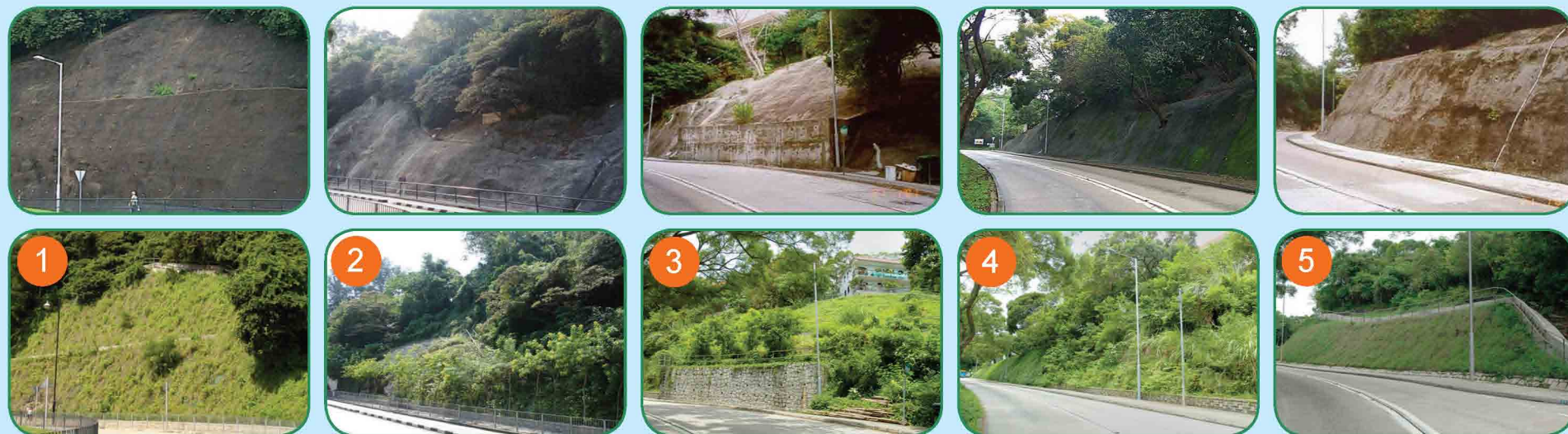
The upgrading works for the 24 features were carried out between December 2001 and October 2004. As most of the features are located within the country park area, this project was the first LPM project which required an Environmental Permit. Various landscaping techniques and treatments were applied to these features, providing a rich green surface cover, and more importantly, facilitating natural succession of the slope vegetation.

This album shows a series of success examples of providing landscape treatment to slopes upgraded under the LPM Programme along South Lantau Road.



24 幅被鞏固的斜坡在施工前後的樣貌





Appearance of the 24 features before and after upgrading





環境美化工程

Landscape Treatment



環境美化工程 Landscape Treatment

24幅斜坡及擋土牆的美化工程主要目的是令它們的外觀與周圍的天然環境融合。因此，工程設計時加入了不少園境美化元素，當中包括種植槽和麻石砌面，以及種植喬木、灌木和鮮艷的花朵等。

The landscape treatment was provided to enhance the appearance of the 24 features so that they could blend in naturally with the surroundings. The treatment included hardwork such as toe planters and random patterned masonry facing, as well as softwork such as shrubs, climbers and screen trees.





在斜度超過55度的斜坡上
採用特殊綠化技術的產品
Using proprietary system to green slopes
with gradient steeper than 55°

