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前 言 Foreword

「啟德」名源於1920年代九龍半島啟德濱的發展,而啟德河(從前又稱作啟德明渠)在周邊發展的過程中,曾被多次改建以符合當時的需要。經歷了約一個世紀的變遷,啟德河已成為東九龍的主要排洪要道,其集水區面積約11平方公里,收集包括慈雲山、鑽石山、黃大仙、新蒲崗、九龍城、啟德發展區等地方的雨水。

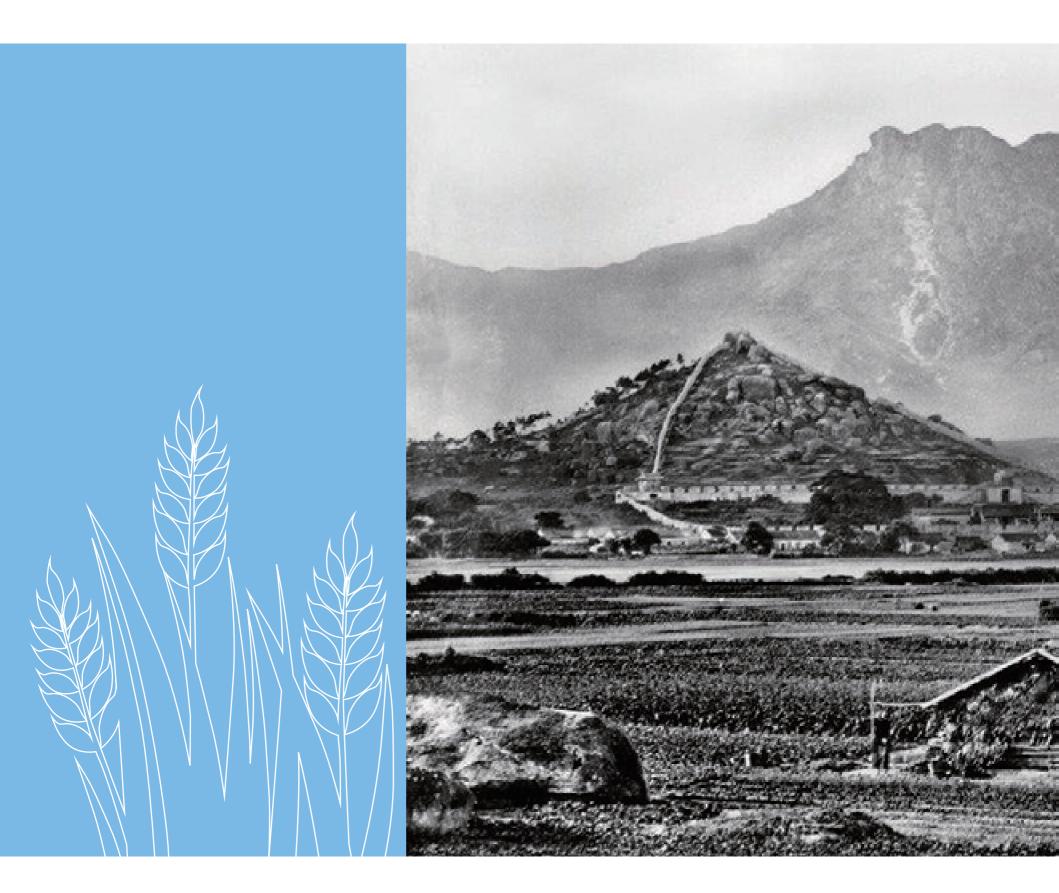
The designation "Kai Tak" found its origin from the Kai Tak Bund development in the Kowloon Peninsula in 1920s. Kai Tak River (formerly named Kai Tak Nullah) was re-made few times due to the pressing development circumstances at that time. Sustained to nearly a century of transformations, Kai Tak River becomes a major flood relief drainage channel in East Kowloon. The catchment area of the Kai Tak River covers 11 square kilometres, including Tsz Wan Shan, Diamond Hill, Wong Tai Sin, San Po Kong, Kowloon City and Kai Tak Development Area.









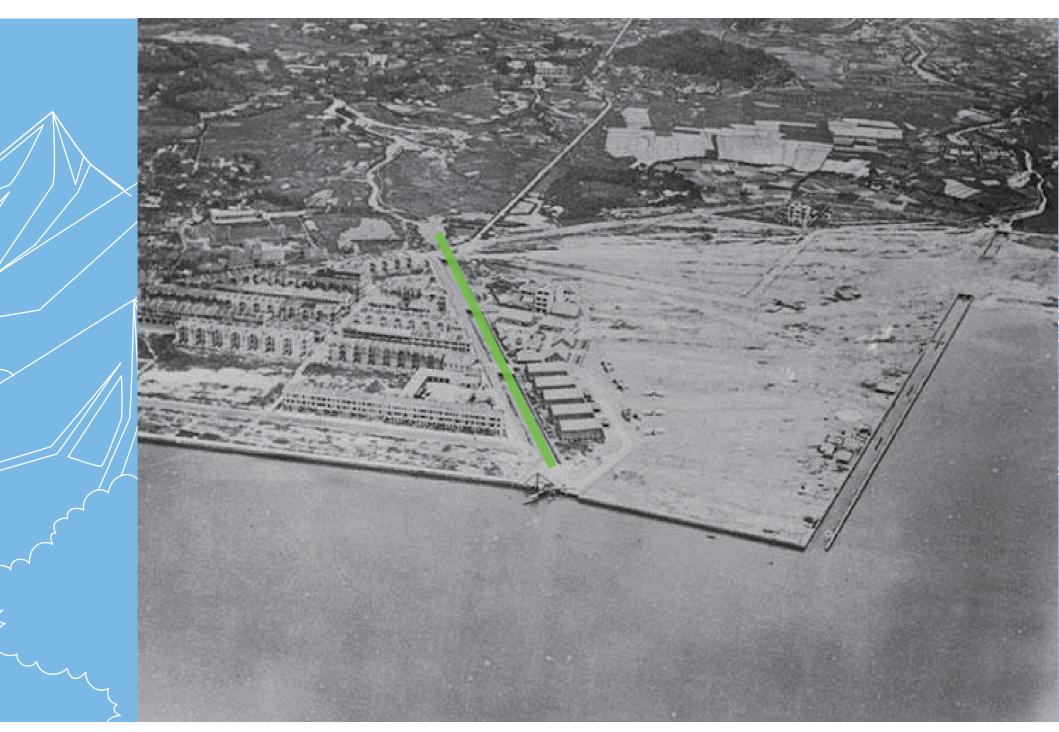




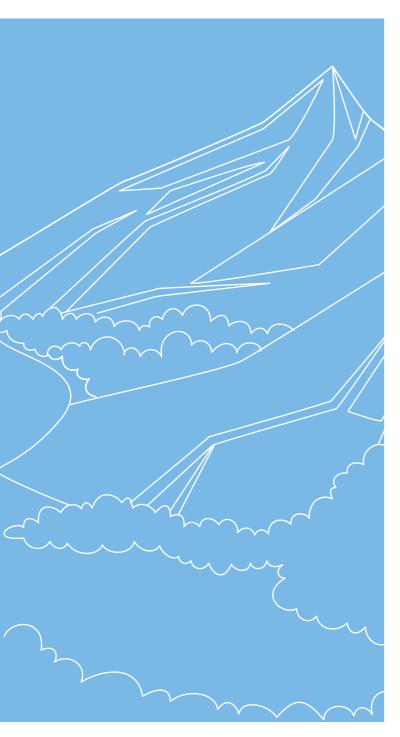


百多年前啟德河尚未出現,九龍寨城已經 建成,但附近仍是一片農地。 Far into more than a century ago, even before the Kai Tak Nallah was built, the Kowloon Walled City was found that the hinterland of which was

相片由啟德明渠歷史研究編撰小組提供 Photo courtesy of the Compilation Team of the Study on the History of the Kai Tak Nullah



綠色部分為第一代啟德明渠 ◢ First phase Kai Tak Nullah (in green)

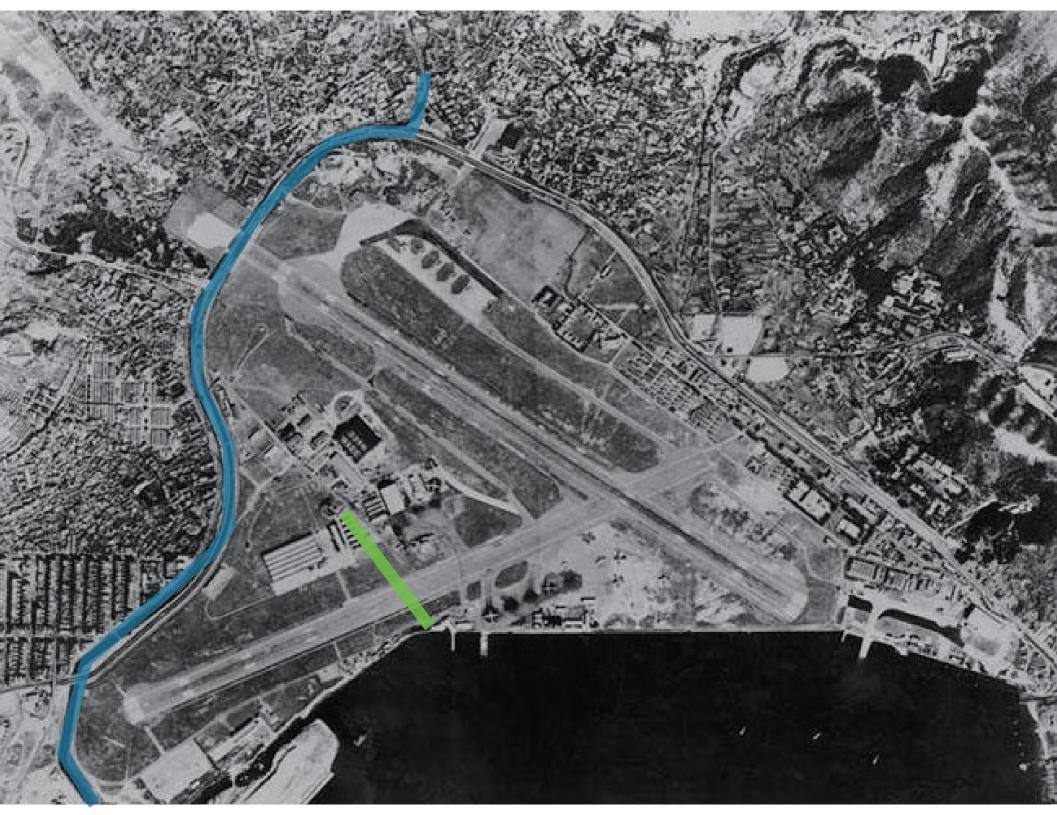


上世紀1920年代,九龍半島「啟德濱」填海工程完成,亦修築出第一代的明渠,連接附近的溪流以便排水,而右方的啟德機場,亦於三十年代開始運作。

In 1920s, the reclamation works on "Kai Tak Bund" in Kowloon Peninsula completed, and the first phase nullah unveiled. While merging with a few streams in vicinity, the nullah helped facilitate drainage. The Kai Tak airport, stationed on the right bank of the nullah, commenced into operation since 1930s.

