

THE  
HONG KONG  
INSTITUTE OF  
LANDSCAPE  
ARCHITECTS

談園說境  
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SPRING  
2022

ISSUE 36



# HKILA AWARDS 2021

LANDSCAPE  
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**ACKNOWLEDGEMENTS**

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Any suggestions and contributions, please send to [publication@hkila.com](mailto:publication@hkila.com)

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# LAUNCH OF HKILA ONLINE APPLICATIONS

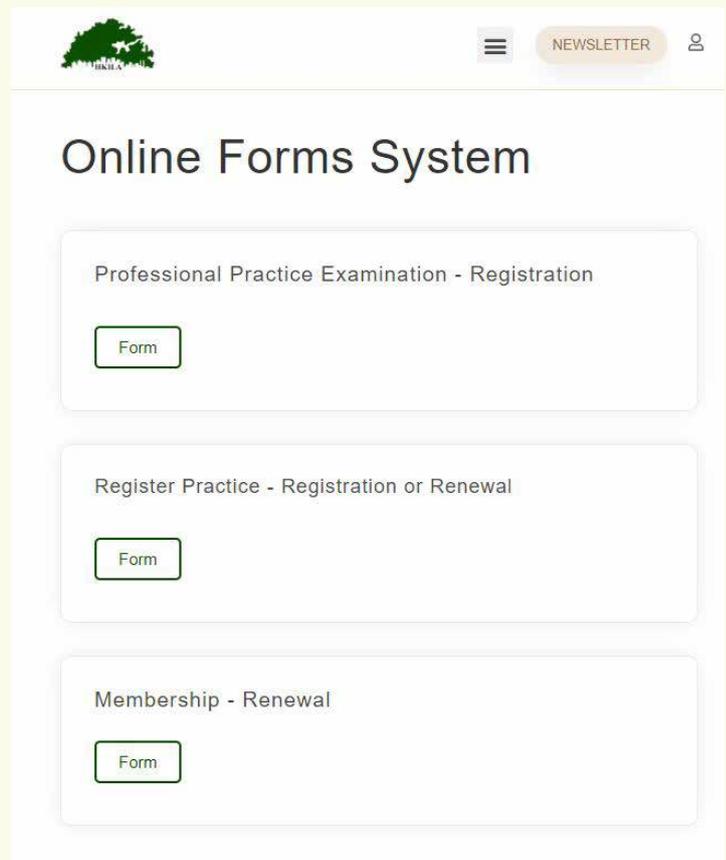
by Mr. Keith HUANG, Vice-President of the HKILA

The HKILA Council are excited to announce we are progressing to digitalize the applications forms to better serve our members. From a successful funding application, the Hong Kong Productivity Council sponsored a new website that offers 3 application forms found at the subdomain page <https://forms.hkila.com/> and also accessed under the Opportunities tab as "Online Forms" in the core HKILA website <https://www.hkila.com/>. The currently offered online forms are:

1. Professional Practice Examination (PPE) registration,
2. Register practice registration or renewal, and
3. HKILA membership renewal.

For the early stages, we are still figuring out the online payment system (via Paypal) and appreciate your patience as we settle the final complications. For now please use the "Electronic fund transfer" option under the payments on the online forms. HKILA Secretariat will continue to accept the equivalent hardcopy submissions but encourage all members to try the new webpage and go paperless!

This is an initial launch and HKILA Council hopes to continue adding more forms for your convenience at a later date.



## PROMULGATION OF NEW STREAMLINED ARRANGEMENT FOR DEVELOPMENT CONTROL (LANDSD LAO PN ISSUE NO. 4/2021)

Please be informed that a new Lands Administration Office (LAO) Practice Note (PN) Issue No. 4/2021 has been promulgated to effect the streamlined measure on "Approval or Consent under Lease". The LAO PN takes immediate effect and could be viewed at below link:

<https://www.landsd.gov.hk/en/resources/practice-notes/lao.html>

For any questions, please contact Secretary of Joint Subcommittee on Streamlining Development Control at 3509 7836.

## YUAN LIN 2022 CALL FOR SUBMISSION

by the HKILA Publication Committee

The Publication Committee would like to invite written contributions from all HKILA members to share your works, experience, thoughts, ideas and vision in relation to landscape architecture in Hong Kong, and compile them for the forthcoming issue of "Yuan Lin 2022".

Contributions should be topical, concise, factual, informative, and not promotional. They may take the form of articles, reviews, academic papers, graphic illustrations or photographic images with accompanying detailed descriptions sharing the development and final product of your works.

The written contributions should relate to Landscape Architecture in Hong Kong. They should be between 1500-6000 words in English or in Chinese with an English summary, and shall be written in professional or academic language. References and citations should be used where appropriate. Past editions of Yuan Lin are available at: <http://www.hkila.com/publication.php>.

Grateful for your submission by 31 May 2022.

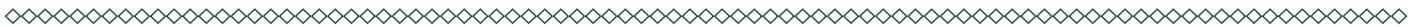
# HKILA ANNUAL DINNER 2021

by the HKILA Functions and Events Committee

The HKILA's Annual Dinner was successfully held on 29 October 2021 at Renaissance Harbour View Hotel. Our guests including government officials, representatives from professional organisations, academics, HKILA members and representatives from registered practices.