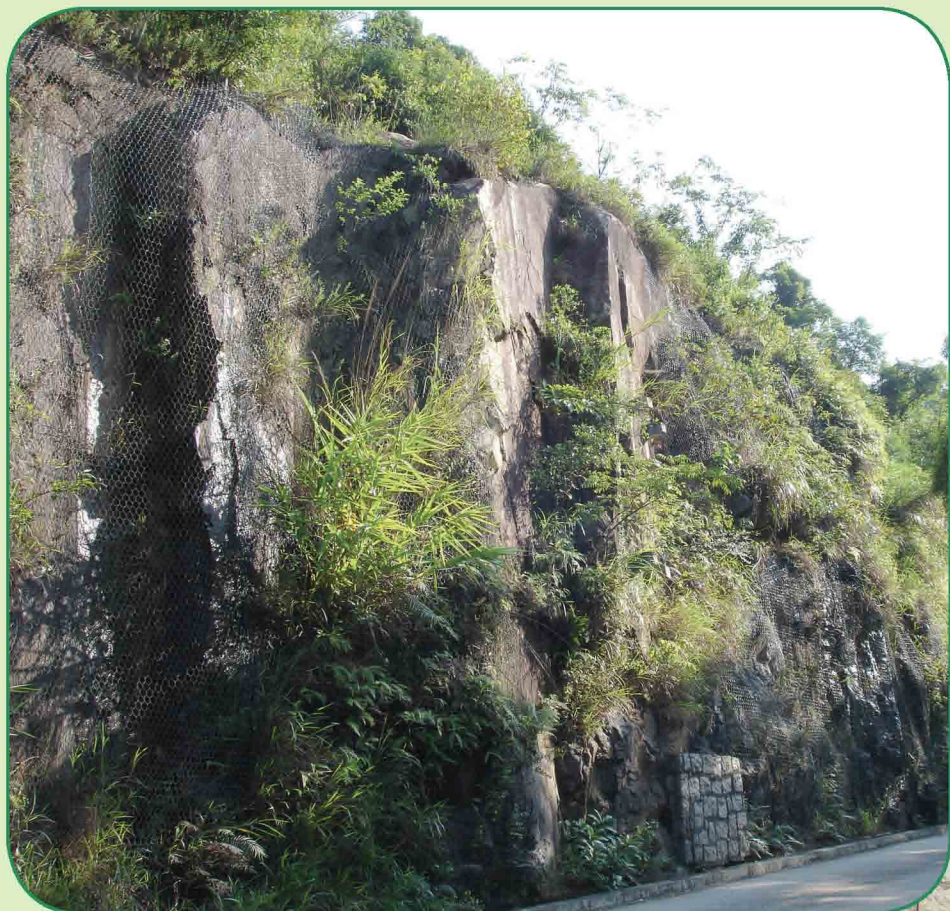




在擋土牆或斜坡面上砌上麻石
圖案及種植攀緣植物以作點綴

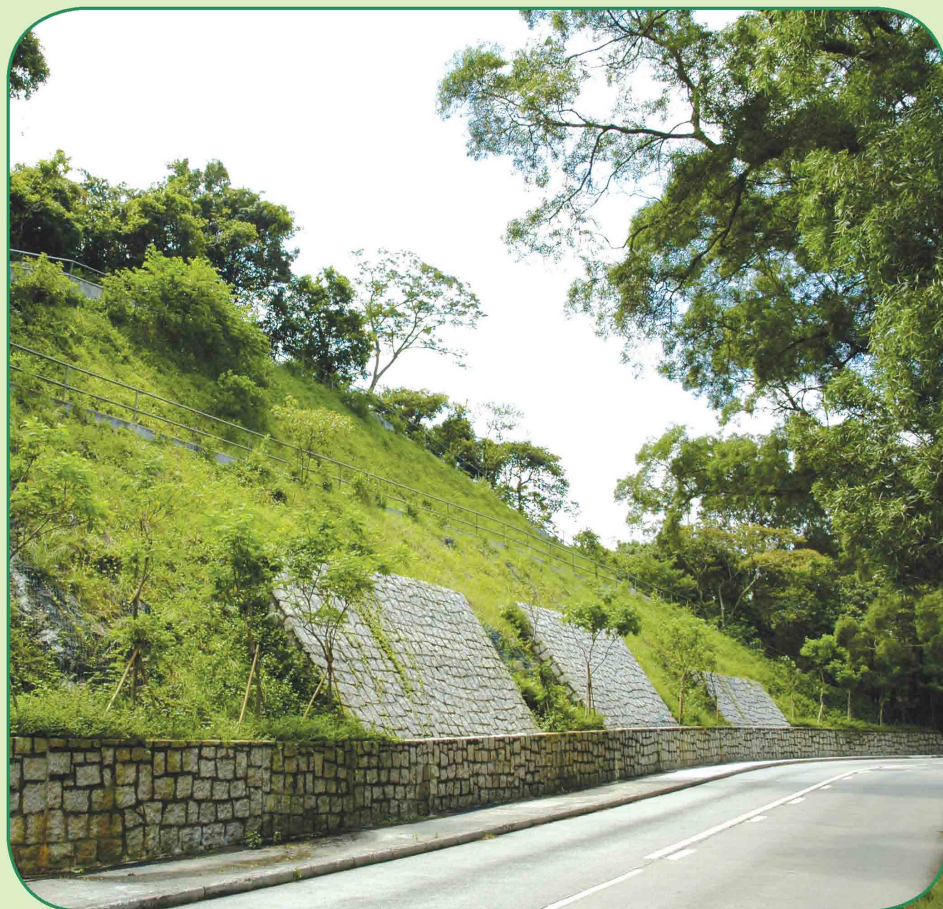
Using random patterned stone
pitching and planting climbers on
retaining wall or slope surface to
create natural appearance