相片由啟德明渠歷史研究編撰小組提供

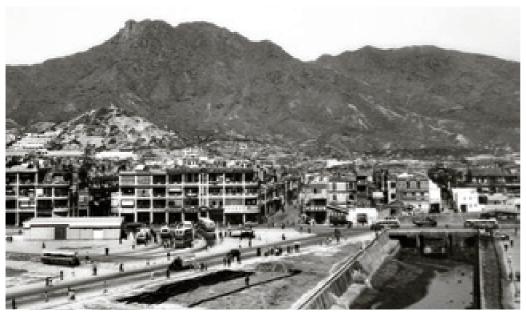
 $Photo\ courtesy\ of\ the\ Compilation\ Team\ of\ the\ Study\ on\ the\ History\ of\ Kai\ Tak\ Nullah$



上方藍色部分為第二代啟德明渠走線 ◢ The second phase Kai Tak Nullah (in blue)

上方綠色部分為第一代啟德明渠位置 ◢ The first phase Kai Tak Nullah (in green)

相片由啟德明渠歷史研究編撰小組提供 Photo courtesy of the Compilation Team of the Study on the History of Kai Tak Nullah



九龍城 ◢ Kowloon City



樂善道 Lok Sin Road



啟德機場於二次大戰期間擴建[,]沿著機場外圍亦修築了一條明渠,此即後來啟德明渠[,]當時明渠的走線是經九龍城才連接維多利亞港。

While the extension work on Kai Tak Airport was underway during the World War II period, a new nullah was constructed along the outer peripheral edge of the Airport. The blended nullah later grew into Kai Tak Nullah. Those days, the nullah passed through Kowloon City, before meandering into the Victoria Harbour.



相片由啟德明渠歷史研究編撰小組提供 Photo courtesy of the Compilation Team of the Study on the History of Kai Tak Nullah



東光道▲ Tung Kwong Road



第三代明渠走線穿過啟德機場▲

The predesignated track of the third phase nullah cut across the Kai Tak Airport

工業發展蓬勃,部分未經

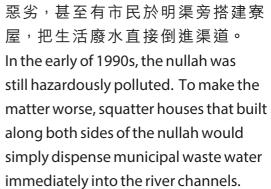


相片由啟德明渠歷史研究編撰小組提供 Photo courtesy of the Compilation Team of the Study on the History of Kai Tak Nullah

橫跨啟德河的樂善道橋底 ▲
Pavement underneath footbridge that curved across Kai Tak Nullah in Lok Sin Road







黄大仙下邨對出 ◢ Adjoining area to the Lower Wong Tai Sin Estate

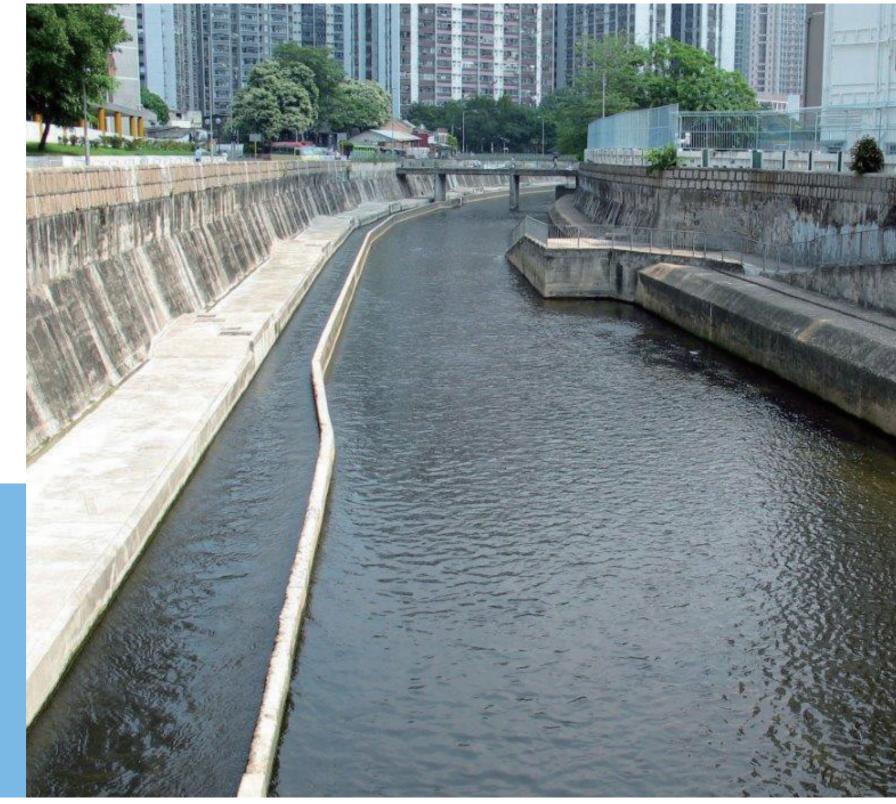








政府於九十年代,實施一系列改善水質措施,包括沿河興建旱季污水截流設施,將雨水渠中受污染的旱流截取並將其輸送至污水系統。
In 1990s, the government rolled out a series of measures to improve the water quality, including the construction of dry weather flow interceptors along the river banks that would intercept and divert the polluted dry weather flow in stormwater drains during dry seasons to sewage treatment works for treatment.



相片由啟德明渠歷史研究編撰小組提供 Photo courtesy of the Compilation Team of the Study on the History of Kai Tak Nullah

東光道旁的啟德明渠 ▲ Kai Tak Nullah adjoining to Tung Kwong Road



自1995年,政府將沙田及大埔污水處 理廠已處理的排放水輸送到啟德明渠 排放,啟德明渠便有源源不絕的水源 沖刷河道。

Since 1995, the government started conveying treated effluent discharged from Sha Tin and Tai Po Sewage Treatment Works into Kai Tai Nullah, this served to provide the latter with continuous flushing along the river course.





彩虹道及大成街路口 **△** Intersection at Choi Hung Road and Tai Shing Street







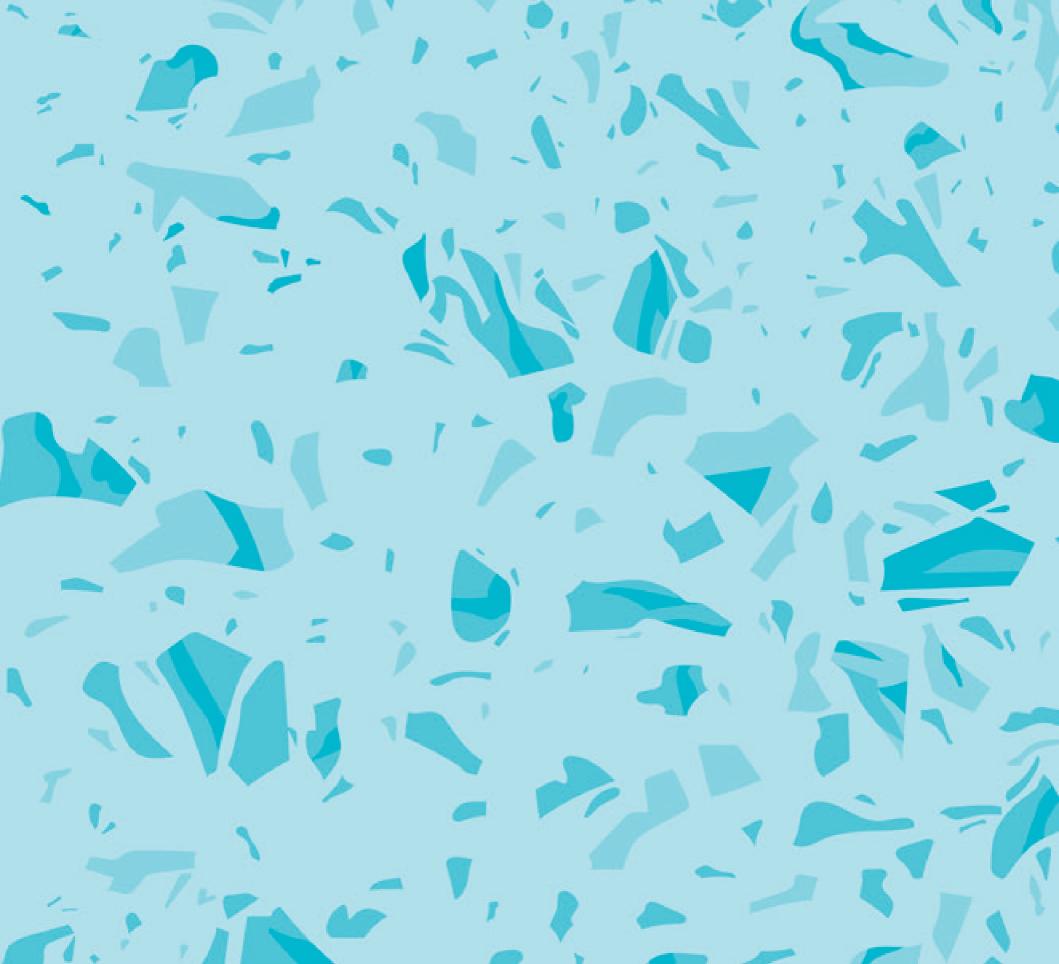


沙田坳道及彩虹道路口 ◢ Intersection at Shatin Pass Road and Choi Hung Road





城市不斷發展,不少大型公共設施橫跨河道,減低排洪能力,加上氣候變化因素,早期興建的啟德明渠漸漸不能應付所需,大雨時水位會迅速上漲,洪水更會湧出相鄰的彩虹道。 Along with the robust development in the city, a lot of public utilities laid across the river course had long undermined the flood conveyance capacity, while climate change only makes the situation worse. Kai Tak Nullah, built in the earlier period proved to be inadequate to cope with head-on pouring rain, as water level could built up in short instant. Overflowing flood would eventually spill over to the adjoining Choi Hung Road.



為提升啟德河的排洪能力, 渠務署於黃大仙區內約1.1公里 的啟德河進行改善行程。

To enhance flood relief capacity, Drainage Services Department (DSD) set out a series of improvement works along the 1.1 km long Kai Tak River in Wong Tai Sin District.



