主辦 Organised by:

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康樂及文化事務署
Leisure and Cultural Services Department

海港工情90
Port Works 90 - A Time to Remember

土木工程拓展署成立15周年及其轄下海港工程部成立90周年巡迴展覽

15th Anniversary of Civil Engineering and Development Department and 90th Anniversary of its Port Works Division Roving Exhibition

土木工程拓展署(土拓署)於2004年由時為土木工程署和拓展署合併而成，成立至今15周年，當中負責為市民提供港口及海事工程服務的海港工程部，其歷史更可追溯至1929年。

為慶祝土拓署成立15周年及其轄下海港工程部成立90周年的重要里程碑，我們特別舉辦這個巡迴展覽，透過文字、短片以及珍貴舊相片，讓市民回顧土拓署與海港工程部的歷史和發展，以及瞭解部門的未來發展方向。

This year marks the 15th anniversary of the Civil Engineering and Development Department (CEDD) which was established in 2004 through amalgamation of the Civil Engineering Department (CED) and the Territory Development Department (TDD).The history of its Port Works Division which was responsible for providing port and marine services can be traced back to 1929.

As a celebration of the significant milestones of the 15th anniversary of the CEDD and the 90th anniversary of its Port Works Division, CEDD has organised a thematic roving exhibition. Through texts, videos and precious old photos, it offers the opportunities for citizens to review the history and development of CEDD and its Port Works Division, and to understand Department's future development.

土木工程拓展署成立十五周年

CEDD's 15th Anniversary

昔日的中環
Old Photo of Central

昔日的沙田
Old photo of Shatin

昔日的屯門
Old Photo of Tuen Mun

西九龍填海工程
West Kowloon Reclamation

白石角發展計劃
Pak Shek Kok Development

赤柱卜公碼頭
Blake Pier at Stanley

啟德發展計劃
Kai Tak Development

梅窩改善工程
Improvement Works at Mui Wo

新界拓展署成立
The New Territories Development Department (NTDD) was formed

新界拓展署改稱為拓展署，職責範圍擴展至市區的大型發展工程。
The NTDD was renamed the Territory Development Department (TDD) to take on additional responsibility for major development projects in the urban areas.

1883 工務司署成立
Public Works Department (PWD) was formed

1964 工務司署轄下的土木工程處成立
Civil Engineering Office (CEO) under PWD was formed

1973 新界拓展署成立
The New Territories Development Department (NTDD) was formed

1986 土木工程署成立
Civil Engineering Services Department, renamed as Civil Engineering Department in 1991 (CED) was formed

1986 TDD

2004 CEDD

2004年7月1日土木工程署與拓展署合併，成立土木工程拓展署。
On 1 July 2004, the CED merged with TDD to form the Civil Engineering and Development Department (CEDD).

2019 土木工程拓展署成立十五周年
CEDD's 15th Anniversary

中環填海計劃
Central Reclamation

竹篙灣填海工程
Penny's Bay Reclamation

我們的工作
Our Works

我們致力將環保元素及創新科技引入各項工程，提供優質的工程服務，以配合香港發展的需要。以下是我們四個主要服務範疇：

We strive to introduce environment protection elements and innovative technology into various engineering projects. We are committed to provide high quality civil engineering services to meet Hong Kong's development needs. Our four major areas of services are shown in the following:

港口及海事工程服務
Port and Marine Services

推行不同類別的海事工程，包括設計和建造公眾碼頭及海濱長廊、維修海堤和碼頭，以及定期進行維護性疏浚工程等。

Implementation of various types of marine works, including design and construction of public piers and waterfront promenades, maintenance of seawalls and piers, and carrying out regular maintenance dredging works, etc.


西貢新公眾碼頭
Sai Kung New Pubic Pier


馬鞍山海濱長廊
Ma On Shan Waterfront Promenade


綠化總綱圖下完成的綠化工程
Finished greening works under Greening Master Plans


將軍澳填料庫
Tseung Kwan O Fill Bank

環境及可持續發展服務
Environment and Sustainability Services

推行綠化總綱圖、基建相關的綠化工程和管理建築廢物等。

Implementation of Greening Master Plans, greening works associated with infrastructure projects and management of construction waste etc.

土地及基礎建設
Provision of Land and Infrastructure

提供土地和基礎建設以配合不同的發展需要，其中包括將軍澳跨灣連接路和落馬洲河套地區發展等。

Provision of land and infrastructure for various development needs, including Cross Bay Link, Tseung Kwan O and Lok Ma Chau Loop, etc.


將軍澳跨灣連接路
Cross Bay Link, Tseung Kwan O


落馬洲河套地區發展
Lok Ma Chau Loop


建造柔性防護網
Installation of Flexible Barriers


鞏固現有的政府人造斜坡
Upgrading of existing government man-made slopes

岩土工程服務
Geotechnical Sevices

確保斜坡安全和管理「長遠防治山泥傾瀉計劃」等。

Ensuring slope safety and managing the Landslip Prevention and Mitigation Programme, etc.

想認識更多，請登入
To learn more about us, please check it out:
www.cedd.gov.hk

如有任何查詢，歡迎電郵至
For enquiries, please email to
enquiry@cedd.gov.hk

海岸線發展

Shoreline development

海港工情90

Port Works 90 - A Time to Remember

19世紀的兩榮碼頭，沿岸客棧滿佈。苦力正忙於運送食水上船。

(相片來源：地換山移)

Coolies busily carrying buckets of water to the junks moored at Liangrong Pier in the nineteenth century. The shore was lined with inns.

(Source: Challenges for an Evolving City)

1841至1883年間，政府的港口工程主要集中在興建及維修碼頭、海堤及海旁。政府在海港興建的第一個碼頭便位於現址中環遮打花園附近。1841年開始動工的船政道（Harbour Master）登岸台階，全部工程連船政道臨時住處在內於1845年竣工，耗資2,460元（折合約559英鎊）的興建費，雖只佔政府在1841至1844的總支出的1.2%，但已標誌著政府日後在碼頭維修及建設上會擔當一定的角色。

In 1841-1883, the Government mainly involved in the construction and maintenance of piers, seawall and the Praya as regards port-related works. The first pier built inside the Harbour was situated near the present-day Chater Garden at Central. Construction works for the Harbour Master's landing place began in 1841. The whole project, including a temporary residence at the Harbour Master, was completed in 1845 at a cost of $2,460 (£559). Although the outlay represented only 1.2 percent of the total government spending in 1841- 1844, it marked the beginning of governmental involvement in the construction and repair of piers.

從天樂里海旁東眺東角，約於20世紀初。

(相片來源：夢周文教基金會藏品)

East Point, looking east from the Tin Lok Lane waterfront, in the early twentieth century.