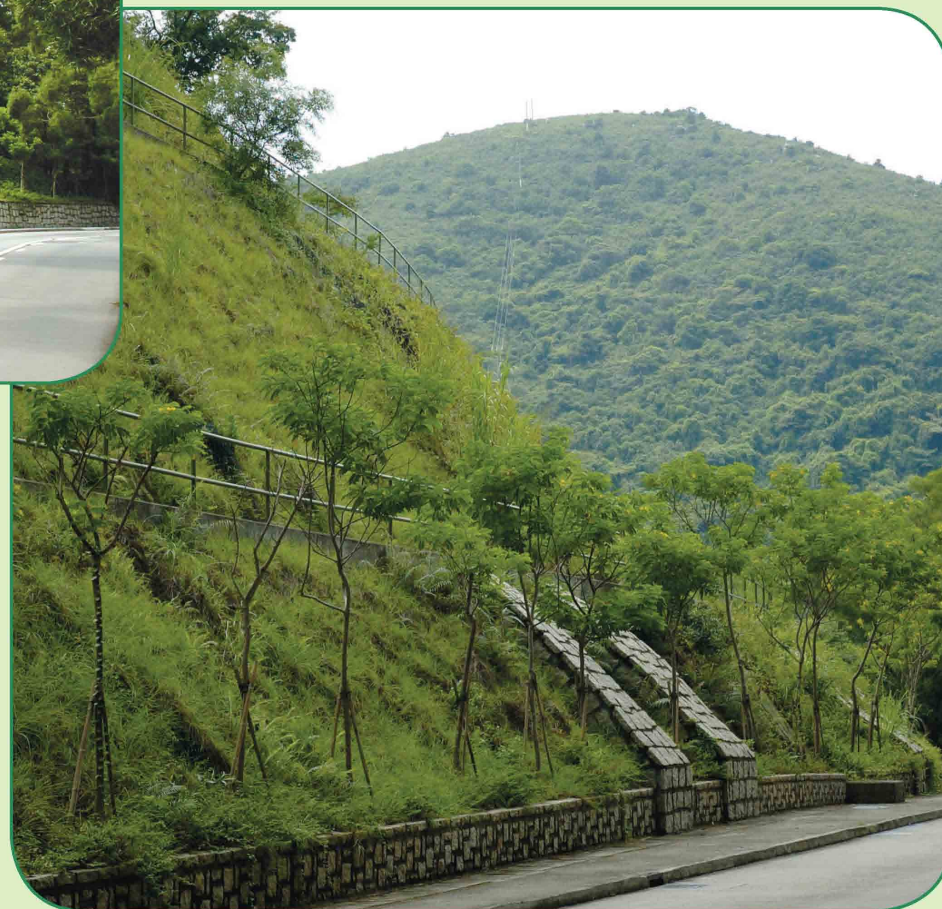
爲扶壁砌上麻石圖案
與石坡的粗糙面融爲一體
Providing masonry facing blocks buttresses
to integrate with the rough rock face



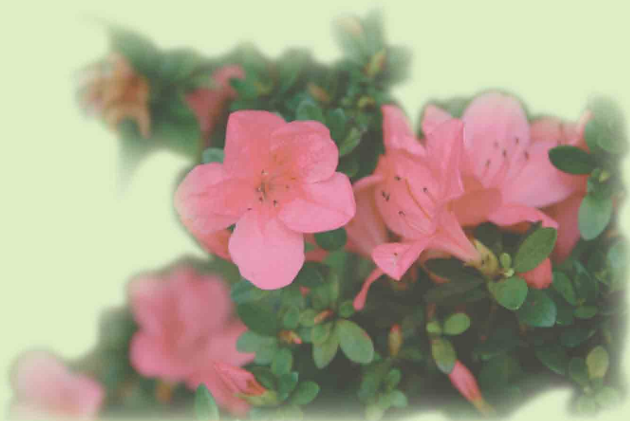
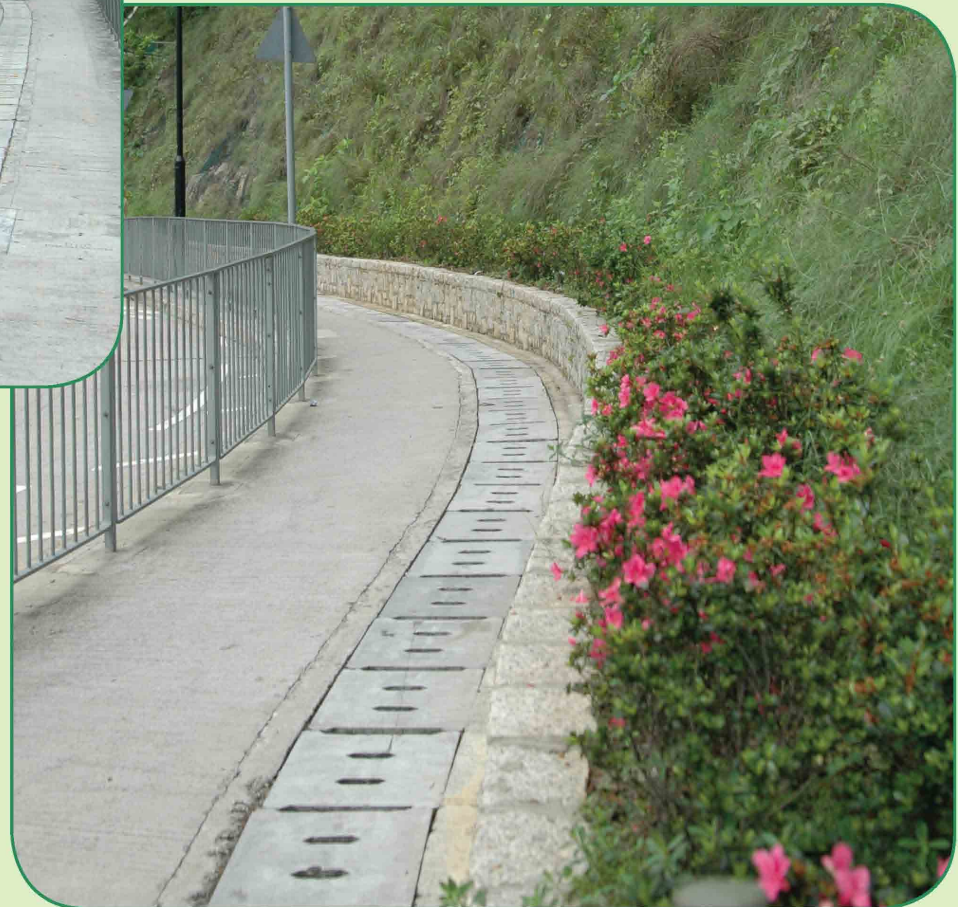