Two Strategies

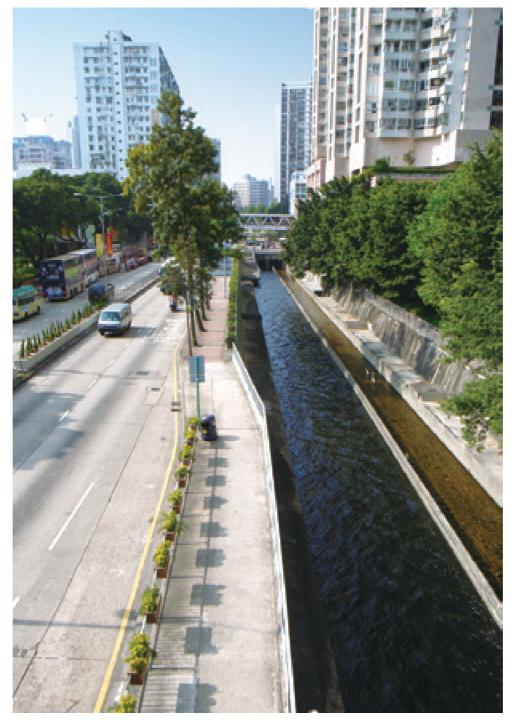
兩個策略

- 挖深河床
- Deepening River Bed
- -興建箱形暗渠
- Building Box Culvert



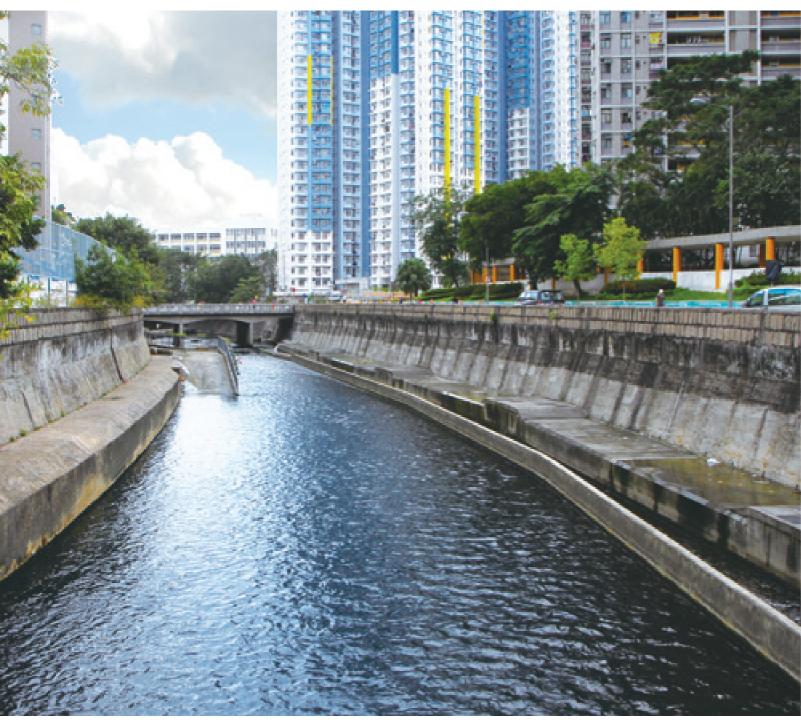
Box Culvert 箱形暗渠 6m (width) 闊6米 3.2m (height) 高3.2米

挖深河床 River bed dredging 原有河床 Former river bed





黃大仙下邨對出 ▲ Adjoining area to Lower Wong Tai Sin Estate



東光道旁的啟德河 ◢ Kai Tak River adjoining Tung Kwong Road

由於黃大仙區的啟德河附近都是已發展成熟,要擴大排洪空間,便要往地下發展。 As the adjoining areas to Kai Tak River in Wong Tai Sin are well-established, underground space has to be explored to improve the drainage capacity of the river.



黃大仙下邨對出 ┛ Adjoining area to Lower Wong Tai Sin Estate





改善排洪的策略是於相鄰啟德河的彩虹道地底建造一個6米闊、3.2米高的箱形暗渠[,]令排洪能力大大提升。

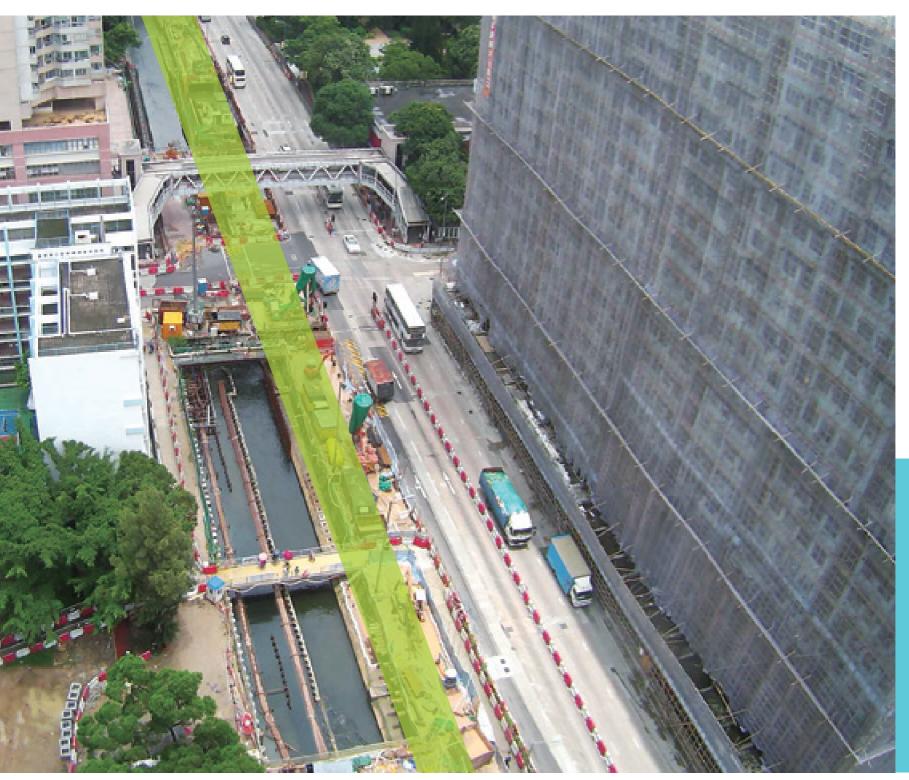
The flood relief strategy reached then is to build a box culvert underneath Choi Hung Road, adjoining Kai Tak River.

As dimensions of box culverts are 6m (width) x 3.2m (height), the drainage capacity of the river was significantly lifted.

箱形暗渠長400米,跨越彩虹道位於沙田坳道及大成街路口的瓶頸位。 The underground box culvert is about 400m in length, covering two bottlenecks in Choi Hung Road, namely, intersections at Shatin Pass Road and Tai Shing Street.







▲ 擬建箱形暗渠的位置 Intended geographical site to accommodate the box culvert





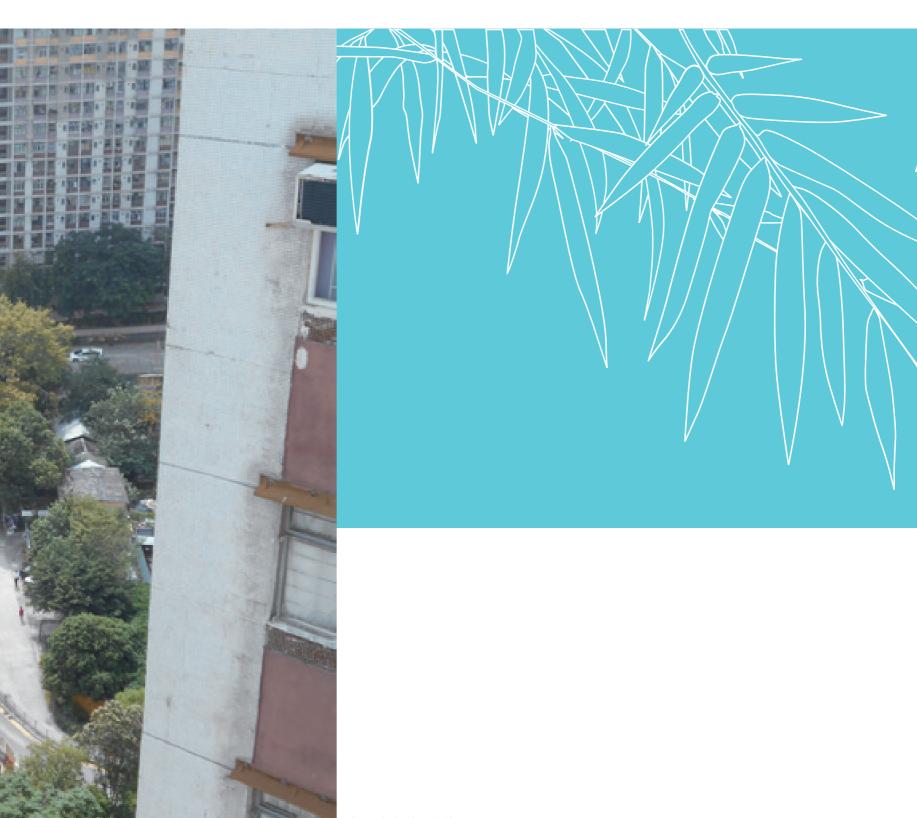
沿育群街的啟德河 ◢ Kai Tak River along Yuk Kwan Street



