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 漁農自然護理署  
 Agriculture, Fisheries and  
 Conservation Department

## A Journey of a Thousand Miles

# Begins with the First Step

## Preface

Trails are the lifeblood of country parks. Stretching over 500 kilometres, these trails wind through high peaks, valleys, hills and forests, taking visitors to various corners of the parks. What may seem like a natural part of the landscape in the eyes of ordinary people actually require careful construction and regular maintenance. Drawing on decades of trail-building experience and recent research findings, our country park colleagues have prepared this series of newsletter titled "Trail Building@Country Parks". We hope to share with the public our knowledge and experience related to trail building. As the saying goes, "A journey of a thousand miles begins with the first step." Let's treasure these trails and enjoy more beautiful landscapes together.

Jackie Yip  
 Assistant Director (Country Parks)  
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## The Original Aspiration of Building Country Park Trails

The hiking trails that run across all country parks in Hong Kong may look simple and ordinary at first glance, but their functions extend far beyond mere passage routes. These trails serve education, nature conservation and recreation purposes all rolled into one. Hiking along a countryside trail can nourish the body and mind, providing an excellent opportunity to learn about the nature while fostering a caring attitude towards nature conservation.



Dr Wong Fook-ye, former Assistant Director of Agriculture, Fisheries and Conservation Department (AFCD), who joined the Department in the late 1970s, witnessed the concurrent development of country parks and the trail network. He explains, "Country park trails serve three functions that correspond well to the three objectives of country parks: nature conservation, education and recreation. Therefore, the two are consistent in their functionality, or in other words, hiking trails actually 'represent' country parks."

Why is it necessary to build and manage a criss crossing trail network in country parks which account for 40% of Hong Kong's total land area?

"Without these hiking trails, the public would have no access to the countryside to enjoy the natural environment and the recreational facilities there, not to mention education or nature conservation. As a result, it would be difficult for country parks to fulfill their roles."

In other words, hiking trails are one of the key components of country parks.

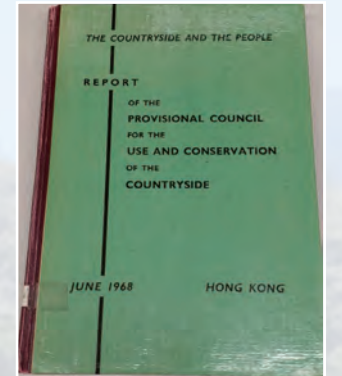
He points out that hiking trails provide numerous benefits. They serve as bridges between urban areas and the countryside, connecting the hustle and bustle of the city with the tranquility of the countryside, and bringing people from the artificial environment into the nature. Through hiking, visitors can also enjoy a wide panorama of the natural environment and fresh air, while socialising with fellow hikers and promoting their overall wellness through physical activity.

"The unique advantage of trails is further highlighted during extraordinary times. For example, during the SARS outbreak and the more recent COVID pandemic, hiking surged in popularity, surpassing activities like barbecuing and camping, and became the top mainstream countryside recreation activity."

In fact, long before the designation

of country parks in Hong Kong, many local hiking groups regularly organised trips to the countryside. These outings, which offered well-planned hiking routes and carefully drawn maps, received great popularity. However, at that time, hiking trails were not properly planned or managed, and conservation and maintenance efforts were virtually non-existent.

In June 1968, the Provisional Council for the Use and Conservation of Countryside set up by Sir David Trench, then Governor of Hong Kong, published a report titled *The Countryside and the People*. The report comprehensively reviewed the need for recreation and nature conservation in Hong Kong and acknowledged their importance. Notably, the chapter on Recreation mentioned that the extensive network of hill paths existed in the New Territories were increasingly used by urban residents for outdoor recreation. However, due to over-intensive use and a lack of maintenance, serious erosion had developed in some areas. The Council therefore recommended that the Government improve and maintain these hill paths to direct users to locations provided with such path facilities, and produce maps of existing trails for future reference.