In this period of special time fighting the virus, the theme of our Annual Dinner this year is "Healthy City". Our members are very much like to discuss about the city's development during post-pandemic time, making Hong Kong a pandemic resilient and healthy city. We truly believe together, we can defeat the virus, come out a better planned city and a better planned future.

Thank you for joining and supporting the Annual Dinner. It has been a challenge organizing the event with the covid pandemic situation. The Dinner was full of joy and cheerful, with band show from LaLaChimp and also the lucky draw. The HKILA Functions and Events Committee would like to take the chance to thank all guests who grace us with their presence at the HKILA Annual Dinner, as well as the sponsors who providing the support, and all helpers' tremendous effort in organizing such a memorable event.



# JOINT INSTITUTES FORUM FOR 2021 LEGISLATION COUNCIL ELECTION (THE ARCHITECTURAL, SURVEYING, PLANNING AND LANDSCAPE FUNCTIONAL CONSTITUENCY)

The 2021 Legislation Council (LegCo) Election was held on 19 December 2021. Pursuant to the Annex II to Basic Law amended by National People's Congress (NPC) Standing Committee on 30 March 2021, the LegCo shall be composed of 90 members. 1 of the LegCo members will represent Architectural, Surveying, Planning and Landscape (ASPL) Functional Constituency (FC) and be elected by all eligible ASPL FC voters.

To let the eligible ASPL FC voters from 4 Institutes of ASPL Subsector know more about the candidate(s) and their election platform(s), the HKIA, HKILA, HKIP and HKIS has co-organised an online "Joint Institutes Forum for 2021 LegCo Election (ASPL FC)" on 6 December 2021.

Thank you for members' support for the Joint Institutes Forum.



# 重用園境專業 建設宜居城市

立法會建築、測量、都市規劃及園境界議員 謝偉銓

香港園境師學會在臨回歸前，獲賦予法定地位和設立了獨立註冊制度，正式成為當年仍稱為「建築、測量及都市規劃界」立法會功能界別的一員。但由於初時學會會員及註冊園境師人數較少，佔界別的專業會員比例不足百分之一，加上當時不少香港市民、以至部分政府官員，對園境工作及其社會效益認識不深，令到學會與園境師的聲音，相對其他建築相關專業受重視的程度為低。

本人自2012年首次當選議員、成為業界在立法會的代表之後，便一直致力提升園境師在社會及政府內部的認受性。具體工作包括在2015年成功爭取政府及立法會修改相關法例，將立法會功能界別及特首選舉委員會界別分組的「建築、測量及都市規劃界」名稱，「正名」為「建築、測量、都市規劃及園境界」，以如實反映園境師在我們功能界別的地位。

此外，基於香港的獨特城市環境，不少涉及園境的建設均是政府工程，但政府內的專業園境師職位，相對於其他建築相關專業卻是最少，尤其是負責決策、統籌及管理工作的首長級職位，或多或少影響了本港園境建設的發揮和認受。在我的首屆議員任期，政府的園境師職位只有約90個，可供園境師職系人員出任的首長級職位更只有1個，而且是最低的D1級職位。這個1比90的比例，明顯並不合理及遠低於其他專業職系。

經過本人聯同業界、學會及有關的公務員工會的努力爭取，現時政府園境師職位已增至約130個，幾年間增幅接近50%。可供園境師出任的首長級職位更倍增至4個，最高可達D2級。至於組織架構方面，發展局近年亦已先後成立「樹木管理辦事處」及「綠化、園境及樹木管理組」，反映政府對園境師及園境相關工作越加重視。

在政府工程方面，以往園境與綠化工作，往往被部分官員及議員視為粉飾性、錦上添花、甚至是可有可無的附加項目。在本人與業界的積極推動下，近年所有工務工程撥款申請，都會將項目內的園境及綠化部分獨立成項，變成必須向立法會交代的內容與開支，有助議員、業界及市民進行監察。

內地幅員遼闊，發展蓬勃，建設快速，對園境綠化及相關專業服務的需求甚殷，但過往兩地的建設相關專業互認工作，大都集中在工程、建築及測量等專業和企業，對人數較少，但發揮機會甚多的園境專業關注相對不足。

過去近十年，本人不論是以立法會議員或全國政協委員身份，為業界向內地進行的溝通及爭取工作，從來都不會忽略了園境師學會的份兒。過去一年多，內地不同部委和省市公布的大量開放市場及專業資格、資質互認措施，絕大部分都有涵蓋園境專業，為本港的園境師與相關企業，創造了更多的機遇和更大的發展空間。

隨着市民對環境保育及健康生活的日益重視、對城市綠化和公共空間的訴求日益提升、對氣候變化與樹木管理的加緊關注，還有即將推展的「明日大嶼願景」、「北部都會區」等大型發展與保育計劃，粵港澳大灣區的大量園境項目，國家對環保、綠化及宜居城市建設的支持與投放，都為本港的園境專業帶來龐大發展機遇。

不過，在今屆立法會選舉期間，亦有不少園境師及相關企業，向我反映業界面對的種種問題和挑戰，有待本人在新一屆立法會的四年任期，繼續與業界及學會積極爭取，努力推動。

當中包括進一步加強政府及整體社會對園境工作的重視和投資、增加相關大學學額及培訓機會、接受園境師以「總顧問」(Lead Consultant)身份競投及管理一些以園境為主的建設工程項目、以「能者居之」原則容許園境師擔任更高層政府決策及管理職位，以至研究設立獨立的園境師部門或辦公室等。讓我們一起努力，加倍善用和重用園境專業，將香港建設成更綠色、健康及宜居的城市！