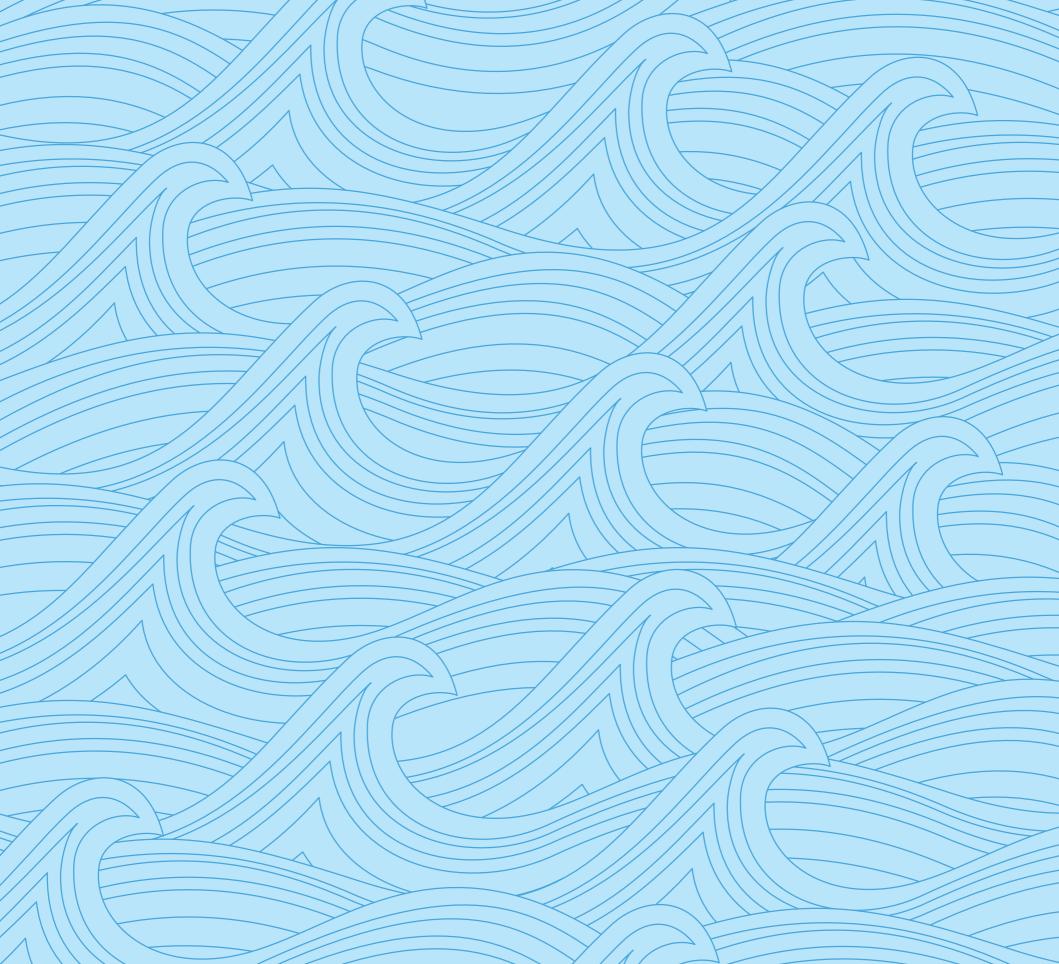
另一改善排洪策略是挖深河床:先鞏固河堤,再挖深河道及重建河床。

The other flood relief strategy entails deepening river bed: firstly, strengthening the river bank; secondly, deepening the river course; and thirdly, reconstructing the river bed.





▲ 沿東光道的啟德河 Kai Tak River along Tung Kwong Road



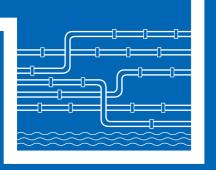


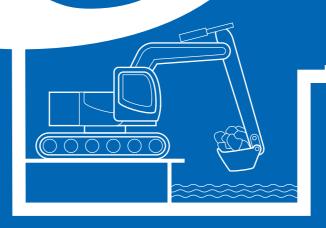
渠務署在工程期間面對 三大工程挑戰:

DSD was posed with 3 major challenges resulting from the construction works:

Three 三大挑戰 Challenges

重置河道內大量公共設施 To relocate substantial amount of public utilities







實施大型臨時交通措施 To implement large-scale temporary traffic arrangements

維持啟德河排水功能 To maintain drainage capacity of Kai Tak River



彩虹道及沙田坳道路口 ◢ Intersection at Choi Hung Road and Shatin Pass Road





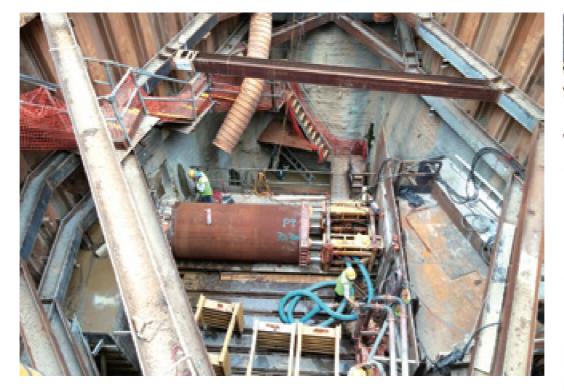


挑戰一:重置河道內大量公共設施

 $Challenge\ 1: To\ relocate\ substantial\ amount\ of\ public\ utilities\ laid\ across\ the\ river\ course$

工程面對不少挑戰,因啟德河早於數十年前興建,當時城市規劃仍未完善,很多地下管道於河道中穿插,大大減低排洪空間。

The construction works itself is not always a straight line. At the time the Kai Tak River was built decades ago, town planning then had plenty of loopholes. As heavy trafficking of public utilities weaving along in the river course, the flood relief capacity in Kai Tak River was significantly impaired.











首要的工程是將橫跨河道大大小小的公共管道設施一併整理及移離河道,期間須建造大型豎井於河底進行隧道工程。

The first priority undertaking was to re-assemble and re-locate those public utilities that were laid previously in the river course. Large construction shafts were required for tunnelling works underneath the river.





東頭二邨對出 ◢ Adjoining area to Tung Tau (II) Estate



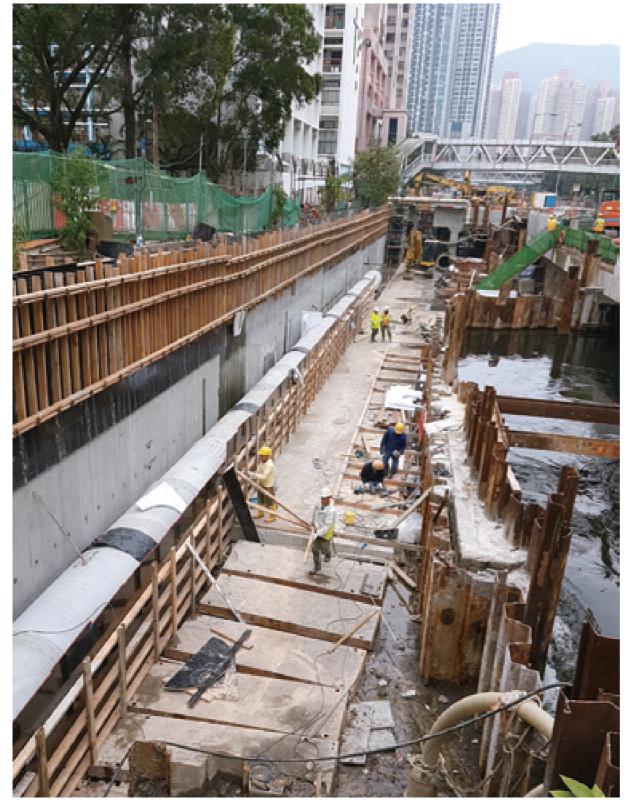


摩士公園 (1 號公園) 對出 ◢ Adjoining area to Morse Park (Park No. 1)

挑戰二:維持啟德河排水功能

Challenge 2: To maintain drainage capacity along Kai Tak River

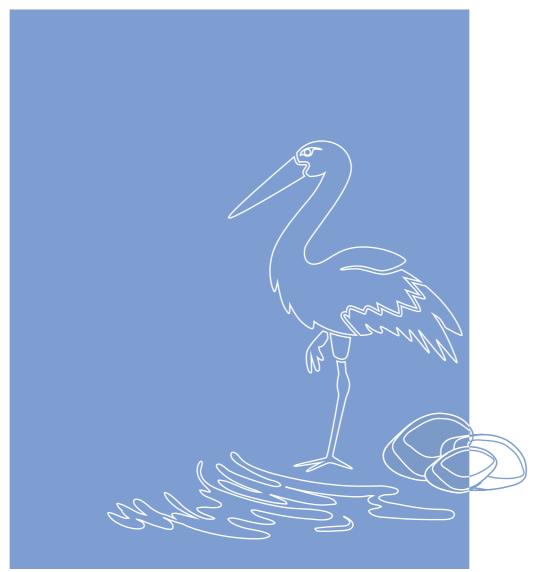
工程期間,啟德河必須維持基本的排水能力,因此於雨季鞏固河堤時須搭建較高的工作台,預留大量河道空間作排水用途。 It is expected that Kai Tak River still had to sustain a reasonable drainage capacity during the construction period. An elevated work platform was built for working along the river bank during those rainy seasons, to allocate ample space along the river course for drainage conveyance.





摩士公園 (1 號公園) 對出 ▲ Adjoining area to Morse Park (Park No. 1)





旱季時,承建商才能大規模進行河道工程,但仍要預留部分河道予沙田及大埔污水處理廠已處理的排放水排放至維多利亞港。

It is understandable that contractors can undertake largescale construction works on the river course effectively during the dry seasons only. Still, sections of river course had to be reserved for conveying effluent discharged from Sha Tin and Tai Po Sewage Treatment Works, to wind into the Victoria Harbour in destination.



彩虹道及爵祿街路口 ◢ Intersection at Choi Hung Road and Tseuk Luk Street







由於工程期間啟德河的排洪能力仍未有明顯提升,以致大雨時啟德河仍有溢滿,導致周邊街道水浸。

During construction, the drainage capacity had not been improved significantly, flooding still occurred during heavy rainstorms.

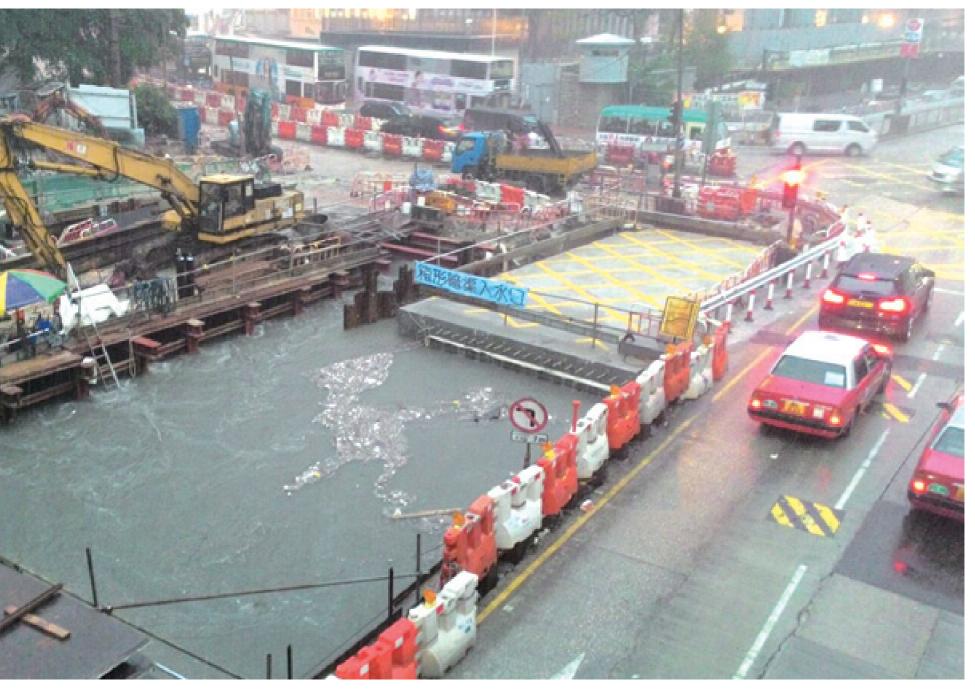
2015年9月26日黃大仙區雨量曾高達每小時103毫米,以致洪水湧出彩虹道。 On 26th September 2015, as rainfall measured 103 mm per hour in Wong Tai Sin, overflowing floods spread to Choi Hung Road.