(Source: Moonchu Foundation Collection)

照片見到灣仔海旁一帶在填海工程前的退潮時景象，不少漁民在淺灘摸蜆。天樂里在早期地圖上的英文名稱Observation Point即「測量地」或「測量角」，因為英軍佔領香港島後，英國皇家海軍卑路乍乘坐琉璜號軍艦在此測量香港的經緯度。照片右方海旁馬路最右的街口是寶靈頓街，這便是寶靈城原來的位置，轉入鵝頸河兩岸的路口及岸邊石圍欄仍清晰可見。再往東走，照片遠景是渣甸洋行在東角的物業，包括渣甸洋行開設的總部大樓，煙囪所在為糖廠，照片左方臨海的建築物均為渣甸的貨倉。

People digging clams in the shallows low tide at the Wan Chai waterfront, before reclamation took place here. Tin Lok Lane was known as "Observation Point" in English on early Hong Kong maps. After Hong Kong Island had been taken possession of by the British , Edward Belcher of the Royal Navy sailed to Hong Kong on HMS Sulphur, and surveyed the longitude and latitude of Hong Kong here. It was from this the name of Observation Point derived. On the right of the picture, the first junction on the right of the waterfront road was Bowrington Road, which marked the original site of Bowrington. The picture shows in clear detail how "Goose Neck Bridge" crossed the Bowrington Canal and the stone railing along the banks of the canal. In the far distance, the premises of Jardine, Matheson & Co. at East point can be seen, including the old East Point headquarters of the company. The chimneys were from a sugar refinery, and on the left of the picture are Jardine's warehouses along the waterfront.

Panel 3 – B
Material size: 1140mm X 1940mm
Visual size: 1100mm X 1900mm

海岸線發展
Shoreline development

海港工情90
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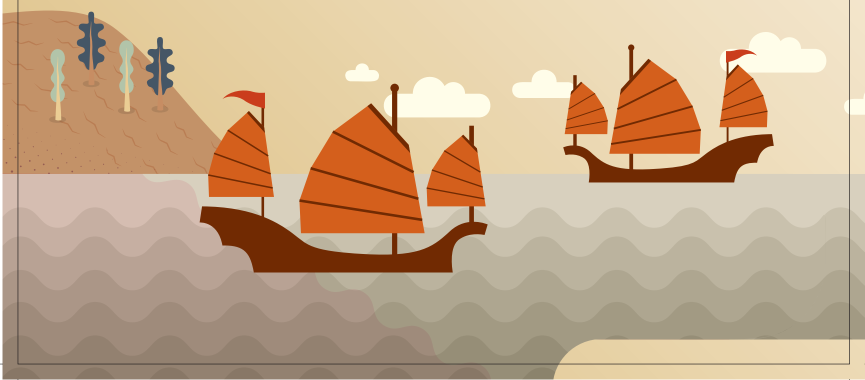
1921年政府開展自灣仔軒尼詩道與莊士敦道匯合處至銅鑼灣波斯富街的填海工程。相片顯示興築海堤進行填海的景象。
(相片來源：地換山移)

Reclamation began in 1921 at the intersection of Hennessy Road and Johnston Road in Wan Chai and extended to Percival Street in Causeway Bay. The photograph shows the construction of seawall for the reclamation.
(Source: Challenges for an Evolving City)

自1841年以來，香港的人口有不斷上升的趨勢，1881至1939年間維多利亞城的人口均佔全港人口的42%以上，於1881年更佔全港人口的72%。解決人口密集及衛生問題，是19世紀末、20世紀初政府的急務。要在港島北部沿岸增加可用土地面積，擴充城市規模，除填海造地以外，政府別無他法。1897年，政府已籌劃在海旁東部，現址軒尼詩道與莊士敦道的匯合處作起點，至現址波斯富街一帶進行填海計劃，以增加市區的面積，疏導維城密集的人口。填海工程於1921年11月1日正式展開，初步估計建築需時6年，但是工程因種種原因而延期，於1931年才竣工。海旁東部填海後獲地3,739,600平方呎（即85.85英畝），海旁蓋建了設有新式衛生設備的中式樓房608間。其他新建築物包括倉庫、飯館、車房、工場、展覽廳、油站、電影院，以及新海員學校。

Since 1841, the population in Hong Kong has been in increasing trend. In 1881-1939, more than 42% of the total population resided within the City of Victoria, with the highest of 72% in 1881. The Government faced the pressing needs to tackle the problems of dense population and poor hygienic condition in the City in the late nineteenth and the early twentieth centuries. The only way to increase usable land along the north shore of the Island in order to expand the city was by reclamation. In 1897, the Government had planned for the Praya East Reclamation which was to start from the junction of present-day Hennessy Road and Johnston Road, and terminate at present-day Percival Street. This was to increase the size of urban district and in turn reduce the population density in the City of Victoria. The reclamation formally began on 1 November 1921, targeted for completion in six years. However, beset by a multitude of issues, its completion has been delayed and the project was not finished until 1931. The completion of the Praya East Reclamation yielded a land of about 3,739,600 square feet (85.85 acres) total in area. 608 Chinese houses, equipped with modern sanitation, were erected along the Praya. Other new building structures that sprouted up included a godown, a restaurant, a garage, a service station, workshops, showrooms, a petrol station and store, a cinema, and the new seamen's institute.



海岸線發展
Shoreline development

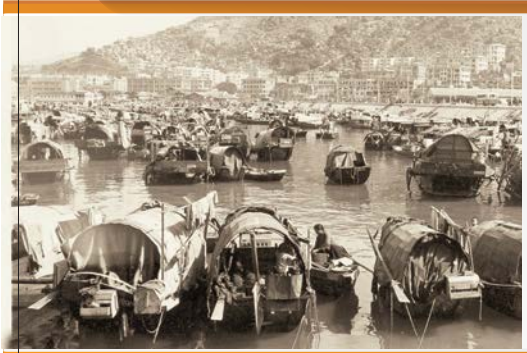
海港工情90
Port Works 90 - A Time to Remember

俗稱「嗶啦嗶啦」的電氣船，約於1930年代。
(圖片來源：香港歷史博物館)

Passenger ferry (diesel-electric ferry) in early days, also known as "Walla-Walla", in the 1930s.
(Source: Hong Kong Museum of History)

香港早期的渡海小輪為蒸汽船，至20世紀初才有內燃機發動的電氣船。由於電氣船航行時摩打會發出「嗶啦嗶啦」的聲音，民間遂以「嗶啦嗶啦」來稱呼這類電氣船。電氣船的載客量較渡海小輪少，收費亦較昂貴，但由於航線及班次較有彈性，方便乘客，故電氣船於1960-1970年代仍是極受歡迎的海上交通工具，直至海底隧道及地鐵通車後才漸漸淘汰。

Prior to the introduction of diesel-electric ferries in the early twentieth century, vessels powered by steam were the usual form of cross-harbour ferries in the early days. As the motor of the diesel-electric ferries emitted a sound like "wallа wallа" during its sailing, the locals called this kind of ship "Walla-Walla". In spite of its smaller loading capacity and higher fee, it became popular in the 1960s and 1970s due to its flexible routes and shifts which were convenient for people travelling early and returning late. Diesel-electric ferries gradually became less important after the opening of the cross-harbour tunnels and the MTR.