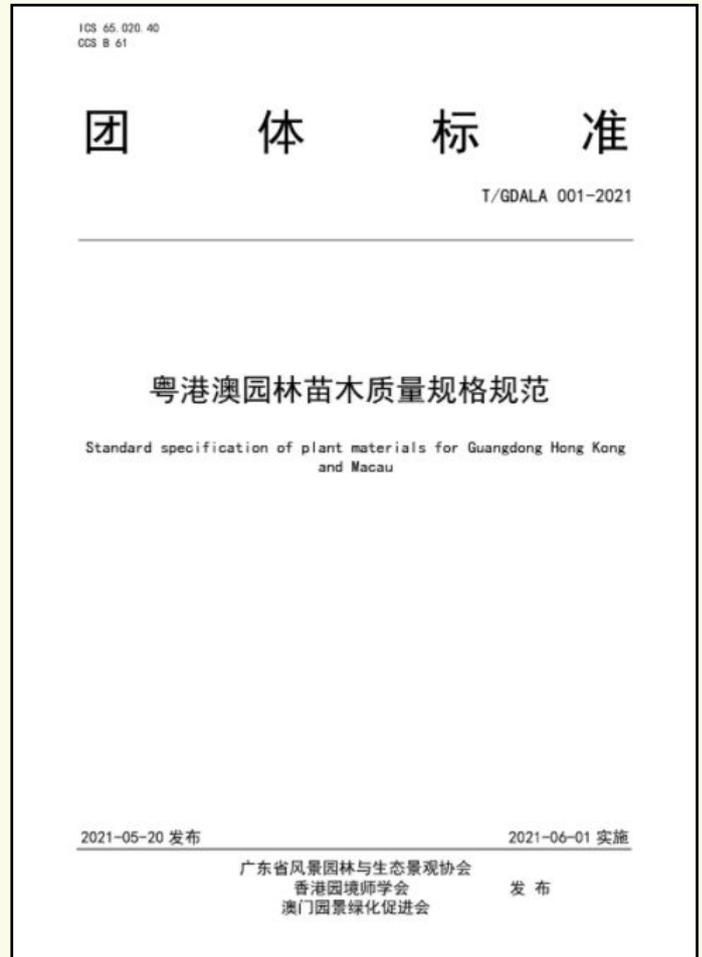
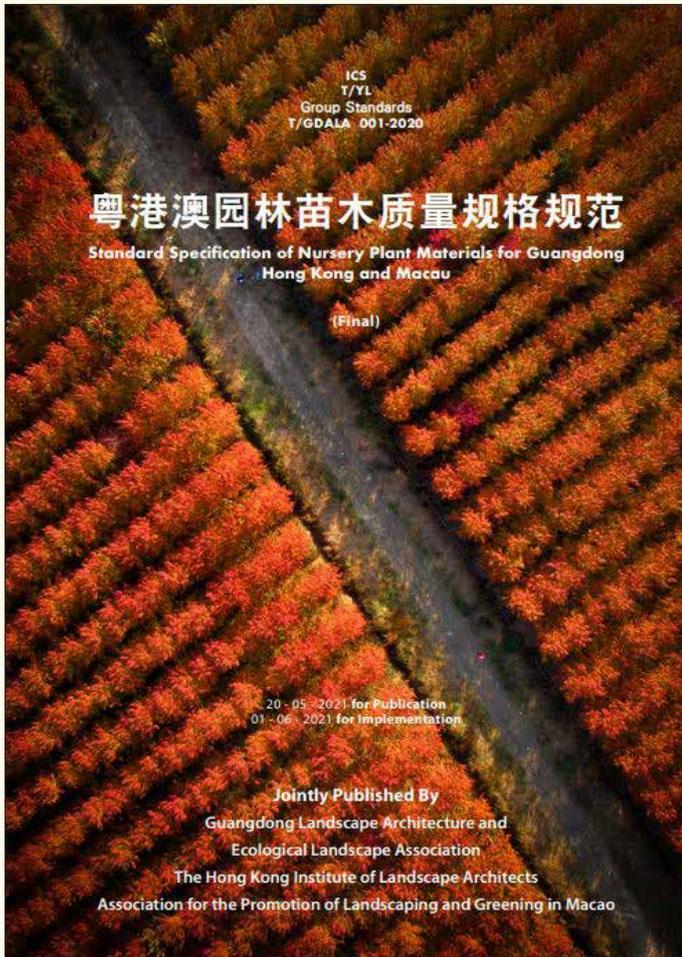


謝偉銓先生現為香港立法會建築、測量、都市規劃及園境界功能組別議員，為香港測量師學會之資深會員。謝偉銓先生從事房地產業務近40年，除致力地產發展外，亦熱心參與公共事務，現為物業管理業監管局主席、市區重建局非官方非執行董事、海濱事務委員會委員、紀律人員薪俸及服務常務委員會委員、香港話劇團理事會理事及智庫思籌知路召集人。彼為中國人民政治協商會議全國委員會委員及中國科學技術協會第九屆會員。謝先生於2014年獲頒銅紫荊星章，2017年獲頒皇家特許測量師學會終身成就獎，於2020年獲委任為太平紳士，及於2021年獲香港理工大學頒發「傑出理大校友」榮譽。

謝偉銓議員, BBS, JP  
香港立法會 (建築、測量、都市規劃及園境界)

# STANDARD SPECIFICATION OF NURSERY PLANT MATERIALS FOR GUANGDONG, HONG KONG, AND MACAU

by Mr. Evans Lu  
Co-opted Council Member of the HKILA



Guangdong province produces and supplies over 90% of soft landscape plant materials for development projects of Hong Kong, there is however, never a common set of specification for use across the regions.