下雨前 ◢ Before the onset of rain



2016年雨季[,]新建成的箱形暗渠在大雨時亦立即投入服務[,]以減低周邊的 水浸風險[。]

During rainy season of 2016, newly built box culvert was put in place, to help mitigate flooding risk in the peripheral areas.

暴雨下的彩虹道及沙田坳道路口 ▲ A snapshot at the intersection of Choi Hung Road and Shatin Pass Road at the mercy of torrential rain



改道前 ▲
Road condition before the diversion





改道後行人路及道路中央分隔欄已拆除◢

Ever since the diversion works, the pedestrian pathway, along with the central divider were demolished

挑戰三:實施大型臨時交通措施

Challenge 3: To implement large-scale temporary traffic arrangements

興建箱形暗渠時必須圍封部分彩虹道,以保持交通暢順,彩虹道部分行人路及道路中央 分隔欄臨時改為行車線。

When the box culvert's construction works was undertaking, a portion of Choi Hung Road was fenced off as required. To facilitate the traffic flows, few sections of pedestrian pathway on Choi Hung Road and central divider were recruited and temporarily converted into traffic lanes.





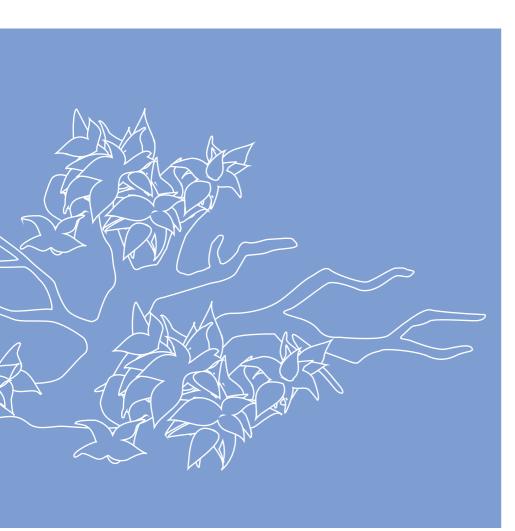
彩虹道及大成街路口 ◢ Intersection at Choi Hung Road and Tai Shing Street



▲ 彩虹道及沙田坳道路口,位於河道上的大型臨時行車鐵橋 At the intersection of Choi Hung Road and Shatin Pass Road, a large-scale steel deck above the river course was built to enable trafficking

近路口位置的安排更是複雜,因為路面須全天候開放行車,路面下的河道亦要不間斷讓河水通過, 必須分多個階段去施工。

The traffic arrangement near the junction was bound to be puzzling. As traffic flows expected to continue on road surface uninterruptedly, the river course beneath has to convey drainage flows in tandem. As such, the construction works has to be orderly divided into different phases.





歷時數年,整段1.1公里的河道已完成挖深,全段400米長的箱形暗渠亦已建成並投入服務。

Spanning over years, deepening works on the whole water course measured at 1.1 km completed. The box culvert measured at full-length of 400 m launched into service, since completion.



▲ 彩虹道地底新建的箱形暗渠位置 The newly built box culvert was laid beneath Choi Hung Road











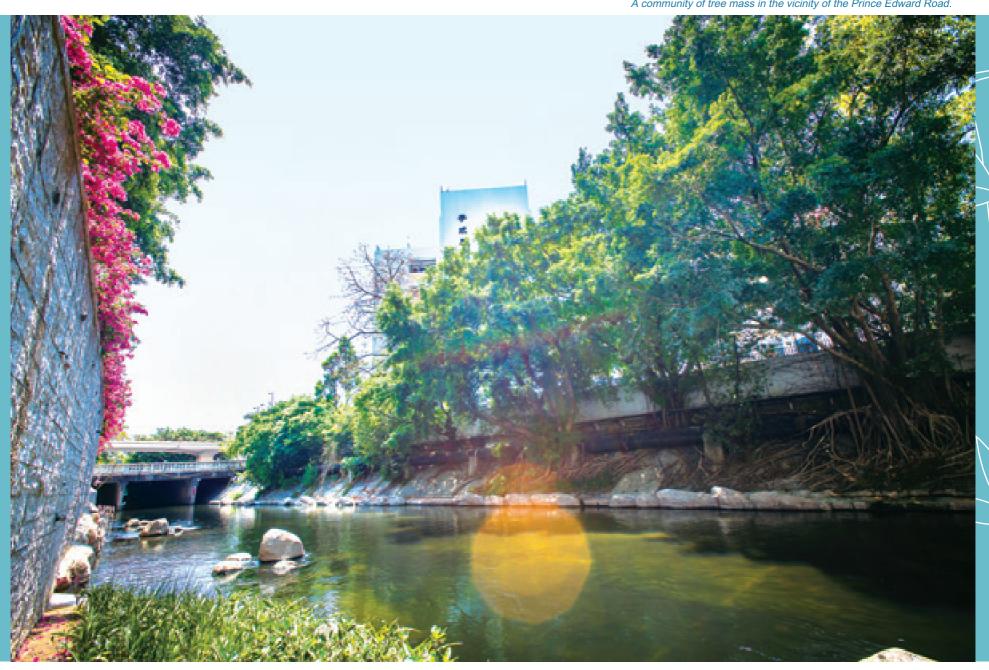


河邊花槽 Riverside planters

於沿河的花槽種植懸垂植物簕杜鵑,它的花期一年兩次,簕杜鵑色彩鮮豔的花朵能美化河堤。
Draping plant Bougainvillea spectabilis is grown in plant palettes along the river. The flora, usually blossomed twice a year helps beautify the riverbank.

▼ 東光道舊石牆 An ancient masonry wall extends along the Tung Kong Road





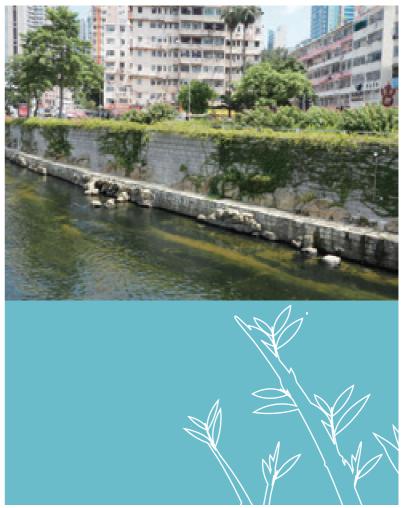
除了東光道保留的舊石牆及近太子道東保留的樹木群外,大部分河段均加設了河邊花槽。 Except for the preserved ancient existing masonry wall in Tung Kwong Road and tree community in the vicinity of Prince Edward East, major sections along the riverside was decorated with roadside planters.





▲ 仿石種植盆 Artificial rock planters

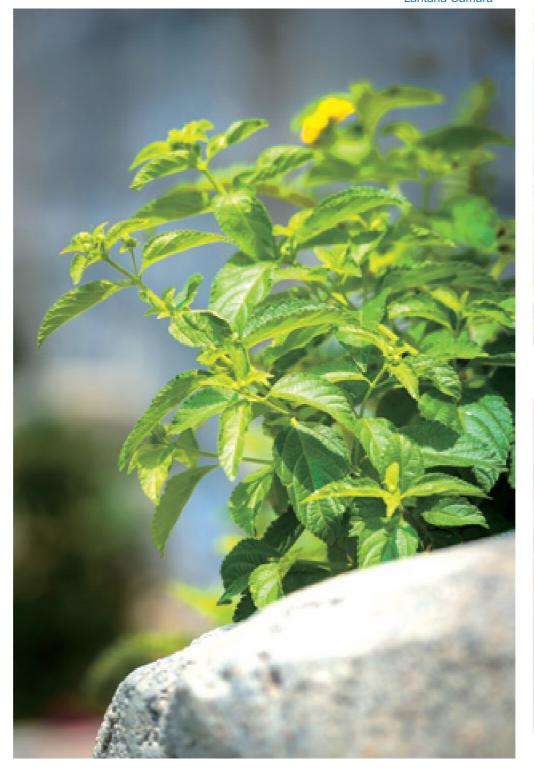




為了模擬自然河床的效果,我們採用了仿石,並於 仿石中設置一些種植空間,模擬出植物從石縫裏生 長出來的情景。

To simulate a natural riverbed, artificial rock with hidden soil pockets are provided at river bank to support plant growth.

馬櫻丹 ▼ Lantana Camara







異葉爬山虎 ◢ Diverse-leaved Creeper



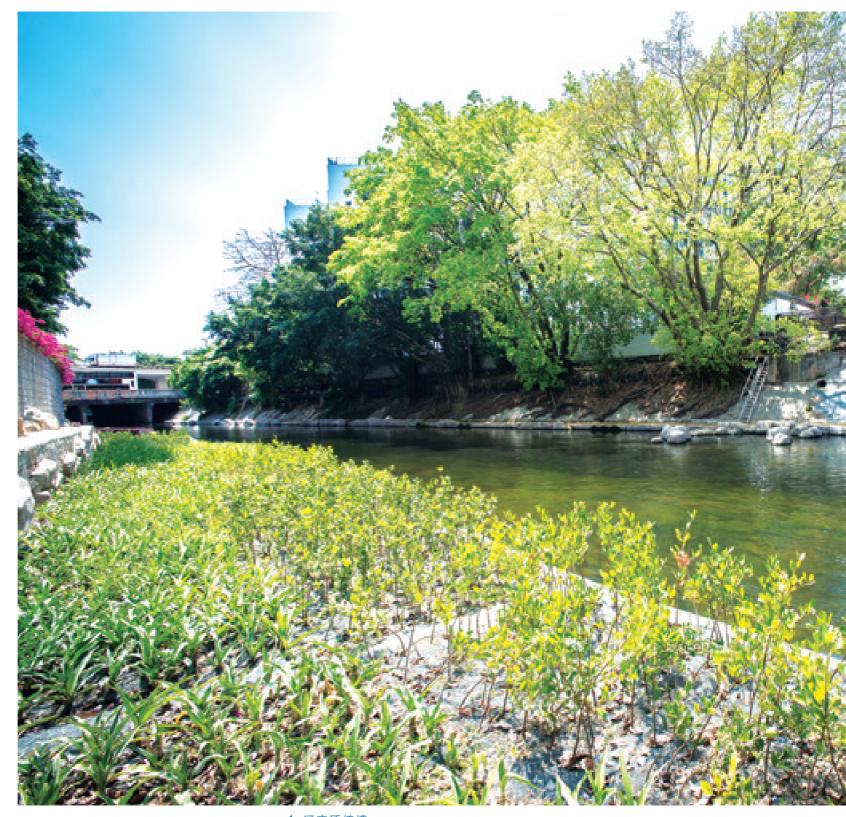
長春花 ▲ Catharanthus roseus





旱季時河水主要是經二級 污水處理的排放水,而雨 季時水流十分湍急及水位 升高,對植物造成一定威 脅。十多種植物經試種後 確定能於河道中健康生 長,才於啟德河大規模 種植。

During the dry seasons, the river mainly conveyed treated water discharged by the secondary sewage treatment works, whereas during rainy seasons, the colliding current and high water conditions posed a threat to most greenery. Dozens of plant species would be put through trial planting to assess for suitability to withstand threat, prior to their large-scale cultivation in Kai Tak River.