1950年代的銅鑼灣避風塘
(圖片來源：維港以北)

Causeway Bay Typhoon Shelter in the 1950s.
(Source: Challenges for an Evolving City)

避風塘的興建是戰後海港建設的發展重點，銅鑼灣避風塘的擴建工程是戰後較先展開的大規模海港工程。工程擬將原有的避風塘舊址填平闢作休憩公園，公園沿岸再興建一面積達65英畝的避風塘。工程於1951年動工，1953年完成。但銅鑼灣避風塘的鑿建，未能完全解決避風塘不足的情況。當時估計本港在1960年約需504英畝的避風塘，但全港的避風塘的實際面積僅為267英畝，較需要的504英畝少了237英畝，估計約有47%的漁船在惡劣天氣下無處容身。1950年代海港工程部開始於全港各區興建新的避風塘，使水上居民免受颱風吹襲之苦。

After the World War II, the construction of typhoon shelters became the key port development. The extension of Causeway Bay Typhoon Shelter was the first large-scale port work after the War. The proposed works involved the filling up of the existing shelter for a park, and the construction of a 65-acre typhoon shelter at the nearshore of the park. The project began in 1951 and was completed in 1953. However, the extension of the Causeway Bay Typhoon Shelter did not meet up the demand of typhoon shelter space. It was estimated that 504 acres of typhoon shelter space was required by 1960, but only 267 acres was available at the time, having a shortfall of 237 acres. The shortfall meant about 47% of the fishing boats were unsheltered during bad weather, exposing the boat dwellers to dangers. In the 1950s, to protect boat dwellers from the onslaught of typhoons, the Port Works Division began the task of constructing new typhoon shelters in various parts of the territory.

海岸線發展
Shoreline development

海港工情90
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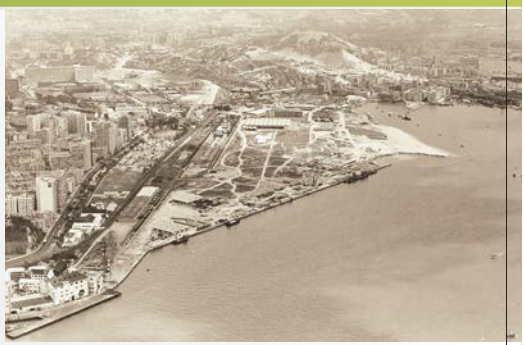
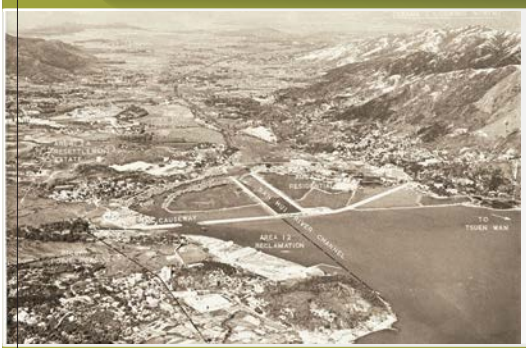
戰後政府積極開拓九龍半島。1963年5月紅磡填海施工實況。
(圖片來源：地政總署)

Development of the Kowloon Peninsula began in earnest after the war. Reclamation in progress at Hung Hom in May 1963.
(Source: Challenges for an Evolving City)

1946年11月，香港政府邀請英國城市規劃專家亞柏康比（Patrick Abercrombie）就香港未來五十年的發展方向提供建議，並設計城市發展藍圖。為減低人口過份密集區域的人口密度，及安置不斷湧入的新移民，亞柏康比建議可在不損害海港的情況下填海，以創造更多的土地。紅磡便是當時九個選址其中一個可透過填海增加土地面積的地區，計劃提供約150英畝土地，並容納約75,000人口。

In November 1946, the renowned British town planner Mr. Patrick Abercrombie, was commissioned by the Hong Kong Government to provide guidelines on the city's development for the coming 50 years and draw up a blueprint for the city design. To thin out the overcrowding population in some districts and accommodate the increasing number of immigrants, Mr. Abercrombie proposed to carry out reclamation in the Harbour to create land, only at locations where the works would not inflict any damage on the Harbour. Hung Hom was one of the districts in Kowloon that could increase in land area through reclamation, targeted to provide approximately 150 acres of land and to accommodate approximately 75,000 population.



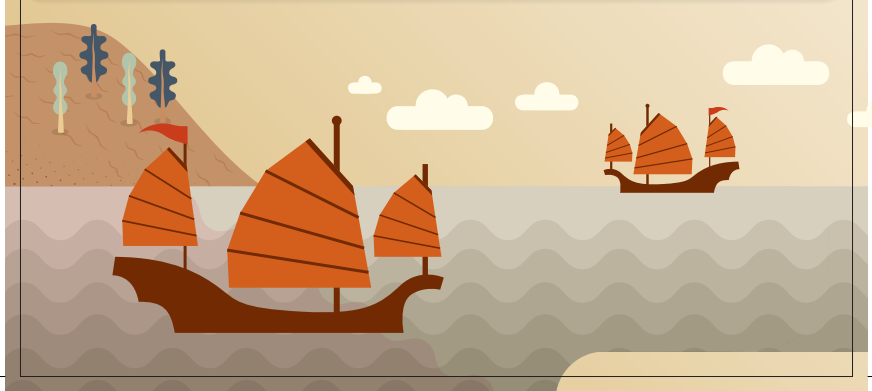


1964年青山（今屯門）的第一期發展工程藍圖。
(圖片來源：地政總署)

Blueprint for the first stage development of Castle Peak (present-day Tuen Mun) in 1964.
(Source: Challenges for an Evolving City)

在1966年，青山進行第一期填海工程，造地達220英畝，到了1968年，政府開始興建可容納11,000人口的新發邨。1970年代末，區內四個主要大型公共屋邨亦相繼落成，配合了政府在1973年公佈的十年建屋計劃，為原先擬定的房屋計劃增添了可容納158,000人的居住單位。

The first stage of Castle Peak reclamation commenced in 1966 and yielded 220 acres of land. In 1968, construction works for San Fat Estate began, which was designed to house 11,000 people. By the end of the 1970s, four large-scale public housing developments in Tuen Mun completed in succession, forming part of the 10-year housing programme announced by the Government in 1973. The additional number of housing units built provided home to 158,000 people.