HKILA took the initiative of launching the captioned project in 2018 to publish a standardized specification for soft landscape plant materials and in collaboration

with Guangdong Landscape Architecture and Ecological Landscape Association (GDLAELA) (廣東省風景園林與生態景觀協會), the Association for the Promotion of Landscaping and Greening in Macao (APLGM) (澳門園景綠化促進協會), and the Hong Kong Landscape Contractors' Association (HKLCA). The Project is partially funded by Professional Services Support Scheme (PASS) of the HKSAR government.



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# 2022 LANDSCAPE ACADEMIC DESIGN COMPETITION

by the Young Landscape Architects' Group (YLAG)

## Background

Young Landscape Architects' Group (YLAG) together with the support from HKILA (Hong Kong Institute of Landscape Architects) and in collaboration with participating institution, YLAG will run a students' work design competition as a platform for budding landscape architecture students to showcase their work to the industry as well as to celebrate their hard work. Please note that the eventual decision where the design exhibition will be held in a public space will have to depend on the number of submissions in the end, and thus will be confirmed again after the submission period.

## Timeline

- 11 February 2022 23:59 Submission Deadline
- March 2022 Announcement of Winners
- April 2022 Awards Presentation and Exhibition

## Registration Fee

- HKILA Member: Free
- Non-HKILA Member: HKD\$50
- Overseas: HKD\$150

## Submission outline

Participants are encouraged to submit their general studio work, but external contents may also be considered. In one A0 panel, submissions can be a single project from an individual or group, or maximum 2 projects in one shared panel. Should one choose to combine 2 project entries into a shared panel, each entry will eventually be averaged out between the 2 projects during the overall panel review.

## Judging criteria

The entries are judged on:

- Originality and uniqueness of project, whereby there is considerable contribution to landscape knowledge
- Quality of the panel content and its design
- Logic in design thought and process; Depth of analysis; Clarity of presentation

The judging panel will be by currently working graduate, associate and/or professional members within the YLAG committee.

## Awards

- Monetary prize of HKD \$1,000 for the Champion of each category
- Monetary prize of HKD \$500 for the 1st Runner Up of each category
- Certificates will also be presented at the YLAG AGM

## Competition Brief

<https://drive.google.com/file/d/16EGGhsawe2mvpJ57irlVvgoiE5PuYHXP/view>

## Enquiries

Please feel free to contact [hkylag@gmail.com](mailto:hkylag@gmail.com) or [ytag@hkila.com](mailto:ytag@hkila.com) for more information.

**2022 LANDSCAPE ACADEMIC DESIGN COMPETITION**

**timeline**  
 Submission Deadline | 11 Feb 2022  
 Announcement of Winners | March 2022  
 Awards Presentation & Exhibition | April 2022

**registration fee**  
 HKILA member | Free  
 Non-HKILA member | \$50  
 Overseas | \$150

**submission details**

Please feel free to contact [hkylag@gmail.com](mailto:hkylag@gmail.com) for more information.

# HKILA PROFESSIONAL AWARDS 2021 RESULTS ANNOUNCEMENT

by the HKILA Annual Awards Organizing Committee

The HKILA is proud to announce the 2021 Professional Landscape Awards winners this year. The jury panel consists of five HKILA Landscape Architects (listed in alphabetical order) – Mr. Christopher Chung, Ms. Elizabeth Leven, Mr. Heung Wai Kin, Mr. Mathew Pryor, Mr. Peter Duncan and the President of AILA - Ms. Claire Martin. Jurors were greatly impressed with the range and quality of the projects submitted, and noted these projects attest to the strength and depth of landscape practice in Hong Kong.

## 2021 Professional Awards Winners: (listed in alphabetical order)

### Housing Department Design and Construction for Public Rental Housing Development at Fanling Area 49

#### Jury comment:

The ecological and sustainability concepts were thoroughly researched and well executed. Of particular note was the active way that the landscape architect had worked with the ecologists, and had used the ecological baseline information within the design. Consideration was given both construction and long-term maintenance factors. Jurors thought the project set a strong example of landscape architectural knowledge and process Hong Kong.

#### Video:

<https://www.youtube.com/watch?v=WdVVJTfcYOk>

### Architectural Services Department Hoi Bun Road Park

#### Jury comment:

An excellent small park project. Jurors appreciated the strength of the overall design concept and noted that it had been very well executed. The use of existing site elements, and the scale, and composition of spaces within the park seemed very well judged.

#### Video:

<https://www.youtube.com/watch?v=1csQXR7Wiq8>

### URBIS Limited South East New Territories (SENT) Landfill Landscape Restoration: One-off Interim Monitoring Exercise

#### Jury comment:

Jurors were impressed with the detail and clarity of the information presented, and the range of site factors surveyed and analysed within the study, especially the relation between soil, vegetation, and site conditions. They considered that the information generated had great potential to inform landscape practice in future.