沿斜坡底建造花槽及種植樹木
加添青葱氣息

Planting trees or shrubs in toe planters to
add delightful greenery to the road



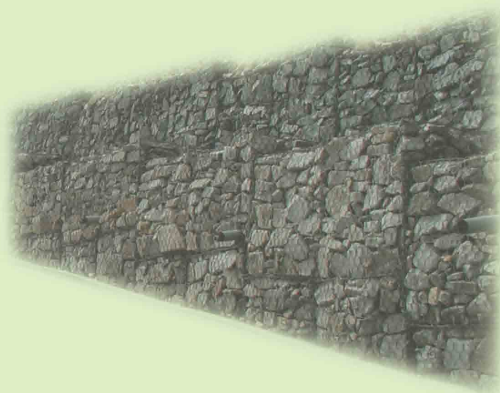
在坡腳種植花卉，讓路人賞心悅目
Planting flower-bearing species to
present a pleasant sight to road users





以石籠牆代替混凝土擋土牆
營造天然效果

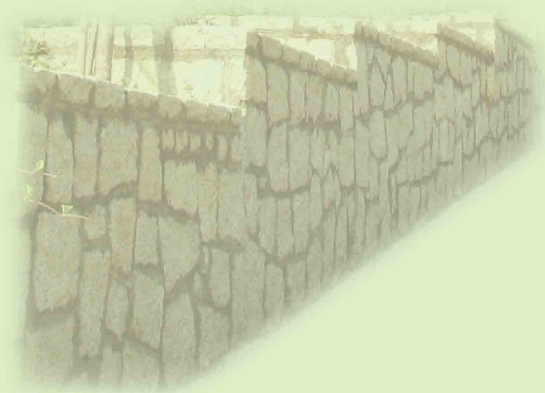
Using gabion walls instead of
concrete walls to create
a more natural looking feature





沿斜坡底建梯級式麻石面花槽
以配合地形及景觀

Using stepped masonry faced toe
planters to match with the surrounding
topography and existing landscape





在填土坡上種植灌木及喬木
可自然揉合四周的林木
Planting shrubs and trees on fill slopes
to blend the slope naturally into
the surrounding woods





綠化斜坡的進程



*Progress of
Vegetation Establishment*

綠化斜坡的進程 Progress of Vegetation Establishment

沿嶼南路兩旁綠化24幅斜坡的成績是令人鼓舞的。雖然綠化工作會隨着季節的轉變而顯示出不同程度的效果，但總括來說，綠化的成效逐漸變得明顯。以下一些例子說明這幾年來有關斜坡的綠化進程，它一再證明綠化斜坡的努力不是徒然的。



The results of the 24 upgraded Lantau Road are encouraging. Although there are seasonal changes on the degree of greening of these features, the progressive establishment of vegetation on slopes has been evident. The following pages give some examples illustrating how this has happened over the past few years. Undoubtedly, the effort on greening the features is worth spent.