海港工程的發展
Development of the Port Works

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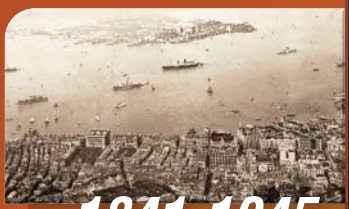


1841-1945

早期海港工程發展
Port Works Development in Early Days

首個碼頭
First Pier

1841-1845 船政道登岸碼頭
Harbour Master's Pier

首項填海工程
First Reclamation

1852 文咸海旁填海工程
Bonham Strand

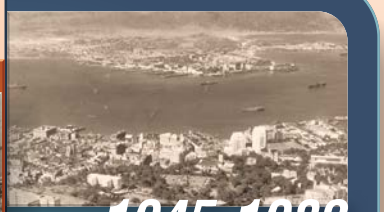
首項避風塘
First Typhoon Shelter

1883 銅鑼灣避風塘
Causeway Bay Typhoon Shelter

1900年卜公碼頭由港督卜力揭幕
Opening Ceremony of Blake Pier (1900)

20世紀初的中環天星碼頭
Star Ferry Pier in Central in the early 20th Century

1924年位於九龍啟德新填地的香港航空會
The Hong Kong Flying Club at the Kai Tak Reclamation Area in 1924



1945-1982

二戰後海港工程發展
Port Works Development after World War II

增闢避風塘使水上居民免受颱風吹襲之苦
Additional typhoon shelters provided to protect boat dwellers against typhoons

增建碼頭以連繫偏遠離島與市區核心地帶
Additional piers constructed to link remote outlying islands with the city nucleus

疏浚航道以確保維港的航行安全
Maintenance dredging works undertaken to ensure navigation safety in Victoria Harbour

在1969年進行的銅鑼灣避風塘擴建工程
Causeway Bay Typhoon Shelter Extension Works in 1969

1963年的香港仔避風塘
Aberdeen Typhoon Shelter in 1963

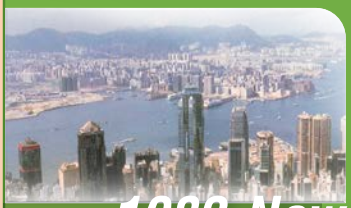
1960年代中環天星碼頭擴建工程
Expansion of Star Ferry Pier in Central in 1960s

海港工情90

Port Works 90 - A Time to Remember

海港工程的發展

Development of the Port Works



1982-Now

近年海事工程建設
Marine Works Construction in Recent Years

設計、建造及維護各類海事設施
Design, construct and maintain various types of marine facilities

改善及重建現有公眾碼頭和登岸梯台設施
Carry out improvement and reconstruction works for existing public piers and landing facilities

就海港和主要河道進行定期維修疏竣
Regular maintenance dredging for the harbour and major watercourse

在1996年進行的昂船洲海軍基地填海工程
Stonecutters Island Naval Base in 1996

2007年的赤柱卜公碼頭
Blake Pier at Stanley in 2007

現正進行的檀咀碼頭重建工程
Undergoing Reconstruction of Sharp Island Pier

海港工情90

Port Works 90 - A Time to Remember

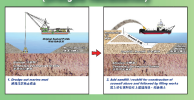
傳統填海技術

Traditional Reclamation Technology

過往，香港的填海工程通常採用兩種建造方法，即「疏浚法」和「排水法」。在填海範圍周邊海堤的位置會採用「疏浚法」，首先移除所有或部分海洋沉積軟土，然後放置沙填料或碎石以承托海堤構築物。而在填海範圍內的位置會採用「排水法」以避免挖去海洋沉積軟土，首先在海床安裝垂直排水帶，然後放置填料，再利用預載重量加快軟土的加固速度。

In the past, there are two reclamation methods in Hong Kong, namely 'Dredged Reclamation' and 'Drained Reclamation'. 'Dredged Reclamation' is used to remove all or part of the soft marine deposit around the seawall, and then sand fill or gravel is placed to support the seawall. While in inner area of the reclamation, 'Drained Reclamation' is used to avoid dredging of the soft marine deposit. Vertical band drains are installed in the seabed, followed by placement of a fill layer and finally surcharge is added to accelerate consolidation of soft marine deposit.

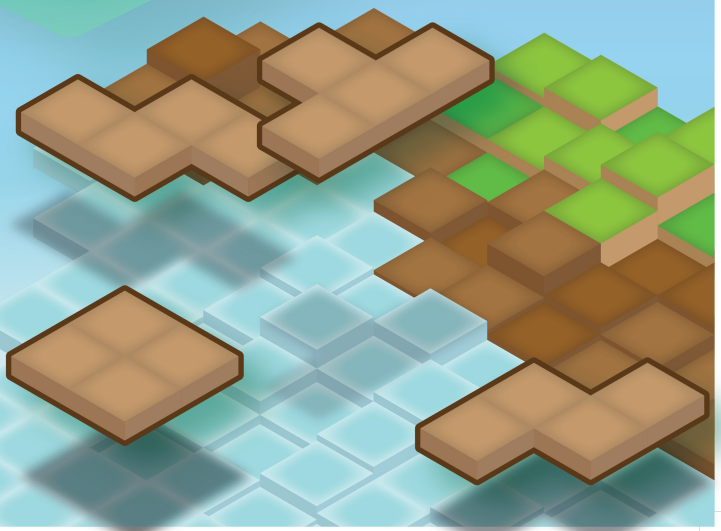
「疏浚法」
(Dredged Reclamation)



「排水法」
(Drained Reclamation)

竹篙灣填海工程（200 公頃）
Penny's Bay Reclamation (200 hectares)

中環填海第三期工程（18 公頃）
Central Reclamation Phase III (18 hectares)



海港工情90

Port Works 90 - A Time to Remember

新填海技術

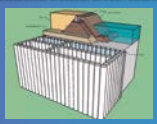
New Reclamation Technology

近年，為了減少填海工程對環境所帶來的不良影響，我們正採用以非疏浚方法推展填海工程，包括深層水泥拌合法及安裝碎石樁。「深層水泥拌合法」並不須要清除海洋沉積軟土，利用機械設備將它與水泥漿混合，形成水泥拌合柱群，從而增加海洋沉積軟土的強度，足以承托海堤構築物和填土的重量。

In recent years, in order to minimize the environmental impacts of reclamation works, we are adopting a non-dredging approach, including Deep Cement Mixing (DCM) and Stone Column, in taking forward reclamation projects. DCM does not require removal of soft marine deposit. Mechanical machines are used to mix marine deposit with cement to form a DCM grid to strengthen the marine deposit for supporting the weight of seawall and backfill.