▲ 河床種植槽 Submerged planters





桐花樹 ▲ Aegiceras corniculatum

於河道較寬闊的位置種植水生植物,當中包括本地原生紅樹林 品種—桐花樹。

Down into the river course, distinctive sections with ample diameter were selected to grow aquatic plants, including the aegiceras corniculatum, an indigenous mangrove species.

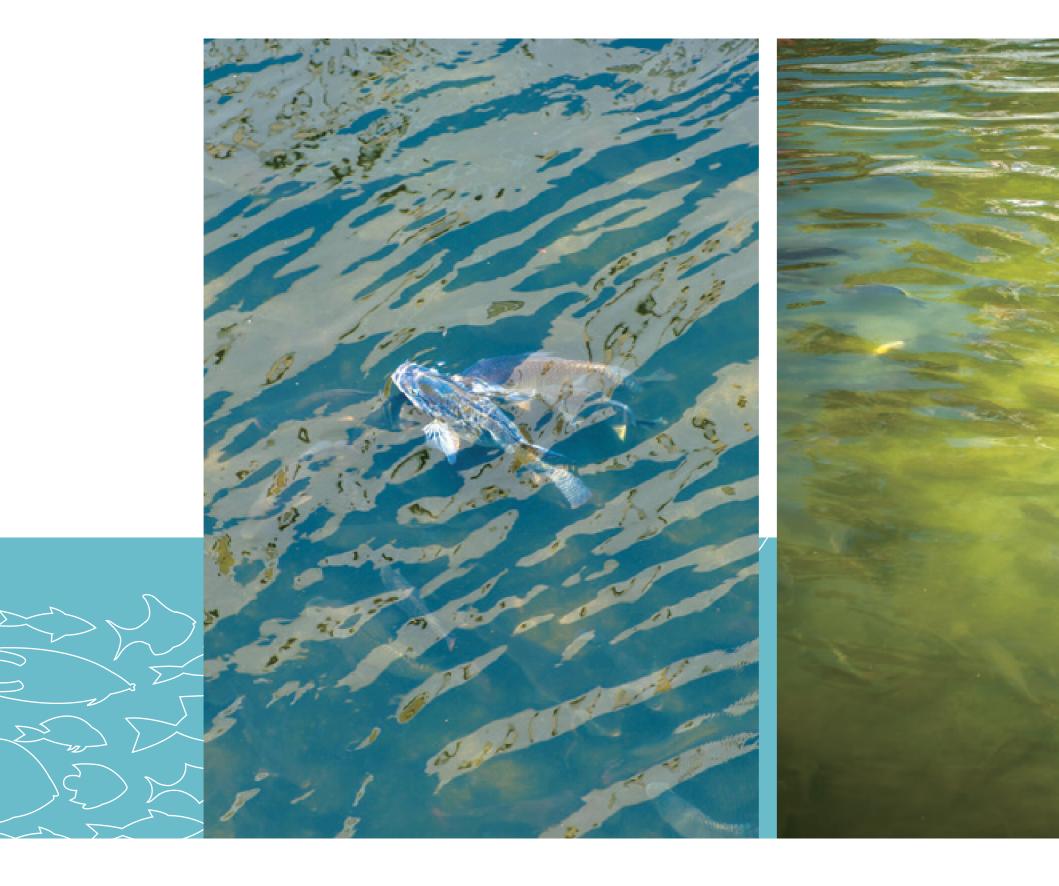






魚洞穴及導流石 ▲ Fish shelters and flow deflectors

於河道加設魚洞 穴及導流石,以 改變水流方向及 減低流水速度, 給魚群休息。 Down into the river course, fish shelters and flow deflectors were built to modify water-flow path, and to migrate high water current, all served to provide the fish species with a moderate habitat.



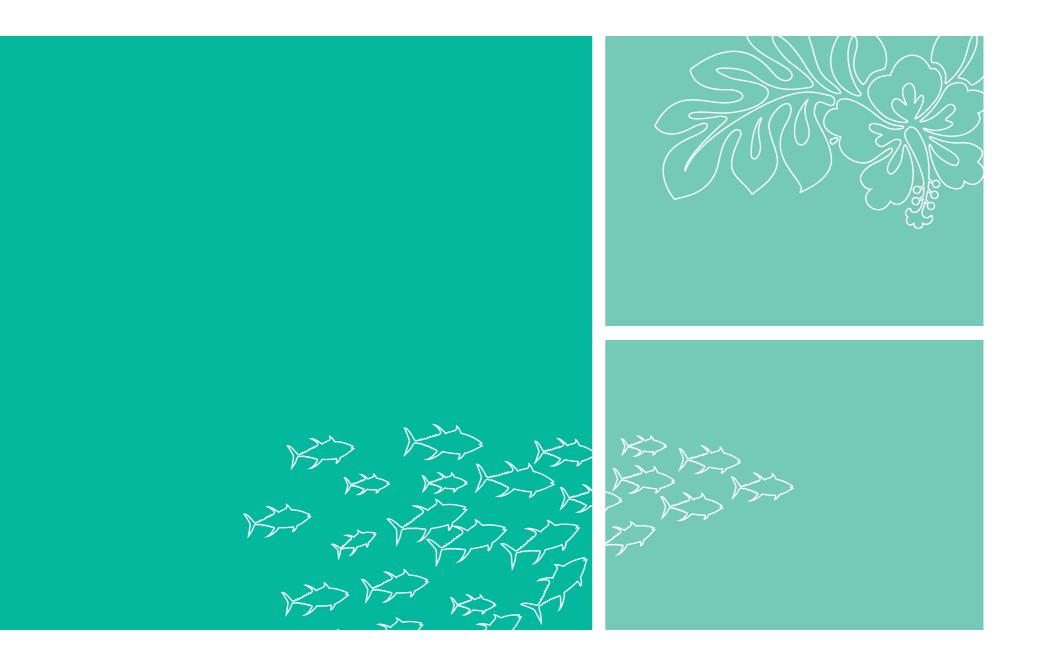


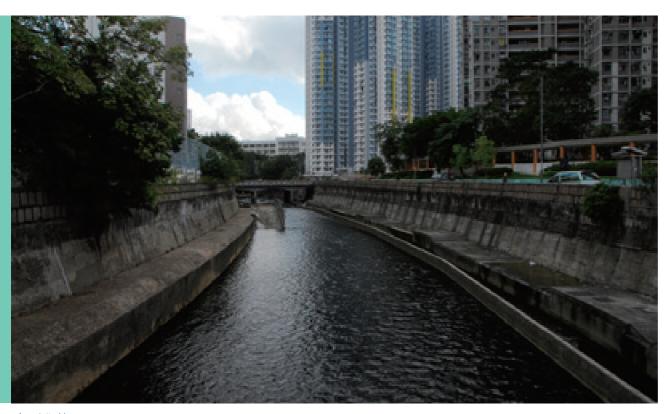
眾多鰂魚在河道中穿梭。 A swamp of tilapia swerving away in the course of river.

活化後的啟德河 Revitalised Kai Tak River

New life breathed into a revitalised Kai Tak River 讓活化後的啟德河重生

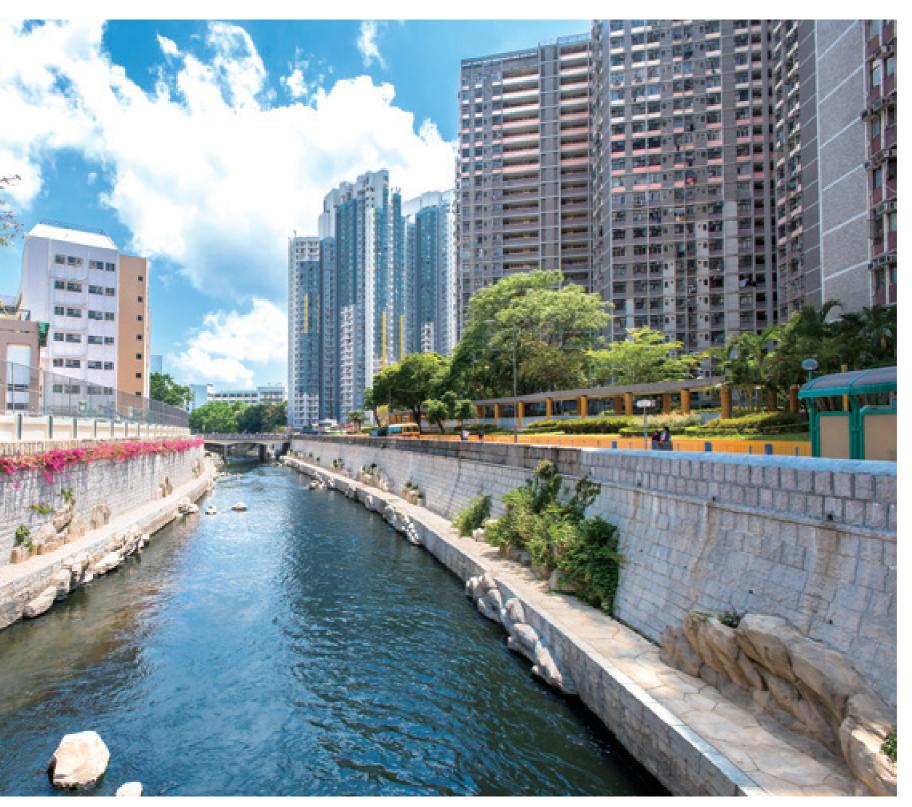






▲ 活化前 Prior to revitalisation





啟德河已活化成「市區綠化河道走廊」。 Kai Tak River was transformed into the "Urban Green River Corridor", subsequent to revitalisation works.