#### Video:

<https://www.youtube.com/watch?v=V4tdx9tXwg8>

### Architectural Services Department Pierside Precinct at Wan Chai harbourfront

#### Jury comment:

A simple but inspiring project design that used the natural qualities of the site to shape an innovative public space. Clear concept that addressed a multi-generational audience. Jurors were impressed with the quality of the detailing and material finishes.

#### Video:

Video: <https://www.youtube.com/watch?v=6MHKHhJPXTs>

Congratulations to the winners and  
we are grateful to all the participants!

# HOUSING DEPARTMENT, HKSAR GOVERNMENT

## DESIGN AND CONSTRUCTION FOR PUBLIC RENTAL HOUSING DEVELOPMENT AT FANLING AREA 49

### Project narrative

The Project Department proposed to develop Fanling Area 49 to a public rental housing development in consideration of its relative flat profile, the locational advantages close to schools, public transportation, shopping and its pleasant surrounding environment, for meeting the Government's 3-year average waiting time target for public housing.

In April 2010, Project Department carried out an ecological survey and assessment for the subject site which contains a watercourse, grassland, seasonally wet grassland and a small marsh; the dominant habitat surrounding the site is a secondary woodland. During the study, the watercourse (within and outside the subject site) and the secondary woodland were found to be of relatively high ecological value with species of conservation concern.

Butterfly community in the study area was found to be relatively diverse (78 species recorded, 30% of total recorded in Hong Kong); two of these species are considered to be of local concern in Hong Kong: *Taraka T. hamada* and *Celastrina C. lavendularis*. In addition, several species of bat were observed in the culvert underneath the site. According to Agriculture, Fisheries and Conservation Department's information, this culvert also serves as a hibernaculum for three bat species of *Rhinolophus affinis*, *Rhinolophus sinicus* and *Rhinolophus pusillus*.

Since certain habitats within the subject site and surroundings have certain extent of ecological importance, it was considered necessary to minimize adverse ecological impacts during construction (e.g. construction runoff and waste, disturbance to bat roost within the culvert, fragmentation of butterfly families, etc.).

During design and construction stage between 2014 and 2020, project team collaborated with ecologists paying extra effort from master layout plan down to landscape design and selection of appropriated planting species, etc. Also, throughout the whole construction period, a regular monitoring system was imposed to review if the mitigation measures were executed effectively. The final monitoring result recorded at end of March 2020 (completion of development) noted that the total numbers of bat boost was 3 times more than that in 2014. Diversity of butterfly families was also successfully restored in the Ecological Transition Zone (ETZ) within the estate. Indeed, it was reviewed that the whole design consideration and monitoring system were successfully implemented with distinguished results.

Proactive design and conservation approaches are classified into eight sequences:

- Ecological footprint prior to site development
- Conservation strategy on ecological assessment
- Ecological-orientated site planning
- Precise construction program with the consideration of species' life cycle & habit
- Concept of ecological restoration merging with landscape design
- Ecological regeneration after project completion
- Sustainability with underground water reuse
- Symbiosis and neighborhood with nature

The aims of coexistence, symbiosis and neighborhood among urban development and other natural species are satisfactory achieved. Four essential elements are well integrated in this small site (site area 1.3 ha) with total site coverage of greenery in 37.913%.

1. Blue (watercourse and underground water)
2. Green (secondary woodland and ETZ)
3. Ecology
4. Flat Production



# Story of Integration ~ Ecology, Site Planning & Underground Water Reuse

## 暉明邨



朝暉蝶舞涓流蓄  
暮明蝠至翠谷藏

- Chapter 1 ● Ecological footprint prior to site development
- Chapter 2 ● Conservation strategy on ecological assessment
- Chapter 3 ● Ecological-orientated site planning
- Chapter 4 ● Precise construction program with the consideration of species' life cycle & habit
- Chapter 5 ● Concept of ecological restoration merging with landscape design
- Chapter 6 ● Ecological regeneration after project completion
- Chapter 7 ● Sustainability with underground water reuse
- Chapter 8 ● Symbiosis and neighborhood with nature

Project Title :

Design and Construction for Public Rental Housing Development at Fanling Area 49

Submission Number : 2021-007

Project Location : Fanling, New Territories, Hong Kong

### Project narrative

The Project Department proposed to develop **Fanling Area 49** to a public rental housing development in consideration of its relative flat profile, the locational advantages close to schools, public transportation, shopping and its pleasant surrounding environment for meeting the Government's 3-year average waiting time target for public housing. The subject site locates in a valley near Yung Shing Court, Fanling, New Territories, land formed in the 90s and allocated to HKIA in 2009.

In April 2010, Project Department carried out an ecological survey and assessment for the subject site which contains a watercourse, grassland, seasonally wet grassland and a small marsh; the dominant habitat surrounding the site is a secondary woodland. During the study, the watercourse (within and outside the subject site) and the secondary woodland were found to be of relatively high ecological value with species of conservation concern.