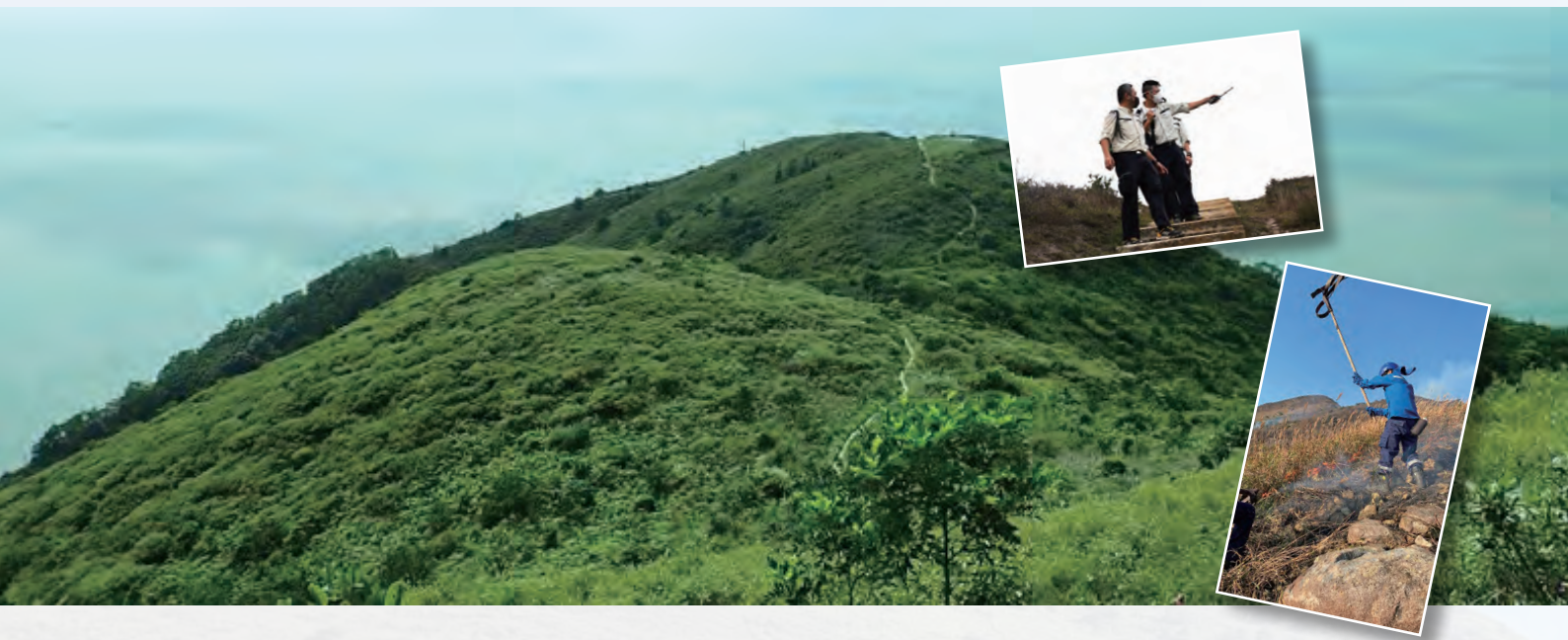


In less than ten years after the report, the first batch of Hong Kong Country Parks were designated in 1977. The hiking trail network was developed concurrently as an essential amenity.

Dr Wong emphasises that the establishment of country parks is essential for preserving our precious natural environment and resources. Thus, the trails within the parks must harmonise







with the natural environment and should not appear overly artificial.

“The construction methods and materials used for hiking trails in country parks aim to be natural and strive to minimise impacts on the natural ecological environment. If hikers build their own ‘private’ paths, it would not only degrade the natural landscape, but also pose dangers to visitors who are unfamiliar with the hiking routes.”

“This kind of trailblazing behaviour may stem from urban ‘dwellers’ desire to showcase their personal skills and experience, and to demonstrate their uniqueness and distinction from others. The truth is, we should always be humble while enjoying the natural environment of country parks or hiking along the trails. Visitors should set aside their urban mindset and refrain from bringing their everyday habits to the countryside. Being a self-centred and convenience-oriented sightseer is not the way to enjoy nature. We must respect the countryside, nature, and the daily lives of rural villagers. Don’t leave any rubbish or other traces behind; don’t

make noise; and don’t cause negative impacts to the wildlife, landscapes and soil.”

Dr Wong opines that the hiking trail network is a concept that countervails the urban culture.

“Although we now have adequate guidelines and regulations, visitors should also raise their moral standards accordingly. That is the way to shift from a human-oriented mindset to a nature-oriented way of thinking.”

On the other hand, since hiking trails are designed for people, it is crucial to consider the need for recreational activities. Thanks to the unique characteristics of the hiking trails, country parks in Hong Kong are deeply loved by locals and are renowned worldwide, attracting numerous visitors from the Mainland and abroad.