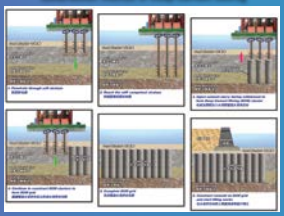
在「深層水泥拌合法」地基上建造海堤

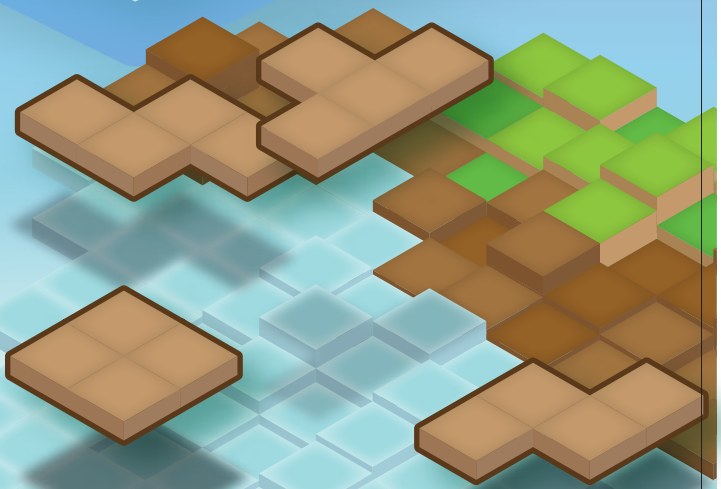
Construction of Seawall on DCM Foundation



「深層水泥拌合法」的施工方法

Construction Method of Deep Cement Mixing





香港氣候變化
Climate Change in Hong Kong

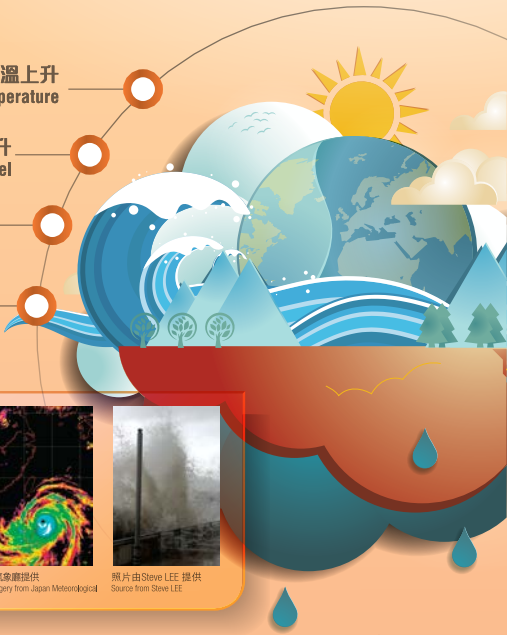
海港工情90
Port Works 90 - A Time to Remember

氣溫上升
Rise in temperature

平均海平面高度上升
Rise in mean sea level

風暴潮威脅增加
Increase of threat of storm surges

極端高溫、極端降雨越趨頻繁
Extreme heat and extreme rainfall becoming more frequent



當中，平均海平面高度上升和風暴潮威脅增加對沿海構築物的影響最為值得關注。

The impact arising from the rise in mean sea level and increasing threats of storm surges on coastal structures are mostly concerned.

衛星圖像由日本氣象廳提供
Source of satellite imagery from Japan Meteorological Agency

照片由Steve LEE 提供
Source from Steve LEE

目前主要工作
Current Main Tasks

海港工情90
Port Works 90 - A Time to Remember

1. 氣候變化基建工作小組成立，土木工程拓展署協調工務部門應對氣候變化。
   With the establishment of the Climate Change Working Group on Infrastructure, the Civil Engineering and Development Department coordinates the works departments to cope with climate change.
2. 已檢視香港重要公共基建設施的抗逆能力。
   Has reviewed the resilience of critical public infrastructures.
3. 已更新“海港工程設計手冊”。
   Has updated the “Port Works Design Manual”
4. 檢視極端天氣及氣候轉變對沿海較低窪或當風地點的影響，並制訂應對措施。
   Study the impacts of extreme weather and climate changes on low-lying coastal and windy locations, and formulate measures.
5. 繼續與天文台合作，推展有關氣候變化的研究。
   Continue to collaborate with the Hong Kong Observatory to launch studies relating to climate changes.

沿岸海事基建設施
Coastal Marine Infrastructure

郵輪碼頭
Cruise Terminal

渡輪碼頭
Ferry Pier

避風塘防波堤
Breakwater of Typhoon Shelter

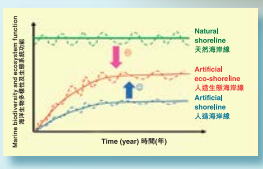
照片由土木工程拓展署提供
Source from CEDD

海港工情90

Port Works 90 - A Time to Remember

什麼是生態海岸線?
What is an Eco-shoreline?

- 將生態學的概念融入人造海岸線的設計中
- 生態海岸線既可提升沿岸生態系統和生物多樣性。亦可推動親水文化，為居民和遊客提供閒息和休憩的好去處。
- Incorporates ecological concepts into the design of an artificial shoreline
- Eco-shoreline will not only enhance the ecological systems along seashores and their biodiversity, but also promote a water-friendly culture, with a view to providing great leisure and recreational destinations for public enjoyment.



與人造海岸線相比較，生態海岸線可以增加海洋生物多樣性及提升生態系統功能。再者，生態海岸線亦可以減少外來入侵物種和提升天然生境及物種間的連接性。

Eco-shoreline can increase biodiversity and ecosystem functions when comparing to the artificial shoreline. It can also reduce bio-invasion and increase eco-connectivity in the sea.

硬岸及軟岸生態海岸線設計
Hard-engineered and Soft-engineered Eco-shoreline Design

生態海岸線設計分別有硬岸設計(即以石頭和混凝土物料建造)和軟岸設計(即使用天然物料建造)。硬岸設計最適合在暴露和受到強烈波浪作用的地點採用，因為它們能抵擋巨浪和提供更有效海堤保護。

而軟岸設計適合採用於受庇護而風浪較小的水域。

Eco-shoreline designs / features can be broadly classified as "hard engineering" (i.e., made of rocks and concrete structures) and "soft engineering" (i.e., building with natural materials like mangrove plantation and artificial wetland). Hard-engineered Eco-shoreline design is suitable to be used in locations exposed to strong waves.

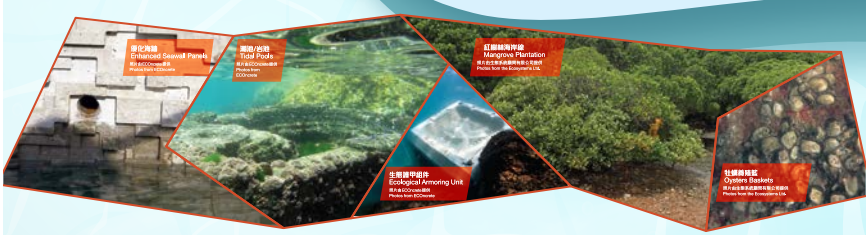
Soft-engineered eco-shoreline design is suitable to be used in the sheltered estuary areas receiving less wave energy.