2001

斜坡鞏固前 Before Upgrading Works

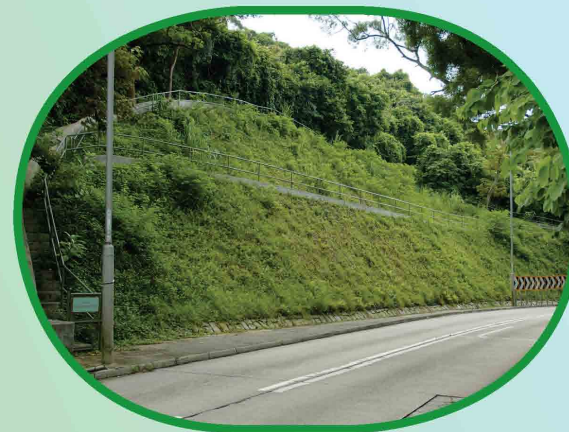


2004

斜坡鞏固後 After Upgrading Works



2005



2007





2001

斜坡鞏固前 Before Upgrading Works



2004

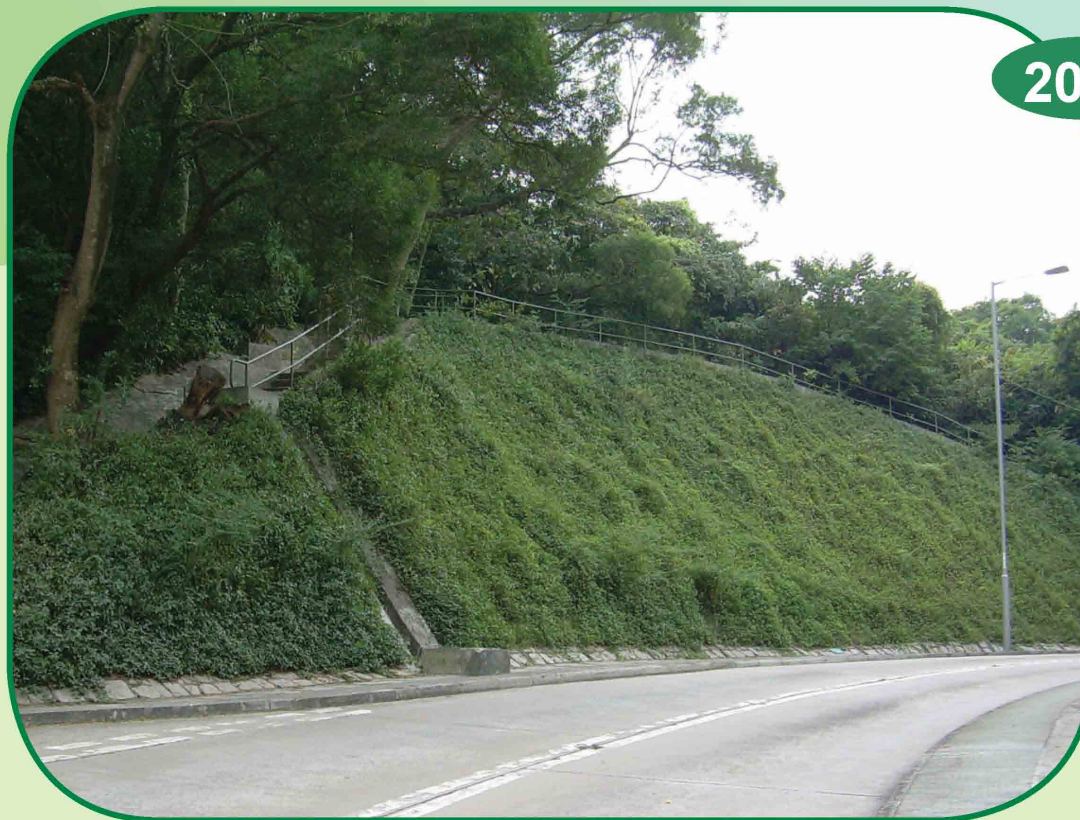
斜坡鞏固後 After Upgrading Works



2005



2006





2001

斜坡鞏固前 Before Upgrading Works



2003

斜坡鞏固後 After Upgrading Works



2004



2006





2001

斜坡鞏固前 Before Upgrading Works



2005

斜坡鞏固後 After Upgrading Works



2006



2007





2001

斜坡鞏固前 Before Upgrading Works



2005

斜坡鞏固後 After Upgrading Works



2006



2007





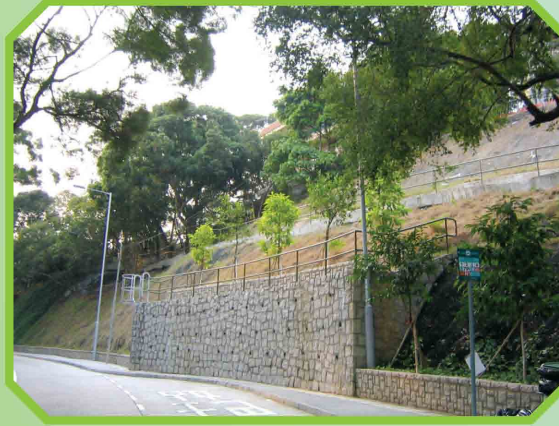
2001

斜坡鞏固前 Before Upgrading Works



2004

斜坡鞏固後 After Upgrading Works



2006



2007





生態優化

Ecological Enhancement



生態優化 Ecological Enhancement

土力工程處爲了提高24幅人造斜坡的生態價值，廣泛採用本地種植物。在景觀美化設計中選擇適合的植物品種，有助促進斜坡植被的自然演替及吸引野生動物到來棲息。在嶼南路經過鞏固工程的斜坡上，可見植物品種的繁衍以及各種動物如雀鳥、蝴蝶、昆蟲、爬行動物等正逐步增加。

The GEO have strived to enhance the ecological value of the area by planting native species on the 24 features wherever practicable. Choosing the appropriate plant species in the landscape design helps increase the attractiveness of the features to wildlife and hence promote natural plant succession. Gradual increase in species of plants and animals such as birds, insects and reptiles was recorded at the features along South Lantau Road after completion of the slope upgrading works.



山黃麻
Trema tomentosa



海金沙
Lygodium japonicum



血桐
Macaranga tanarius



細葉榕
Ficus microcarpa



粗葉榕
Ficus hirta



黑面神
Breynia fruticosa



蜈蚣草
Pteris vittata



烏毛蕨
Blechnum orientale

本地種植物正在自然更新。
Regeneration of local plant species is taking place.