“One notable advantage is that our trails are highly accessible, safe, well-structured, and properly managed and maintained.”

“AFCD provides information on hiking routes through various channels. In addition to the comprehensive and useful



Countryside Maps published by the Lands Department, there are maps with grid references, distance posts, road signs, and warning signs along the hiking trails to offer clear location information and orientation for hikers on the spot. Together with the extensive mobile network coverage, regular patrols by the AFCD, Hong Kong Police Force and the Civil Aid Service, as well as rescue services provided by the Fire Services Department and Government Flying Service, hiking trails in Hong Kong allow people to travel safely.”

“In addition, our country parks provide varying types of trails, offering options of different lengths, distances, difficulties and elevations. Visitors can enjoy a variety of scenery, from mountains, oceans, rivers, rocks, villages to historical sites. The AFCD has also designed a selection of special routes, focusing on different themes and serving different functions, to provide country park visitors with diversified experiences which meet their needs.”



Dr Wong used “RAPID” to describe the characteristics of hiking trails in Hong Kong, which stands for **R**ich, **A**ccessible, **P**rotected, **I**nformed and **D**iverse.

“RAPID is also an appropriate description of our country parks. After all, hiking trails and country parks have an inseparable relationship. They complement each other and even integrate into one.”

Our original aspiration of building a hiking trail network was to achieve the consistent goal of country parks.

- Rich
- Accessible
- Protected
- Informed
- Diverse





# Our Country Park Trails



Currently, there are 25 country parks in Hong Kong, covering more than 40% of the territory's total land area. An extensive network of trails extends across these protected areas. Much like the flourishing foliage of a tree, this trail network stretches to different places, allowing us to connect with nature. Along the trails, visitors can appreciate beautiful landscapes, enjoy fresh air and revel in all the goodness of nature.

Hiking is one of the most popular activities in country parks, but this activity is possible only with a trail network.

Paths in the countryside were first created due to human or animal activities. Examples are hill paths built by hikers, ancient trails connecting villages or suburbs, and wildlife tracks created by migrating and foraging animals in early years. Since the designation of country parks, trails have been built, managed and maintained systematically. In response to the needs of social development and individual users, early hiking trails have progressively transformed into the diverse network of country park trails.

Years of meticulous planning and construction have resulted in a diverse type of trails that vary in lengths and difficulty levels. Some of these trails are even designed to provide nature education information or serve particular functions to meet the varied needs of country park visitors and make hiking a more enjoyable experience. Our country park trail network mainly comprises the following:



**4 Long-Distance Hiking Trails:** MacLehose Trail, Lantau Trail, Hong Kong Trail and Wilson Trail, which run across Hong Kong, Kowloon, the New Territories and Lantau Island, are made up of multiple sections. The distance posts along these trails have serial numbers beginning with M, L, H and W respectively.

The AFCD, as the government department responsible for managing country parks, also undertakes the planning, building, patrolling and maintenance of all these hiking trails in country parks. Over the years, our frontline staff have made dedicated contribution to ensuring that visitors can hike safely and enjoy the natural beauty of the countryside. However, as the awareness of nature conservation grows, the public has expressed grave concern about the construction methods and materials used for building and maintaining our trails. To help the public better understand how trails are built and raise their awareness of trail conservation, the AFCD has been promoting public engagement in trail maintenance activities. It is hoped that these collaborative efforts will further enhance our countryside trail network.



**13 Family Walks:** Gentle and easy short routes that are suitable for a leisurely walk in the country parks with the whole family.

**34 Country Trails:** These trails showcase local attractions and beautiful landscapes of specific areas. The distance posts along these trails have serial numbers beginning with C.

**15 Nature Trails:** Combining hiking with education and highlighting the special features of local natural attractions through the erection of trailside interpretation plates.

**15 Tree Walks** and a number of **Field Study Trails, Heritage Trails** and **Geo Trails:** These routes, themed around natural ecology, heritage, and geology, provide specialised information, allowing visitors to make their countryside journey both educational and enjoyable.

**4 Accessible Routes:** Designed with convenient accessibility features, these routes promote physically handicapped and able-bodied inclusion for enjoyment of the countryside by all.

**4 Jogging Trails, 2 Fitness Trails** and **15 Mountain Bike Trails:** Equipped with relevant facilities and designated routes, these trails cater to the needs of joggers, fitness enthusiasts, and cyclists, allowing them to enjoy their favourite sports in the countryside.