Butterfly community in the study area was found to be relatively diverse (78 species recorded, 30% of total recorded in Hong Kong); two of these species are considered to be of local concern in Hong Kong: *Taraka T. hamada* and *Celastrina C. lavenderis*. In addition, several species of bat were observed in the culvert underneath the site. According to Agriculture, Fisheries and Conservation Department's information, this culvert also serves as a hibernaculum for three bat species of *Rhinolophus affinis*, *Rhinolophus sinicus* and *Rhinolophus pusillus*.

Since certain habitats within the subject site and surroundings have certain extent of ecological importance, it was considered necessary to minimize adverse ecological impacts during construction (e.g. construction runoff and waste, disturbance to bat roost within the culvert, fragmentation of butterfly families, etc.).

During design and construction stage between 2014 and 2020, project team collaborated with ecologists paying extra effort from master layout plan down to landscape design and selection of appropriated planting species, etc. Also, throughout the whole construction period, a regular monitoring system was imposed to review if the mitigation measures was executed effectively. The final monitoring result recorded at end of March 2020 (completion of development) noted that the total numbers of bat roosts was 3 times more than that in 2014. Diversity of butterfly families was also successfully restored in the Ecological Transition Zone (ETZ) within the estate. Indeed, it was reviewed that the whole design consideration and monitoring system were successfully implemented with distinguished results.

Proactive design and conservation approaches are classified into eight sequences:

- Ecological footprint prior to site development
- Conservation strategy on ecological assessment
- Ecological-orientated site planning
- Precise construction program with the consideration of species' life cycle & habit
- Concept of ecological restoration merging with landscape design
- Ecological regeneration after project completion
- Sustainability with underground water reuse
- Symbiosis and neighborhood with nature

The aims of coexistence, symbiosis and neighborhood among urban development and other natural species are satisfactory achieved.

Four essential elements are well integrated in this small site (site area 1.3 ba) with total site coverage of greenery in 37.913%.

1. Blue (watercourse and underground water)
2. Green (secondary woodland and ETZ)
3. Ecology
4. Flat Production

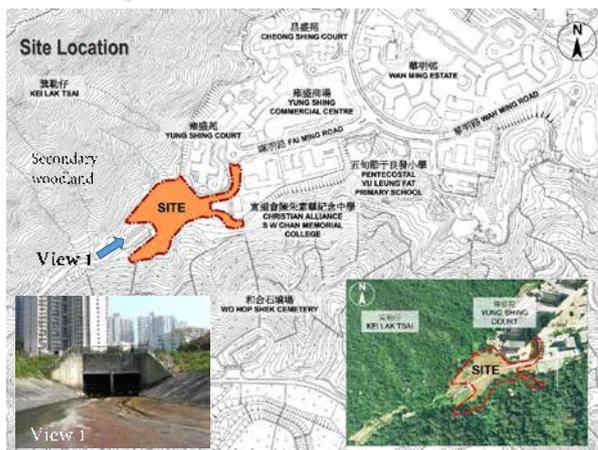


項目敘述

## Chapter 1 Ecological footprint prior to site development



Geographical Location of Fanling Area 49



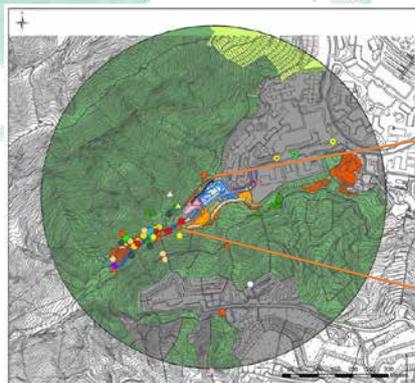
Aerial Photo prior to site development

- 10-month ecological assessment was carried out in 2010
- Watercourse and secondary woodland near the site were found of high ecological value
- The site was relatively in flat profile with seasonal wet grassland and small marsh
- Conservation of adjacent ecology and habitats restoration within the site after development was desired.

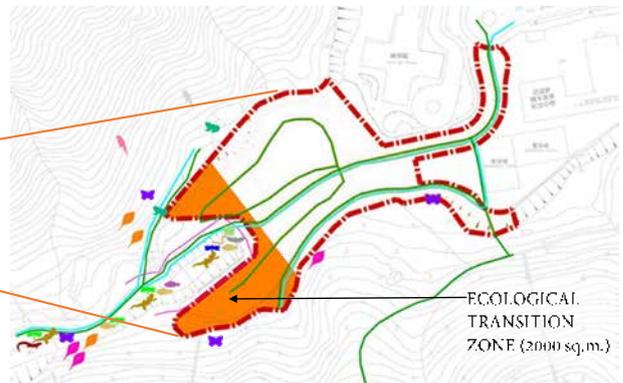
工程開展前的生態足跡

## Chapter 2 Conservation strategy on ecological assessment

- Woodland
- Agricultural land
- Grassland
- Village
- Marsh
- Plantation
- Seasonal Wet Grassland
- Urban or Residential
- Watercourse
- Aquilaria sinensis
- Aquilaria sinensis (seedling)
- Pavetta hongkongensis
- Cibotium barometz
- Little Egret
- Greater Coucal
- Pigmy Wren Babbler
- Collared Scops Owl
- Rufous-capped Babbler
- Black Kite
- Crested Serpent eagle
- Grey chinned Minivet
- Less Shortwing
- Hong Kong Newt
- Short-legged Toad
- Hong Kong Cascade Frog
- Acrossocheilus parallens
- Chinese Horseshoe Bats
- Himalayan Leaf-nosed Bat
- Miniopterus sp.
- Master Layout Plan
- Site Boundary