殘鏢線蛱蝶
Limenitis sulpitia



馬纓丹
Lantana camara



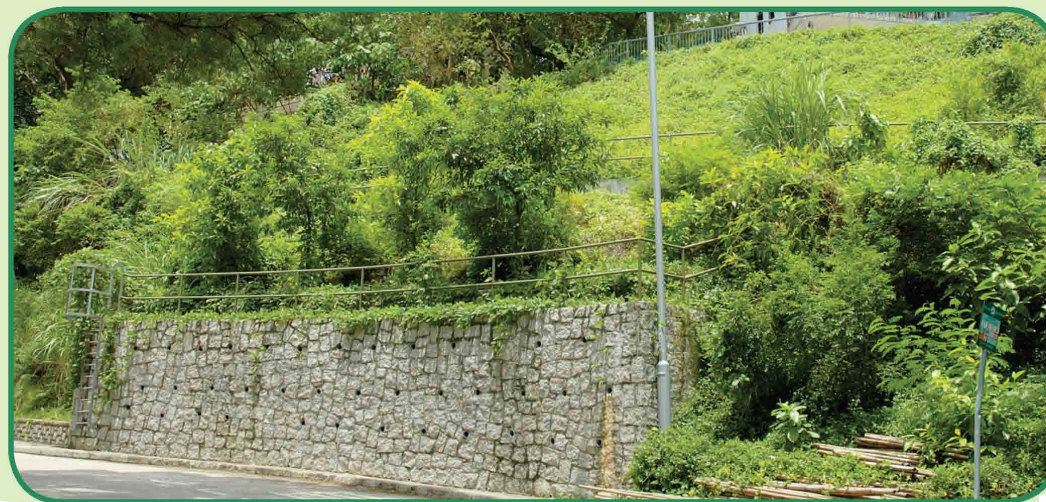
紅耳鵲
Pycnonotus jocosus



貓尾草
Uraria crinita



龍珠果
Passiflora foetida



報喜斑粉蝶
Delias pasithoe



同型巴蝸牛
Bradybaena similaris



三裂葉蟛蜞菊
Wedelia trilobata



木蘭青鳳蝶
Garphium doson



野葛
Pueraria lobata

種植適當的植物品種，令植被生生不息，從而吸引
野生動物到來棲息覓食，促進該處的生物多樣性及自然演替。

Planting suitable species increases the attractiveness of the features to wildlife, and enhance biodiversity, natural succession and sustainability of slope vegetation covers.



大華麗蜾蠃
Delta petiolata



嶺南山竹子
Garcinia oblongifolia



紋藍小蜻
Diplacodes trivialis



小葉馬纓丹
Lantana montevidensis



蒲公英
Taraxacum mongolicum



直紋稻弄蝶
Parnara guttata

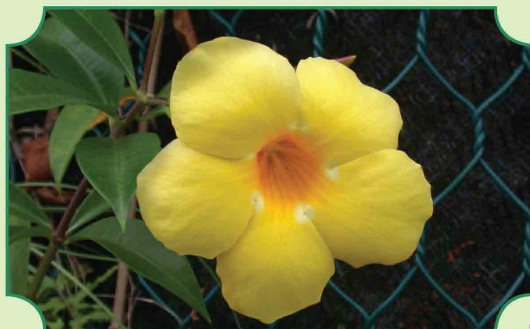


紅毛草
Rhynchelytrum repens



大木林蜘蛛
Nephila pilipes

經過綠化後的斜坡，草葉繁茂，為各類昆蟲提供充足糧食。
The vegetated feature provides insects with food resources.



軟枝黃蟬
Allamanda cathartica



一點紅
Emilia sonchifolia



紫心牽牛
Ipomoea obscura



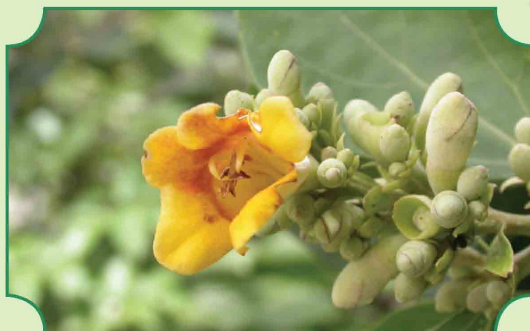
白花燈籠
Clerodendrum fortuneatum



黃馬纓丹
Lantana camara cv. *Flava*



紫杜鵑花
Rhododendron pulchrum
var. *phoeniceum*



石梓
Gmelina chinensis



野牡丹
Melastoma candidum



紫玉盤
Uvaria macrophylla

在經過綠化的斜坡上，可以找到各種花朵，爭妍鬥麗。
Different plant species with pleasant flowers can be seen on the vegetated features.



假地豆
Desmodium heterocarpon



白背葉
Mallotus apelta



馬纓丹
Lantana camara



石斑木
Raphiolepis indica



銀柴
Aporosa dioica



嶺南山竹子
Garcinia oblongifolia



毛梔
Melastoma sanguineum



假蘋婆
Sterculia lanceolata

各樣的植物結出纍纍果實，悅人眼目。
Various plant species bear seeds and fruits.