## Development Milestones of Country Park Trails

**1950-1951** Construction of three colour-coded walks (red, yellow and blue) in Tai Po Kau by the Forestry Division

**1973** Commencement of works for the first batch of Nature Trails

**1979** Commissioning of MacLehose Trail. This 100 km-trail comprising 10 sections stretches across Hong Kong from east to west through eight country parks.

**1984** Commissioning of Lantau Trail. This 70 km-trail comprising 12 sections traverses Lantau Island from south to north through two country parks.

**1985** Commissioning of Hong Kong Trail. This 50 km-trail comprising 8 sections runs across Hong Kong Island from west to east.

**1987** Establishment of the first Family Walk.

**1992** Establishment of the first batch of Tree Walks.

**1996** Commissioning of Wilson Trail. This 78 km-trail comprising 10 sections extends from the southern region of Hong Kong Island to the northern part of the New Territories through eight country parks.

**1997** Establishment of the first batch of Mountain Bike Trails.

**2016** Rolling out of the pilot public engagement programme for the Trail Maintenance Workshop

**2020** Permission for the first batch of trained trail volunteers from non-government organisations to help clean up drains and block shortcuts in country parks.

**2020** Organisation of the first "You Give A Hand" public engagement activity.

## The First Step in Building a Trail: Planning and Design

### Factors to Consider

As trail construction works cover extensive areas of the countryside, careful planning and design are vital before implementation of works. Related factors must be taken into account, and the unique characteristics of each location should be noted. Then, a practical design of a hiking trail can be developed that meets visitors' needs while preserving our natural environment. To align with country park management goals, a number of factors, such as local environmental settings and technical issues, have to be considered during trail planning.

Trails are built for hikers. It is important to understand their preferences and needs, as well as what they find attractive in a particular route, such as the scenery along the way, cultural heritage, visitor facilities, etc.

In fact, easy accessibility to boarding locations of public transportation is a primary consideration for many visitors when it comes to choosing hiking trails. Therefore, at the planning stage, it is important to consider the ancillary transport facilities in the area, including nearby road networks and public transport services available, and to arrange the



starting point, end point and meeting point of the trail rationally.

While it is true that country park trails are designed for visitors, protection of nature remains a fundamental principle that must be upheld. A trail should blend into the natural environment as much as possible, and minimise any adverse impacts to nature. Various natural elements need to be examined prior to the construction works, such as landscape morphology, soil type, soil stability, etc. It is also crucial to avoid harming local wildlife and to protect important and sensitive habitats.

Besides, Hong Kong's countryside is rich in monuments, such



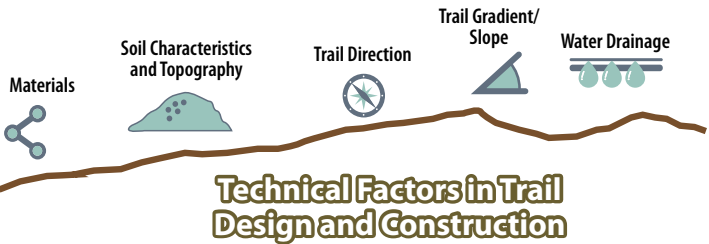


as ancient villages or wartime relics, which may command significant historical value. Trails should be planned thoroughly to avoid damaging or affecting their original outlook as far as possible.

Even government land is subject to designated uses, special attention must be paid to whether the proposed trail's alignment is entirely within a country park and whether it passes through private land or other disposed government land.

In practice, constructing a hiking trail requires intensive labour and resource investment, but the effort does not end here. Ongoing maintenance and repairs are required, and the associated costs and maintenance frequency are essential factors to consider in the overall planning.