活化後 ◢ After



▲ 活化前 Prior to revitalisation



▲ 活化後 After



橫跨啟德河的東泰里行人橋亦一併重建。 Footbridge at Tung Tai Lane across Kai Tak River was also reconstructed.

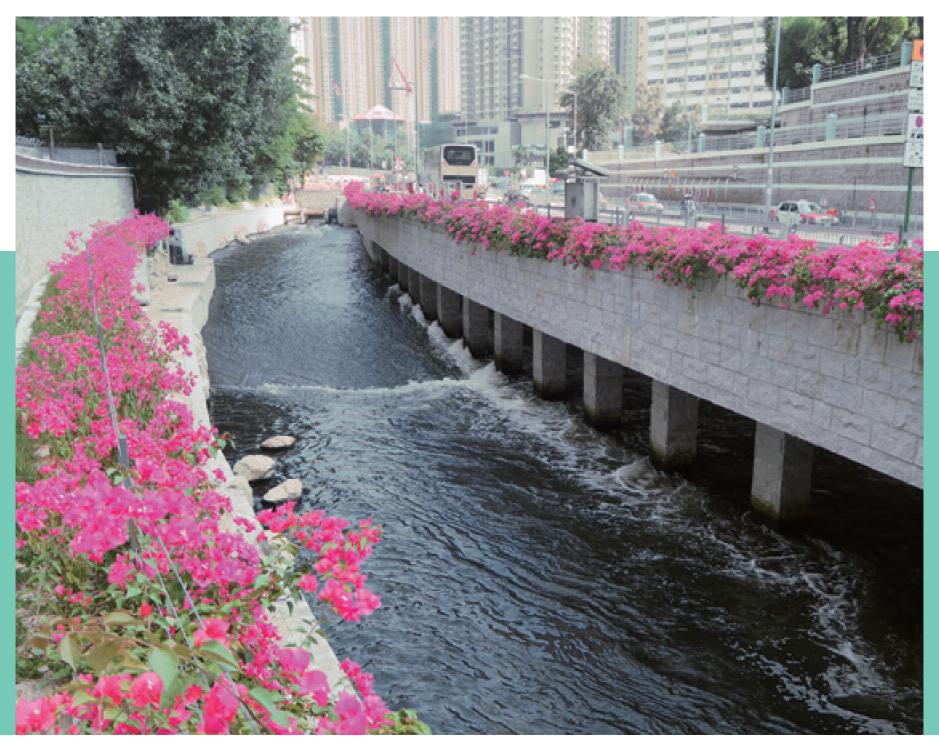
▲ 活化前 Prior to revitalisation







▲ 活化後 After



彩虹道地底箱形暗渠的進水口 ▲ Inlet to box culvert underneath Choi Hung Road

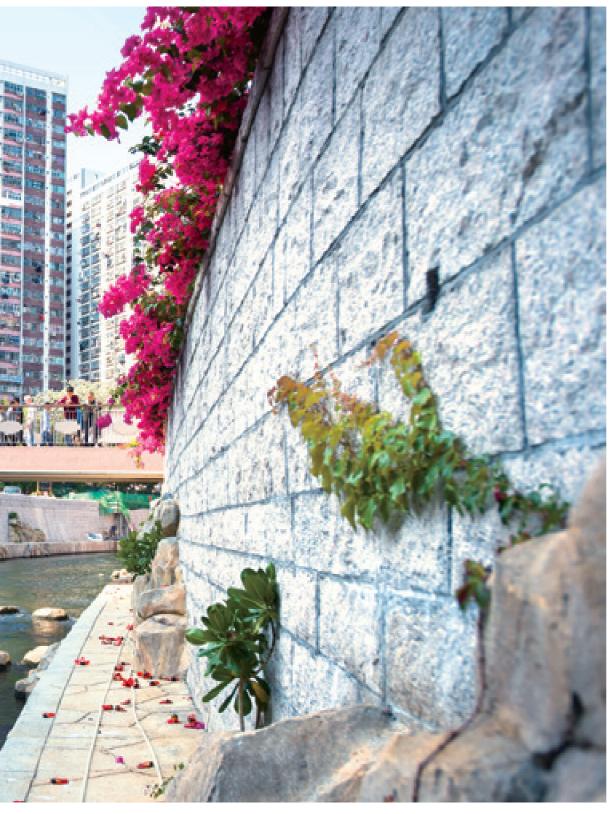


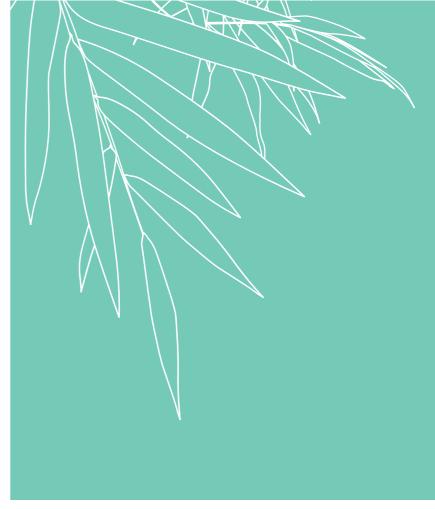
河上新建的巴士停車灣設有特色的上蓋,代表新舊的啟德河走線。 Newly-built bus lay-by over the river with an iconic shelter structure representing the old and new alignments of Kai Tak River.