Study area within 500m of the site



Habitat map and species of conservation concern

- 78 species of butterfly were recorded in 2010 ecological study. Such group was identified as target fauna group for conservation.
- Butterfly species with local concern: *Taraka T. hamada* and *Celastrina C. lavendularis*
- Bat species inside culvert: *Rhinolophus affinis*, *Rhinolophus sinicus* and *Rhinolophus pusillus*



Himalayan Leaf-nosed Bat



Chinese Horseshoe Bat



Nanaipotamor, hongkongense



Hong Kong Newt



*Taraka T. hamada*



*Celastrina C. lavendularis*

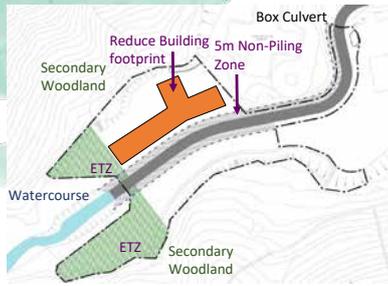
★ Targeted species at Fai Ming Estate

經生態評估後釐定的保育措施

## Chapter 3 Ecological-orientated site planning

### Ecological Matters

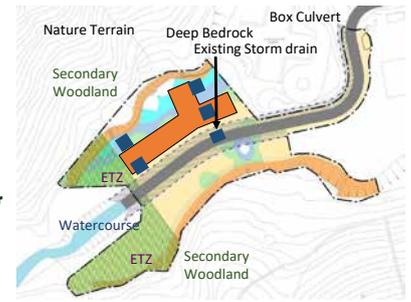
- Ecological Sensitive Site
- Secondary Woodland
- Water course
- Bat Roost at Box Culvert
- Provision of Ecological Transition Zone (ETZ)
- Provision of 5m non-piling zone
- Reduce Building footprint



### Step 1

### Engineering Concerns and Site Planning

- Geotechnical Engineering
  - Land slide from Nature Terrain
- Civil Engineering
  - Existing Stormwater Drain crashes with layout
- Structural Engineering
  - Deep Bedrock level



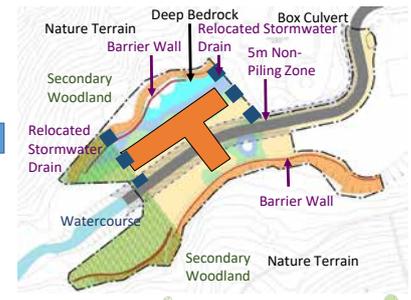
### Step 2

### Engineering Concerns and Site Planning

- Geotechnical Engineering
  - Land slide from Nature Terrain
  - Defensive Barrier Walls
- Civil Engineering
  - Existing Stormwater Drain crashes with layout
  - Relocation of Stormwater Drain
- Structural Engineering
  - Deep Bedrock level
  - Deposition of Domestic Block



### Step 4



### Step 3

- Setup of 5 meters non-piling-zone at both sides of culvert
- Layout of domestic blocks to minimize direct impact to bats in the culvert and other important habitats
- Adoption of bored pile
- Provision of Ecological Transition Zone (ETZ) during operation stage for butterflies' diversity

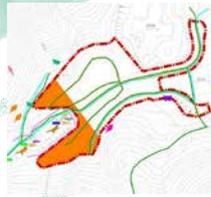
生態主導的整體佈局設計

## Chapter 4 Precise construction program with the consideration of species' life cycle & habit



2010 Q2

Baseline ecological study for rezoning



2014 Q1

Inputs of ecological conservation for Building Committee and Section 16 Submission



2014 Q3

Site monitoring of ecological mitigation in Advance Civil Engineering (ACE) contract



2014 Q3

Site monitoring of ecological mitigation in Foundation Contract until 2017



2017 Q1

Site monitoring of ecological mitigation in Building Contract until 2020

Implementation of disturbing construction works in Oct-Dec avoided affecting roosting bats during hibernation.



2019 Q2

Adopted ecologist's plant species recommendation in planting design



2020 Q3

Completion of planting works in soft landscape contract



2020 Q4

Revitalization & conservation of butterflies and bats diversity in Fai Ming Estate



以物種生命週期及特性釐定的工程和保育計劃

## Chapter 5 Concept of ecological restoration merging with landscape design



Native plant species were implemented to provide feeding zone and nursing ground to enhance the butterfly community.

- Increase the **connectivity** of the woodland on the two sides of the stream
- Provide **buffer zone** to protect the stream from human disturbance;
- As a **physical barrier** to prevent human disturbance to the bat roost in the culvert during operation phase
- A landscape area with both **ecological values** and recreation facilities for tenants



2014 Eco-logger's design input for Section 16 submission



2019 Integration of Landscape Architect and Eco-logger's planting selections



2020 Planting completion

### 園境設計與重現生態概念

## Chapter 6 Ecological regeneration after project completion



- No decline in number of bats in the culvert when compared to pre-construction stage
- Bats continued to roost in the culvert throughout the foundation phase, though with some fluctuation in abundance
- an increase in number of bats could show the likelihood of absence of impact
- the total number of bats in March 2020 was 52 nos. which was 3 times more than the total number of bats (15 nos.) in March 2014.
- Integration of ecologist's advice in planting design and implementation showed that ETZ contributed as a nursing ground and feeding zone for conservation of butterfly species successfully.