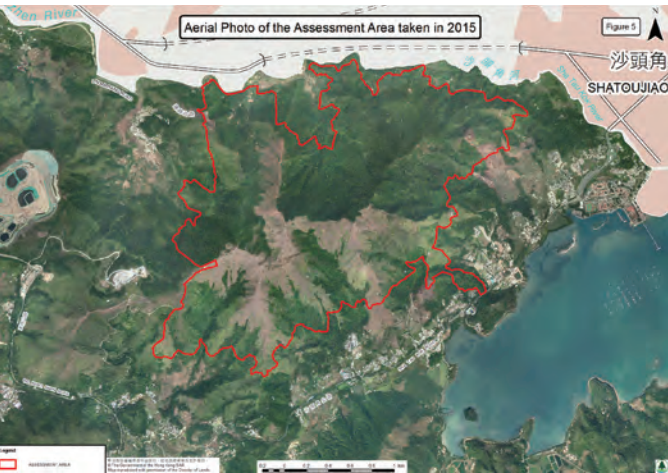
In terms of trail design, various technical factors should be considered. For examples, building materials should blend with the natural environment and one should examine whether these materials are available onsite; whether the design of the trail surface and alignment is suitable for the soil type, topography and vegetation of the area; the exposure of the trail to sunlight and wind and the scenery along the trail; whether the gradient is too steep and poses challenges to future maintenance and exacerbates soil erosion; and the connection points of the drainage system.



### Trail Planning Considerations

After considering all relevant factors carefully, the first step is to clearly define the purpose of the trail - whether it is purely for hiking, doubles as a fire prevention or forest management facility, links to countryside scenic sites and attractions, or has special educational aims? At this stage, it is essential to assess usage and the types of activities involved.

The next step is to gather geographical data of the proposed site from topographic maps, aerial photos and geospatial information systems. The data collected include information on topography, vegetation, streams and rivers, as well as existing facilities, land uses, paths and historical relics. Based on the information, a proposed route will be drawn on a map,



and the fundamental principles of sustainable trails (further discussed in *Trail Classroom*) will be adopted in designing the trail.

Gathering massive data is only a desktop planning process. In practice, it is always important to conduct onsite investigation using specialised tools to identify the most suitable route. Besides, marking the route on maps, colour flags are placed along the route to ensure accurate identification of the designated trail during construction. It is also critical to evaluate the manpower, material, transportation and time requirements for the construction works.



### Problem Solving During Construction

Even with the most careful planning, various unpredictable and unavoidable challenges, whether extrinsic or intrinsic, may arise during trail construction.

One of the potential challenges is objections. Given that Hong Kong's countryside is home to many rural villages, a proposed trail route that passes near a village may raise concerns among some villagers. On the other hand, different groups and hikers in society, each with their own aspirations and stances, may have varying opinions and might not agree with the original trail development plan. Ultimately, efforts must be made to strike a balance and work towards a common understanding and consensus.

Even if construction work can proceed as planned, limited space at the project site or its remote location may make it inconvenient for workers to transport materials and travel to and from the site, resulting in additional resources and time, and even draining the workers of their energy or causing work-related injuries. Furthermore, after the trail is completed and opened to the public, it will be inevitably subject to wear and tear with the increase in the usage of and demand for the trail.

All these issues must be considered and properly addressed as early as possible to ensure that the construction work can progress smoothly and be completed successfully, and the trail constructed can fulfil its intended purposes in a sustainable manner.

### Building Ancillary Facilities

To enhance the public enjoyment of the outdoors through hiking activities, the following ancillary facilities tailored to the specific purpose and existing conditions of each route are incorporated into country park trail projects during the planning and design phase:



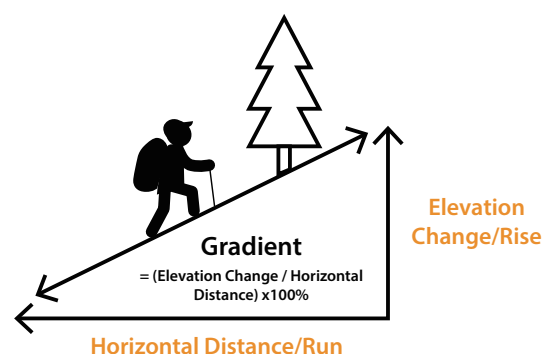


## Trail Classroom:

# The Concept of Sustainable Trail

A sustainable trail should serve intended its purposes, while support long-term usage. Its characteristics include minimising impacts on the natural environment, such as soil, vegetation, and ecology, as well as historical and cultural heritage. Their resilience to natural erosion and their good physical condition over an extended period also provide users with a pleasurable and safe experience in the countryside. When designing, planning and constructing this type of trails, the basic principle is to minimise maintenance costs and utilise public resources effectively.

Trail gradient is one of the key factors in designing sustainable trails. It is calculated as  $\text{rise} \div \text{run} \times 100\%$ . The steeper the trails, the more susceptible to soil erosion they are. Yet, gentle slopes often experience water accumulation or muddiness issues. Therefore, it is critical to follow key design elements that fits the actual environment and enhance its sustainability. These basic principles include 1) **Half Rule**; 2) **Grade Reversals**; 3) **10% Average Grade**; 4) **Maximum Sustainable Grade**; and 5) **Outslope**.