硬岸生態海岸線設計
Hard-engineered Eco-shoreline Design

優化海牆 Enhanced Seawall Panels
潮池/岩池 Tidal Pools
生態護甲組件 Ecological Armoring Unit

軟岸生態海岸線設計
Soft-engineered Eco-shoreline Design

紅樹林海岸線 Mangrove Plantation
牡蠣養殖籃 Oysters Baskets



海港工情90

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香港生態海岸線實地試驗研究

Site Trials of Eco-shoreline in Hong Kong

土木工程拓展署轄下海港工程部正與本地大學攜手合作，分別在西貢、馬料水和龍鼓灘三個分屬海洋性、半開放水域和河口性的地點，進行為期兩年的實地測試。有關測試結果將有助評估是否適宜在本港建造生態海岸線，並就此制訂適切的設計及維修保養標準。

The Port Works Division under the Civil Engineering and Development Department, currently in collaboration with local universities, commissioned 2-year field tests at Sai Kung, Ma Liu Shui and Lung Kwu Tan (identified as the oceanic, enclosed and estuarine types of water body respectively). The test results may help us assess the suitability of adopting the eco-shoreline concept locally and devise the design and maintenance standards as appropriate for such eco-shorelines.

東涌新市鎮擴展工程

The Tung Chung New Town Extension project

紅樹林生態海岸線
Mangrove Eco-shoreline

岩石生態海岸線
Rocky Eco-shoreline

東涌新市鎮擴展工程是首個工務工程引入生態海岸線設計，包括紅樹林生態及岩石生態海岸線，加入模仿自然潮間帶的設計，以提供一個較合適的環境給海洋物種生長，形成潮汐生態系統。在本工程採用生態海岸線之前，將於東涌進行實施生態海岸線的實地試驗。

The Tung Chung New Town Extension project is the first public works project adopting eco-shoreline, which mangrove and rocky eco-shorelines would be provided. The eco-shoreline would mimic the physical properties of natural inter-tidal shoreline, in order to provide habitat for colonisation of marine species, forming a tidal eco-system. A site trial of implementing eco-shoreline in Tung Chung will be conducted before adopting eco-shoreline in this project.

海外例子

Oversea Examples

以色列海法灣的生態海堤
(Eco-shoreline in Haifa Bay, Israel)
照片由ECOncrete提供
Photos from ECOncrete

以色列海法灣的生態海堤
(Eco-shoreline in Haifa Bay, Israel)
照片由ECOncrete提供
Photos from ECOncrete

澳洲悉尼市巴蘭加魯保護區的大型生態海堤
(Large-scale eco-shoreline at Barangaroo Reserve in Sydney, Australia)

我們的挑戰
Our Challenges

房屋土地需求與日俱增
Increasing Demand for Housing Land

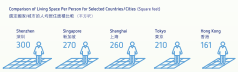
「貴」、「細」、「擠」的生活環境近年困擾香港。在未來二十多年，全港人口和家庭住戶數目仍會持續上升，我們需要解決住屋土地短缺問題。

The pricy, tiny and cramped living predicaments have been a pressing issue in Hong Kong. In the coming decades, the population and number of households are on the rising trend. We need to resolve the shortage of land for homes.

優質生活環境
Quality Living Environment

除了居住面積，我們亦需要一個更好的居住環境，包括更多的休憩用地和社區設施。

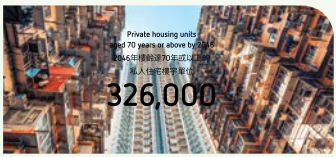
Apart from the living space, we need a better living environment, including more open space and supporting community facilities.



優質環境助安老
Decent Living Environment for Ageing Population

香港人口日趨老化，我們需要為長者提供宜居的社會環境。

With an increasingly ageing local population, we need to secure a liveable community for our elders.



解決市區重建的土地需求
Solution Space for Urban Renewal

香港人口稠密、現有大量樓宇迅速老化，市區重建將提供大好機遇改善生活環境。但我們必先提供足夠土地安置受市區重建影響的居民。

Hong Kong is densely populated, with a rapidly ageing building stock in large quantity. It is opportune to improve the living environment through urban renewal. As a pre-requisite, we need to provide sufficient land to accommodate the affected residents due to urban renewal.

配合環境經濟競爭所需
Demand under Global Economic Competition

土地供應短缺持續推升商業用地的租金水平，損害香港在區域/全球經濟的競爭力。我們需要建設新的核心商業區及擴大基建容量，提供良好的區域連接和功能連繫，以鞏固及提升香港的國際經濟樞紐地位。

Shortage of land supply continuously pushes up the rental level of commercial space and undermines Hong Kong's competitiveness in the regional and global economy. We need to establish a new commercial core and expand the capacity of our infrastructure for sound regional and functional connections, with a view to reinforcing and enhancing Hong Kong's role as an international economic hub.

Sources 資料來源：

Hong Kong Population Projections 2017-2066, Census and Statistics Department
Hong Kong Monthly Digest of Statistics, Feature Article: Hong Kong Domestic Household Projections up to 2051, October 2017, Census and Statistics Department
Information of Task Force on Land Supply, with sources from C&SD; South China Morning Post; Shenzhen Economic Daily; Skytree Strategy and Statista

《香港人口推算2017-2066》，政府統計處
《香港統計月刊》，專題文章《至2051年的家庭住戶推算》，2017年10月，政府統計處
土地供應專責小組資料，綜合政府統計處、《南華早報》、《深圳商報》、日本房產網及Statista資料

明日大嶼願景
Lantau Tomorrow Vision

土地是解決香港重重挑戰的重要一環。地理位置上，大嶼山具備無可比擬的策略性地利，並有完善的航空、道路和鐵路運輸交通網絡，向外連接到大灣區其他城市及世界各地，對內連繫位於中環的現有核心商業區。在大嶼山附近區域新增土地應付住屋和經濟需求，有助達致更均衡的人口和就業空間布局。因應大嶼山發展而建造的策略性交通設施，亦有助紓緩新界西北現時的交通壓力，以及加強市區與新界之間的連繫。

為把握大嶼山的策略性優勢和機遇，行政長官在2018年施政報告中公布明日大嶼願景，以期為香港未來的可持續發展奠定穩固基礎。

我們會透過以下五項政策方針，實現這個跨越未來二、三十年的願景。

Land is the essential building block for the challenges faced by Hong Kong. In the spatial context of Hong Kong, Lantau commands an un-paralleled strategic location with a comprehensive air, road and rail transport network connected externally to other cities in the Greater Bay Area and the World as well as internally to the well-established core business area at Central. Creation of land for meeting housing and economic needs in this area would also allow a more balanced spatial distribution of population and jobs. The strategic transport facilities in support of the Lantau development could also help relieve the existing transport capacity constraint in Northwest New Territories as well as enhance connections between urban areas and the New Territories.