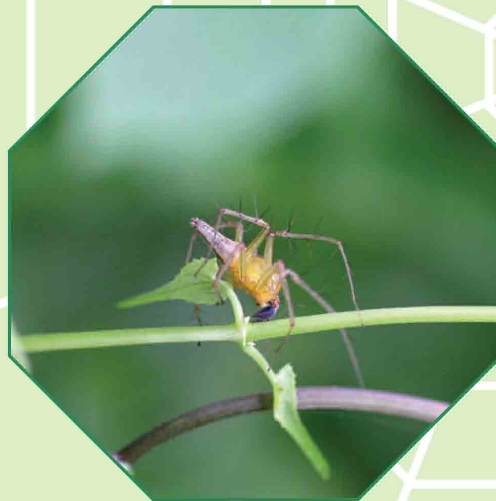
大腹園蛛
Araneus ventricosus



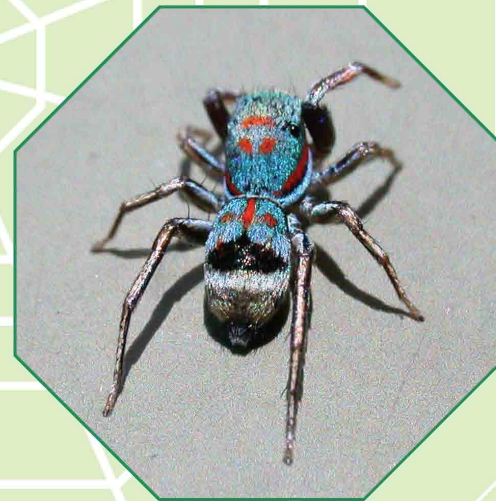
好勝金蛛
Argiope aemula



大木林蜘蛛
Nephila philipes

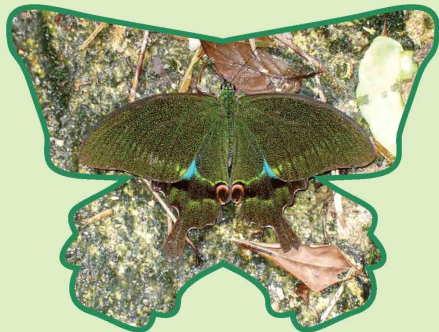


細紋貓蛛
Oxyopes macilentus



翠蛛屬
Siler sp.

蜘蛛在大自然環境中修網築家。
Spiders are making home in the natural environment.



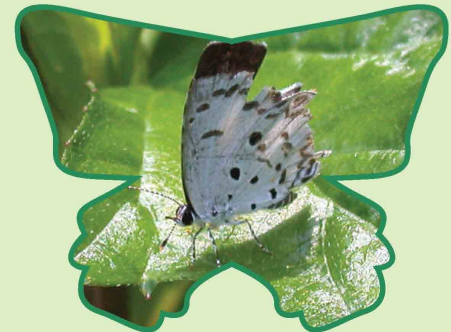
巴黎翠鳳蝶
Papilio paris



中環蛺蝶
Neptis hylas



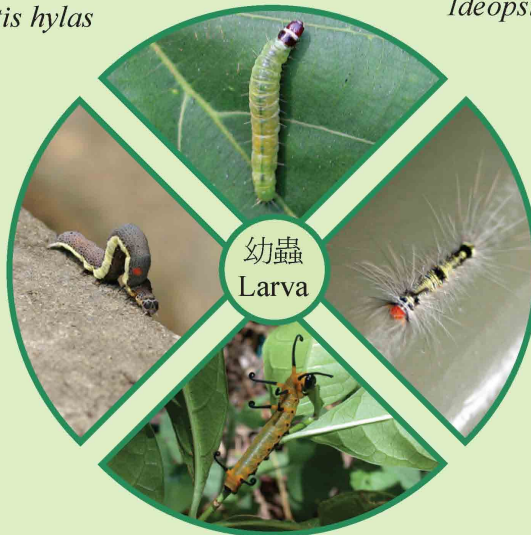
擬旖斑蝶
Ideopsis similis



鈕灰蝶
Acytolepis puspa



藍點紫斑蝶
Euploea midamus



幼蟲
Larva



酢醬灰蝶
Zizeeria maha



小眉眼蝶
Mycalesis mineus



銀線灰蝶
Spindasis lohita

綠化了的斜坡吸引了各式蝴蝶爭相探訪，傳播花粉及繁衍後代。
Butterflies are attracted to the vegetated features,
propagating pollen and bearing offsprings.

變側異腹胡蜂
Parapolybia varia



果馬蜂
Polistes olivaceus



叉胸側異胡蜂
Parapolybia nodosa



東方蜜蜂
Apis cerana



竹木蜂
Xylocopa nasalis

蜜蜂及胡蜂在植物之間穿梭覓食。
Bees and wasps are looking for food in the vegetation.



南蚱蟬
Cryptotympana holsti



卵圓圓腹象
Blosyrus herthus



箭痕腺長蝽
Spilostethus hospes



三帶隱頭葉甲
Cryptocephalus trifasciatus



異負泥甲
Lilioceris impressa



金斑虎甲
Cicinclela aurulenta



沫蟬
Cosmoscarta heros

只要細心觀看，不難找到各類顏色鮮艷的小昆蟲。
Various kinds of colourful insects are spotted on the vegetated features.



黑翅竹蝗
Ceracris fasciata



蝗
Ceracris sp.



蚱
Tetruic sp.



黑條蝻
Ducetia japonica



黑尾灰蜻
Orthetrum glaucum



紋藍小蜻
Diplacodes trivialis



慶褐蜻
Trithemis festiva



狹腹灰蜻
Orthetrum sabina

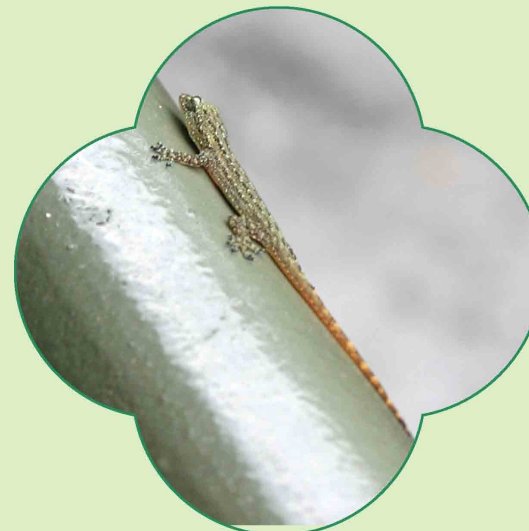
蜻蜓在枝葉上稍作憩息，草蜢在草叢中蓄勢待躍。
Dragonflies are resting on the leaves and grasshoppers are ready to launch.