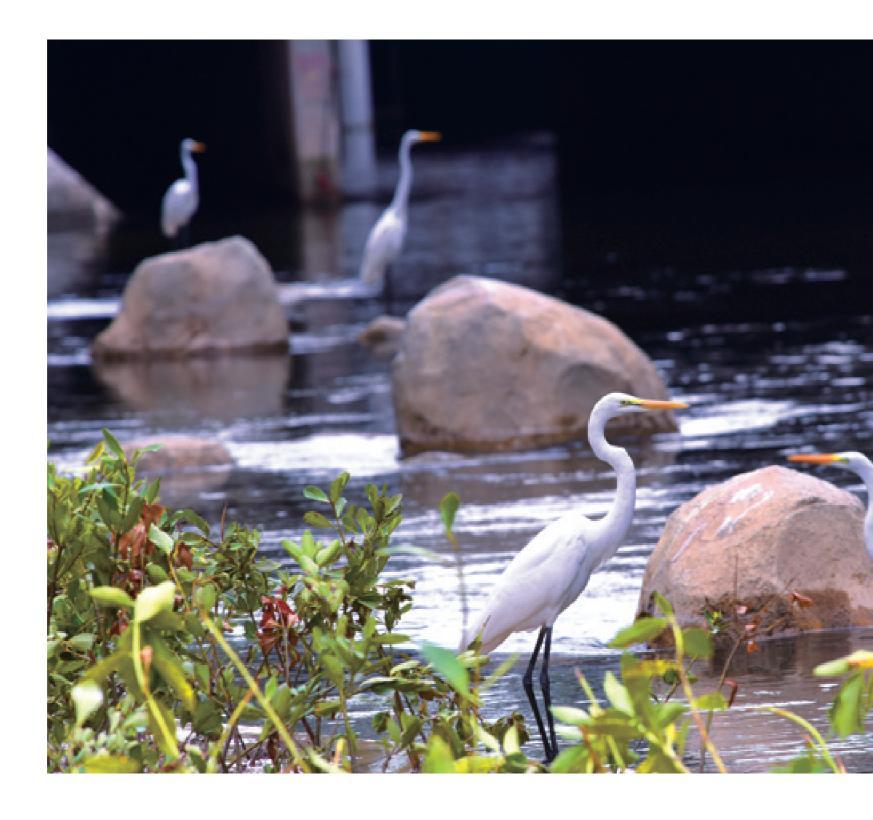


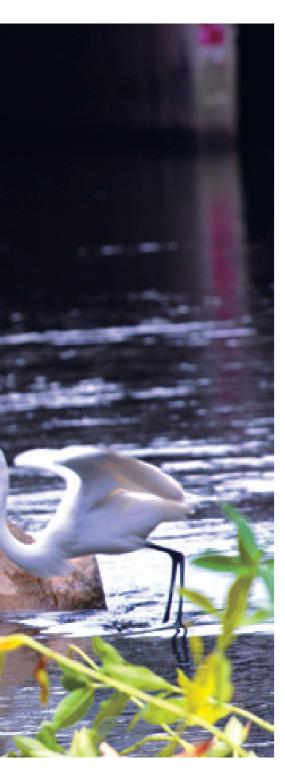


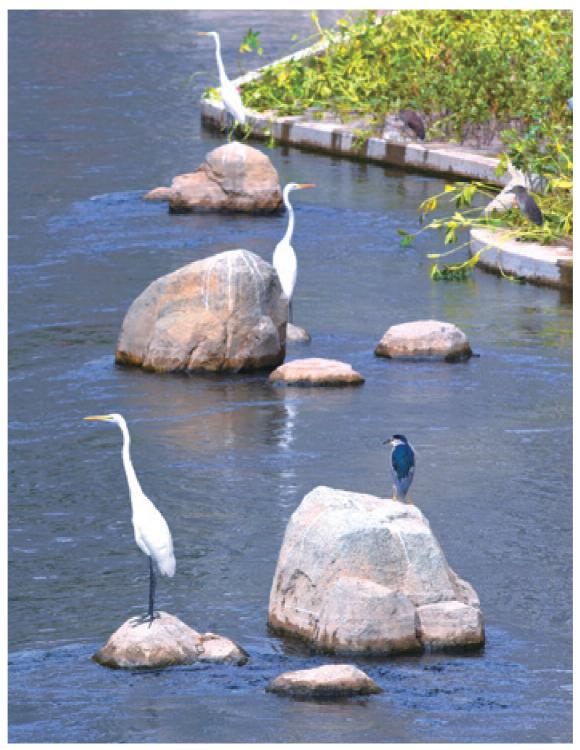




市民於橋上駐足欣賞 ◢ Residents leisurely lingered on the footbridge





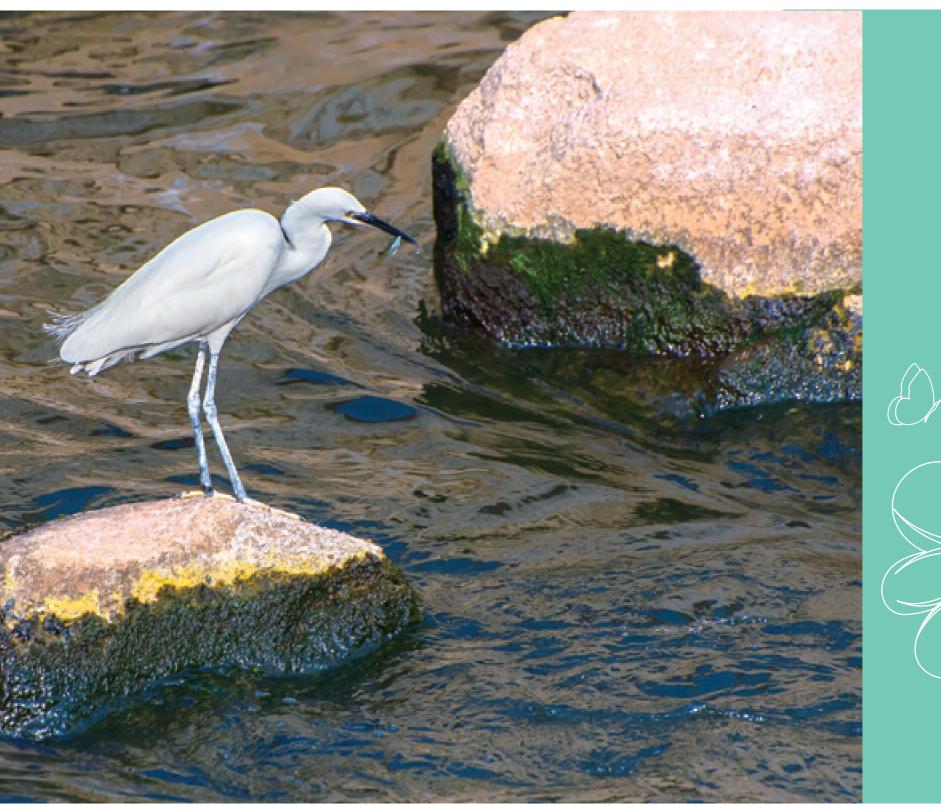


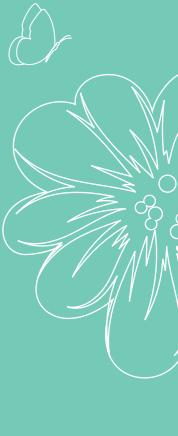
改善的環境更吸引了不少鷺鳥前來駐足 ◢ A revitalised waterscape, a kind of alluring attraction, harbours the egret species



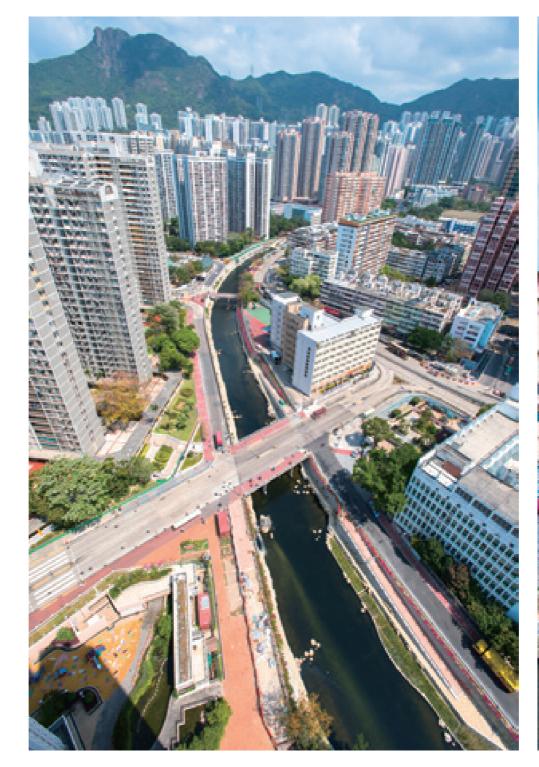








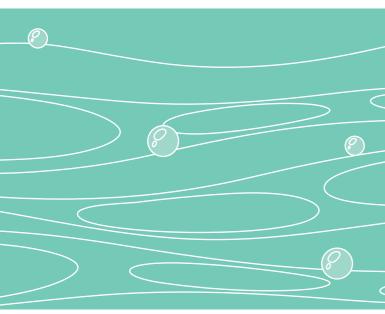
小白鷺於河中覓食◢ Little egret perched to look for prey















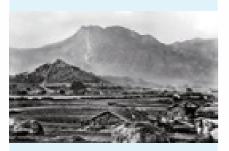
河堤畔倒影著社區生活的夜景 ◢ Night view of the river reflecting the city life of the community

啟德河發展歷程

Development of Kai Tak River

百多年前啟德明渠尚未出現, 九龍寨城已經建成,但附近仍 是一片農地。 第一期啟德填海於 1920 年完成,將該處關為住宅區啟德濱,建成明渠連接附近小河,亦即第一代的啟德明渠。

二次大戰時期啟德機場擴建 時,沿著機場外圍亦修築了一 條明渠,此即第二代啟德明 渠,當時明渠的走線是經九龍 城才連接維多利亞港。 因新蒲崗一帶工業發展蓬勃, 部分未經處理的廢水直接排 放到啟德明渠,造成污染問 題,令水質變得差。



Before 1900 ^{年前}

Far into more than a century ago, even before the Kai Tak Nallah was built, the Kowloon Walled City was found that the hinterland of which was fenced in by a sheer coverage of farmland.

·1920 第代



The first phase of Kai Tak reclamation for the residential district of Kai Tak Bund was completed in 1920 and the natural streams nearby were connected to a nullah, i.e. the first phase of Kai Tak Nullah, and extended to the sea.

· 1940 宗代

While the extension work on Kai Tak Airport was underway during the World War II period, a new nullah, i.e. the second phase of Kai Tak Nullah was constructed along the outer peripheral edge of the Airport. The blended nullah later grew into Kai Tak Nullah. Those days, the nullah passed through Kowloon City, before meandering into the Victoria Harbour.

1970 · **



Due to vigorous growth of industrial sector in San Po Kong, some untreated wastewater was discharged directly to Kai Tak Nullah and caused pollution. The water quality had become unpleasant.

政府實施一系列改善水質措施,及將沙田及大埔污水處理廠已處理的排放水輸送到明渠,以持續沖洗河道,明渠水質得以改善。



·1990 等代

The Government implemented a series of measures to improve the water quality, and conveyed the treated effluent from Sha Tin and Tai Po Sewage Treatment Works to the nullah for continuous flushing. The water quality of nullah was improved.

啟德明渠水質有所改善後,亦 命名為啟德河。城市發展加上 氣候變化因素,啟德明渠已不 能應付所需,導致大雨時周邊 地方水浸。 啟德明渠改善工程於 2011 年 年底展開,以提升排洪能力。 同時,政府亦把握機遇,將明 渠活化成一條市區綠化河道 走廊「啟德河」。



·2000 ^{年代}s



As the water quality improved, Kai Tak Nullah was subsequently renamed as Kai Tak River. Due to urban development and extreme weather, Kai Tak Nullah, built in the earlier period proved to be inadequate to cope with head-on pouring rain. Overflowing flood would eventually spill over to the adjoining areas.

- 2010 年代

Kai Tak River Improvement Works commenced in late 2011 to increase the drainage capacity of Kai Tak Nullah. The Government also seized this opportunity to revitalise the Nullah into an urban green river corridor "Kai Tak River".

啟德河改善工程於 2018 年峻 工。

2018 ···



The improvement works of the Kai Tak River was completed in 2018.

工程資料 Project Information

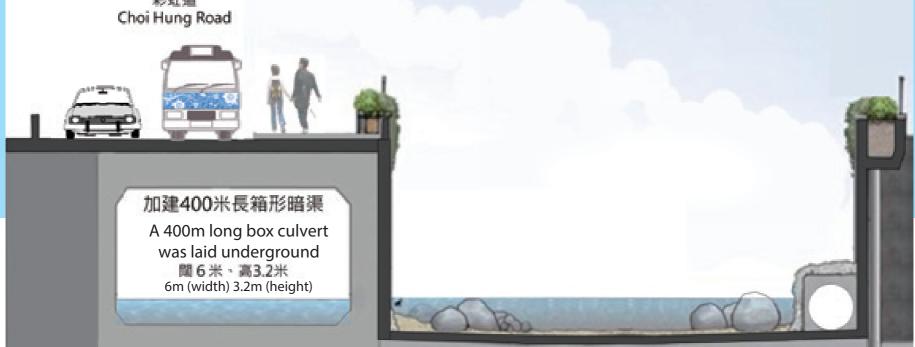


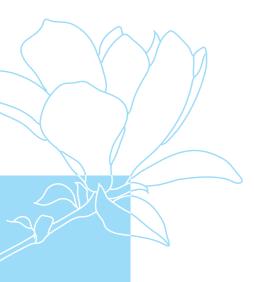
Ł	游	段	I	程		
		rea			cti	on

程 Section	中游段工程 Midstream Section
及修復一段由黃大仙警署至東頭二	重建和修復一段由東光道

工程合約 Contract	重建、改善及修復一段由黃大仙警署至東頭二 邨的啟德河 Reconstruction, Improvement and Rehabilitation section of Kai Tak River from Wong Tai Sin Police Station to Tung Tau II Estate	重建和修復一段由東光道至太子道東的啟德河 Reconstruction and Rehabilitation of Kai Tak River from Tung Kwong Road to Prince Edward Road East
合約編號 Contract No.	DC/2011/04	DC/2013/03
工程範圍 Project Scope	✓ 重建和修復長約600米的啟德河上游段; Reconstruction and rehabilitation of an upstream section of Kai Tak River of about 600m long; ✓ 沿黃大仙警署至東泰里的一段啟德河建造一條長約400米的箱形暗渠;以及Construction of a box culvert of about 400m long alongside the Kai Tak River from Wong Tai Sin Police Station to Tung Tai Lane; and ✓ 進行河道美化工程。 Landscaping works in river.	✓ 重建和修復長約500米的啟德河中游段; Reconstruction and rehabilitation of a midstream section of Kai Tak River of about 500m long; ✓ 改善摩士公園(一號公園);以及 Associated improvement works at Morse Park (Park No. 1); and ✓ 進行河道美化工程。 Landscaping works in river.
動工日期	2011年10月	2013年12月
Commencement Date	October 2011	December 2013
完工日期	2018年6月	2017年11月
Completion Date	June 2018	November 2017
顧問公司	艾奕康顧問有限公司	阿特金斯顧問有限公司
Consultants	AECOM Consulting Services Limited	Atkins China Limited
承建商	利達一實力聯營	中國路橋工程有限責任公司
Contractors	Leader - Sunnic Joint Venture	China Road and Bridge Corporation
工程預算開支	約16億港元	約12億港元
Project Estimate	About HK\$1.6 billion	About HK\$1.2 billion

彩虹道 Choi Hung Road





啟德河改善工程(黃大仙段)紀念相冊

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Kai Tak River Improvement Works (Wong Tai Sin Section) Monograph

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