To harness the strategic advantages and opportunities of Lantau, the Chief Executive announced in her Policy Address 2018 the Lantau Tomorrow Vision with a view to building a solid foundation for a sustainable future for Hong Kong.

We will realise this vision in the coming 20 to 30 years through the following five policy directions.

宜居城市
Liveable City

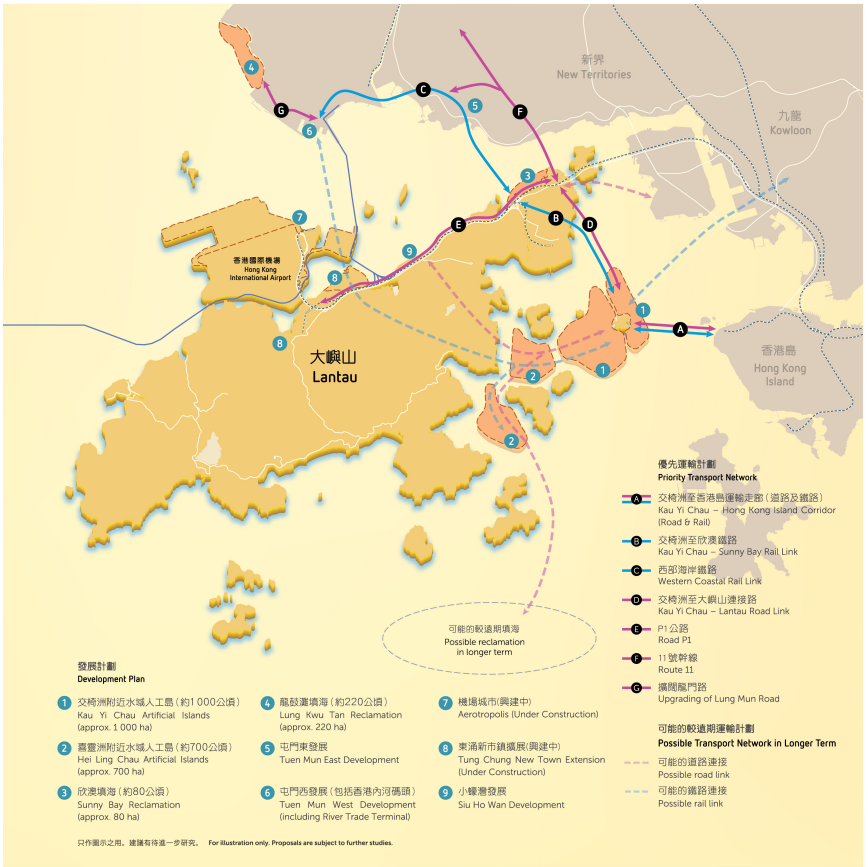
運輸基建先行
According priority to transport infrastructure

經濟發展動力
Economic Powerhouse

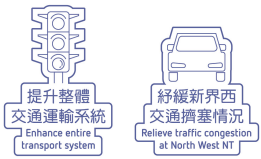
休閒娛樂好去處
Leisure and Entertainment Destination

可持續發展和保育
Sustainability and Conservation

概念發展及策略性運輸計劃
Conceptual Development and Strategic Transport Plan



運輸基建先行
According priority to transport infrastructure



交通運輸是城市發展的命脈所在。完善的運輸網絡是支撐香港發展及配合市民生活所需的重要一環。

明日大嶼願景的其中一脈發展主軸是運輸基建先行。透過提供新的運輸走廊，我們冀拉近赤鱲角機場與香港島的距離，從而鞏固大嶼山連接世界及大灣區其他城市的角色，釋放沿走廊的土地發展潛力，包括中部水域人工島、龍鼓灘近岸填海土地及屯門沿岸地區（包括內河碼頭）。這條運輸走廊亦會紓緩現時西鐵和屯門公路繁忙時段的擠逼情況，大大改善新界西北的交通運輸系統和提升香港整體交通網絡的彈性及抗禦力。

Transport is the backbone of development. Good transport connections are essential to support Hong Kong's growth and citizens' needs. One of the key development axles of the Lantau Tomorrow Vision is to accord priority to transport infrastructure development. Through new transport corridor, we aim to shorten the travelling distance between the Chek Lap Kok airport and Hong Kong Island, thereby strengthening the role of Lautau as a gateway to the world and other cities in the Greater Bay Area and also releasing the development potential of the land along the corridor, including artificial islands in the Central Waters, reclaimed land at Lung Kwu Tan, as well as coastal areas of Tuen Mun (including River Trade Terminal). Besides, the corridor will help relieve the congestion at the West Rail and Tuen Mun Road during peak hours, and significantly improve the transport system in the North West New Territories as well as enhance the flexibility and resilience of the entire transport network of Hong Kong.

冀透過以下發展達致我們的目標：

We target to achieve the objective through：

1 研究興建一條新的主要運輸走廊，以道路和鐵路連接屯門沿海地帶、北大嶼山、中部水域人工島和港島北的傳統商業中心，並會推展一條與北大嶼山公路並行的高速公路和擴建龍門路

Studying the construction of a new major transport corridor with roads and railways to link up the coastal areas of Tuen Mun, North Lantau, the artificial islands in the Central Waters and the traditional business centre in Hong Kong Island North, and take forward works for a highway parallel to the North Lantau Highway and the Lung Mun Road improvement

2 研究其他道路/鐵路的連接，以支援在大嶼山推展的長遠計劃

Exploring the need of other possible road/rail links to support development initiatives on Lantau in the long term

發展機場城市及第三個核心商業區

Economic Powerhouse

CBD3
200 000
就業職位
jobs

大嶼山為香港經濟帶來新機遇。我們的目標是要締造有利的營商環境，以支持香港的四大支柱和新興行業發展，從而為香港市民，特別是年青一代，提供多元化的事業發展機會。

Lantau brings new opportunities to Hong Kong's economy. We target to create a business-friendly environment favourable to the growth of Hong Kong's four pillar industries and emerging industries. This in turn will offer diversified opportunities for Hong Kong people, in particular new generations, to pursue their career.