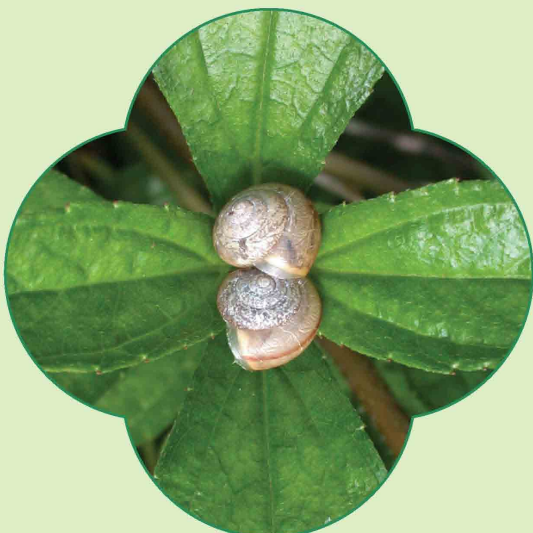
褐雲瑪瑙螺
Achatina fulica



暗綠繡眼鳥
Zosterops japonica



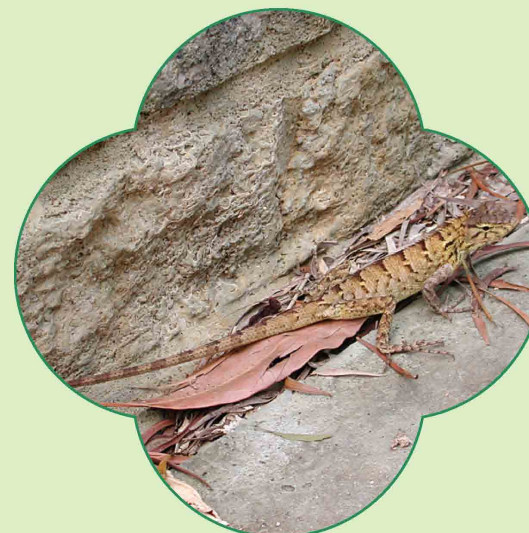
原尾蜥虎
Hemidactylus bowringii



同型巴蝸牛
Bradybaena similaris



白腰紋鳥
Lonchura maja



變色樹蜥
Calotes versicolor

蝸牛在綠葉中悠悠棲息，鳥兒在枝頭上高聲歌唱，
蜥虎在山坡上緩緩爬行，一片和諧景象。
Snails are relaxing, birds are singing and reptiles are crawling,
giving a peaceful and harmonious atmosphere.



結語

在「防止山泥傾瀉計劃」下，我們不僅鞏固了斜坡，亦同時為這些斜坡添加天然景觀。美化嶼南路的24幅斜坡是一個成功的典範。我們將延續這份使命：建設一個更安全、更綠化及更美好的生活環境。

Concluding Remarks

While we upgrade the safety of the slopes under the Landslip Preventive Measures Programme, we landscape them at the same time. This is well demonstrated in these 24 features along South Lantau Road. We will continue our mission to create a safer, greener and better living environment.



項目小檔案

- 管理部門： 土力工程處
防止山泥傾瀉部二
- 工程顧問： 合樂中國有限公司
- 工程承建商： 順源建築有限公司
- 園境設計顧問： 雅邦規劃設計有限公司
- 工程合約編號： GE/2001/06
- 工程合約主題： 延續十年的防止山泥
傾瀉計劃第2期第A組
防止山泥傾瀉工程－大嶼山
- 工程合約總額： 約港幣七千五百萬元
- 工程細節： 開挖及再壓實填土坡；削坡；建造
扶牆；安置泥釘，岩釘及岩層錨杆；
改善斜坡排水系統；綠化斜坡及
有關園境美化工程
- 種植植物： (喬木:約1,600棵;灌木:約52,000棵)
- 工程期： 2001年12月至2004年10月

Project Information

- Managing Division: Landslip Preventive Measures
Division 2, Geotechnical
Engineering Office
- Engineering Consultants: Halcrow China Limited
- Contractor: Shun Yuen Construction
Company Limited
- Landscape Consultants: Urbis Limited
- Contract No. : GE/2001/06
- Contract Title: 10-year Extended LPM Project,
Phase 2, Package A,
Landslip Preventive Works
for Slopes on Lantau Island
- Contract Sum: about HK\$75M
- Works Details: Excavation and recompaction
of fill slopes, cutting back,
construction of buttress
walls, installation of soil nails,
rock bolts and rock dowels,
improvement of surface
drainage and landscaping works
- Vegetation Planted: (Trees:~1,600; Shrubs:~52,000)
- Construction period: December 2001 to October 2004



土木工程拓展署
Civil Engineering and
Development Department