## Half Rule

The trail gradient should be less than half of the adjacent natural slope. This is known as the half rule. For example, if the gradient of the adjacent slope is 20%, the trail gradient should not exceed 10%. This is to facilitate the flow of rainwater from the uphill slope across the trail tread surface, and move toward the downhill slope. It could minimize the effect of erosion and maintain the trail tread in good conditions.



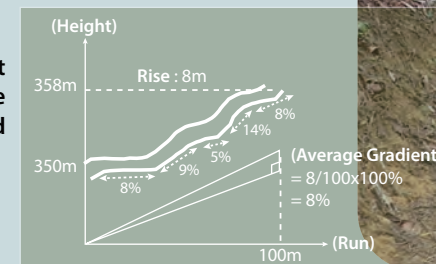
## Grade Reversals

Grade reversals are slope undulations that follow the local terrain, creating a series of ups and downs. This design not only helps manage water flow effectively but also add an element of interest to the hiking route. An undulating trail offers more variety, making it more engaging for hikers and especially enjoyable for mountain bikers.



## 10% Average Grade

Keeping the overall average gradient below 10% by incorporating grade reversals and a mix of steep and gentle sections.



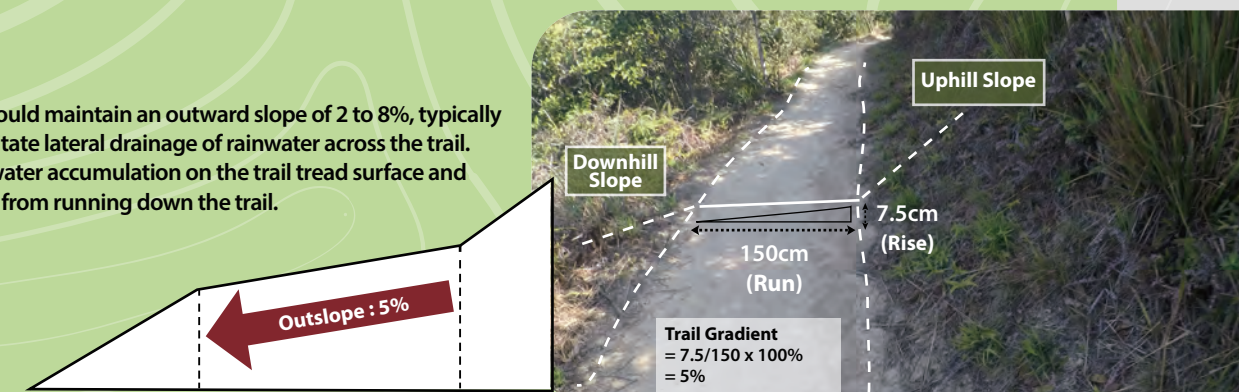
## Maximum Sustainable Grade

The average sustainable gradient of hiking trails is between 15 and 20% but there are other considerations, including the half rule, natural conditions of the site (e.g., annual rainfall, types of soil and rock), presence of artificial structures, difficulty level of the trail, hiker behaviour and foot traffic. For example, a trail in a dry zone with stable rock surface that presents a relatively challenging experience can be designed with a sustainable grade of up to 15%. If the gradient of some of the trail sections exceeds the maximum limit, hikers may have difficulties in finishing the trail and thus increasing safety risks. It will also make the trail vulnerable to erosion, exacerbate soil loss, and lead to the formation of large gullies. In the long run, these issues will pose challenges to trail management or even result in irreversible environmental degradation.



## Outslope

The trail surface should maintain an outward slope of 2 to 8%, typically around 5%, to facilitate lateral drainage of rainwater across the trail. This helps reduce water accumulation on the trail tread surface and prevents rainwater from running down the trail.



## 香港郊野公園山徑的管理原則及系統

TRAIL MANAGEMENT PRINCIPLES AND SYSTEM OF HONG KONG COUNTRY PARKS



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### Notes:

1. Illustration of water flow direction
2. The images are for conceptual representation only and do not imply that the trail section is built entirely according to theory.
3. The information is referenced from the theory on the concept of sustainable trail proposed by the International Mountain Bicycling Association.

### Editorial team:

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