冀透過以下發展達致我們的目標：
We target to achieve the objective through：

1

透過機場的三跑道系統、位於南貨運區的高增值物流中心、航天城發展項目和亞洲國際博覽館未來發展以及香港口岸人工島上蓋發展項目，大嶼山將會成為連接粵港澳大灣區以至全世界的機場城市，可進一步鞏固及提升香港的國際商業中心及交通樞紐地位
Creating at Lantau an Aerotropolis connecting the Greater Bay Area and the world, thereby strengthening and enhancing Hong Kong's position as an international business centre and transport hub, through the Three-Runway System, high value-added logistics centre at the South Cargo Precinct, the SKYCITY project and the future plan for the AsiaWorld-Expo at the Airport Island as well as the proposed Topside Development at the Hong Kong Boundary Crossing Facilities Island

	直接就業人數 Direct employment	間接／引動的就業人數 Indirect / Induced employment	總計 Total
雙跑道系統 Two-runway System (2030)	89 000	119 000	208 000
三跑道系統(約數) Three-runway System (about) (2030)	123 000	165 000	288 000

資料來源：香港機場管理局
Source : Airport Authority Hong Kong

2

在交椅洲附近水域興建人工島，發展繼中區及九龍東後的第三個核心商業區，估計可提供約400萬平方米商業／寫字樓的樓面總面積，可創造約20萬個就業職位
Constructing Kau Yi Chau Artificial Islands to create in addition to Central and Kowloon East the third Core Business District (CBD3), with estimated creation of about 4 million sqm of commercial / office gross floor area and create about 200 000 jobs

3

加快東涌新市鎮擴展計劃的發展步伐，提供逾80萬平方米的商業樓面總面積，以作區域辦公室樞紐、零售和酒店發展用途，當中可創造約4萬個就業職位
Pressing ahead with the implementation of Tung Chung New Town Extension, providing over 800 000 sqm of commercial gross floor area for regional office hub, retail and hotel development, and creating about 40 000 jobs

增加土地供應 建立近零碳排放的宜居地區

Liveable City

面對房屋需求和市民對改善生活質素的期望，我們計劃盡快開展中部水域人工島的相關研究，研究會聚焦發展鄰近交椅洲約1 000公頃的人工島。我們爭取於2025年開展首階段的填海工程；並於2032年入伙首批單位。至於餘下鄰近喜靈洲的人工島，我們會在上述研究中收集一些基本技術數據，作日後長遠規劃的參考。

In response to the housing needs and the public aspirations for better living quality, we plan to commence the studies related to the artificial islands in the Central Waters, which will focus on the artificial islands of about 1 000 hectares near Kau Yi Chau. Our work target is to commence the first phase of the reclamation works in 2025, with the first batch of residential units ready for intake in 2032. As for the remaining artificial islands near Hei Ling Chau, we will collect basic technical data in the above studies for future reference in long-term planning.

在中部水域興建人工島將有助滿足香港居民長遠房屋、社會、經濟及就業需要。

The proposed artificial islands in the Central Waters will help meet the housing, social, economic and employment needs of Hong Kong people in the long run.

透過在中部水域填海，我們為香港市民締造一個可持續及優質的居住和工作環境，其目標是：

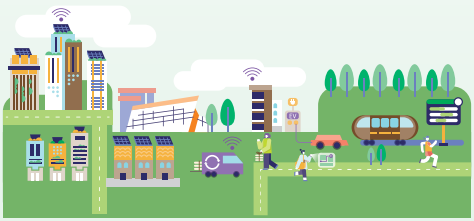
Through reclamation in the Central Waters, we will create a quality and sustainable living and working environment for Hong Kong people with the following targets :

1 首先聚焦交椅洲附近水域人工島，建造約15至26萬個住宅單位
First focus on Kau Yi Chau Artificial Islands, which can accommodate about 150 000 to 260 000 housing units

2 七成單位為公營房屋
70% of units as public housing

3 研究透過更廣泛地採用再生能源、高能源效益設計和科技、環保交通運輸、提高綠化比率，以及更先進的回收及廢物管理等措施，冀能向可持續的零碳排放社區的長遠願景邁進
Explore measures, such as wider use of renewable energy, energy efficient design and technologies, green transport, higher greening ratio, more advanced recycling and waste management measures, to progress towards the vision of sustainable carbon-neutral community

4 推行智慧、環保及具抗禦力的措施
Adopt smart, green and resilient measures



增加休閒、娛樂設施
Leisure and Entertainment Destination

健康生活
Healthy lifestyle

大嶼山擁有豐富的藍綠自然資源，在妥善保護環境的前提下，具有成為休閒和娛樂好去處的發展潛力。

Lantau has a wealth of green and blue natural resources. Given proper measures for environmental protection, it has the potential of developing into a leisure and entertainment destination of choice.

為提供多元化休閒體驗，以及推廣健康生活模式，我們會：

In order to provide diverse leisure experience and promote healthy living, we will :

1 發展欣澳為休閒和娛樂樞紐，成為全年皆宜的度假目的地，舉辦超大型活動和國際或本地競賽盛事，與大嶼山現有景點形成協同效應

Develop Sunny Bay into a Leisure and Entertainment Node for a year-round vacation destination, where mega-scale activities as well as international or local major competition events will be held, leveraging on the synergy effect of the existing attractions on Lantau

2 制訂及分階段落實全面的大嶼山遠足徑和康樂設施計劃，發展遠足徑網絡，連結文物、生態和康樂熱點，提供多元化休閒體驗，推動健康生活，以及發展生態旅遊

Formulate and implement in phases a comprehensive Lantau Trails and Recreation Plan for the development of a hiking trail network connecting heritage, ecological and recreational hotspots, provision of diverse leisure experience, and promotion of healthy living as well as the development of eco-tourism

3 研究擴展或連接大嶼山單車徑和越野單車徑網絡，實現可持續旅遊，及實踐綠色生活

Investigate expansion or connection of the cycle tracks and mountain bike trail network on Lantau to achieve sustainable tourism and foster green living

提升環境實力，達致可持續發展
Sustainability and Conservation

大嶼山擁有豐富的自然和文化歷史資源，我們會堅定秉承「北發展、南保育」的規劃原則，貫徹「先保育、後發展」的方針，推展基建及發展項目的同時致力保護大嶼山的鄉郊環境。

Lantau possesses rich natural and cultural heritage resources. We will uphold firmly the planning principle of "Development in the North, Conservation for the South" and the direction of "Conservation to precede Development" to protect the rural environment of Lantau whilst carrying out infrastructure and development projects.

我們將會：
We will：

1

成立10億元的大嶼山保育基金，在大嶼山郊區推動及落實保育工作，以及在一些偏遠鄉村和社區進行民生改善工程
Set up a $1 billion Lantau Conservation Fund to promote and implement conservation of rural Lantau, and to pursue livelihood improvement works in remote villages and communities

2

檢討相關法例及釐訂更有效措施管制於大嶼山的高生態價值地區進行填土、傾倒廢料及相關破壞環境的發展活動，以加強保護這些優美的自然環境
Review the legislation concerned and map out more effective means to control landfilling, dumping of wastes and associated development activities causing environmental damage to areas of high ecological values at Lantau, with a view to enhancing protection of the natural beauty of these areas

3

研究採取切實可行的措施，彌補因大型發展項目而損失的生態環境
Explore practical means to compensate for the habitat loss as a result of large-scale development projects