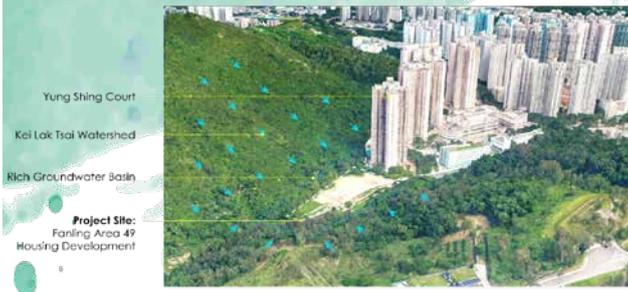
About 30% of Hong Kong butterfly species could be observed in ETZ

3 species of bat stay in the culvert

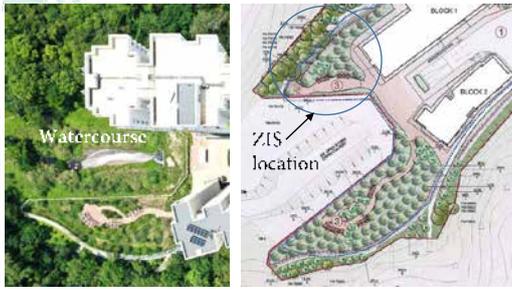


### 完成發展後的生態重現

## Chapter 7 Sustainability with underground water reuse



Hydrologic characteristics at Fanling Area 49

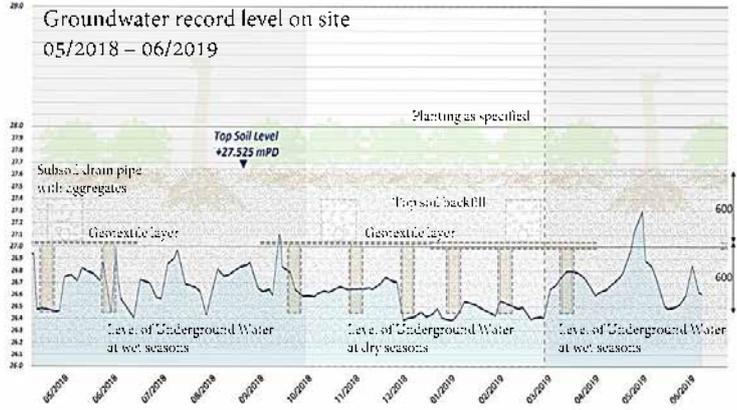
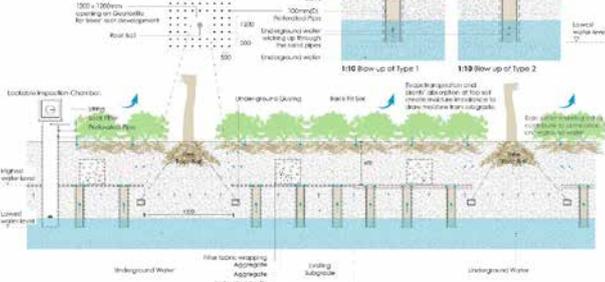


- All plants are established
- Shrubs are in fair to good conditions
- The conditions of 4 native trees *Sterculia lanceolata* improved after some time of adaptation to site
- No flooding was observed

### Zero Irrigation System

#### Features:

- Utilize rain/faculture water resources from underground throughout the year
- Perforated pipes with river sand media to facilitate wicking of underground water



利用地下水資源之可持續性

## Chapter 8 Symbiosis and neighborhood with nature

- Ecologist's proposed mitigation measures, design recommendations and viewpoints of species for conservation were fully implemented in all stages from site planning in 2014 to construction and planting works in 2020.
- Adoption of bored pile, designated season to conduct first piling, setup of 5 meters non-piling-zone from the culvert, proper treatment of waste discharge and restricted access to culvert were considered effective to bat roost. Such that the total number of bats in March 2020 was 52 nos. which was 3 times more than the total number of bats (15 nos.) in March 2014.
- About 30% of Hong Kong butterfly species could be observed in ETZ.
- 3 species of bat stay in the culvert after construction.
- Integration of ecologist's advice in planting design and implementation showed that ETZ contributed as a nursing and feeding ground for conservation of butterfly species successfully.
- Signage with ecologist's input for educational purpose was installed in ETZ.



融合共存 各居其所

# ARCHITECTURAL SERVICES DEPARTMENT, HKSAR GOVERNMENT

## HOI BUN ROAD PARK

### Introduction

Hoi Bun Road Park is an urban sanctuary in a dense industrial/commercial district. Flanked by the Flyover of Kwun Tong Bypass and the major traffic road as a connector that mediates a piece of nature in the midst of the city fabric and as a promenade that allows the pedestrian flow by bridging the inner city to the waterfront. The former Hoi Bun Road Park was built in 1990. Subjected to the changing need of the working population and the general public, the park is revitalised and re-opened in 2021. The site is located at 123 Hoi Bun Road next to the Kwun Tong Promenade, with about 9300 m<sup>2</sup>.

### Design Strategies

1. An urban sanctuary in the midst of a dense industrial area to mediate between nature & urban fabric.
2. Architecture and pavilions in the garden embody a theatrical backdrop for the central lawn.
3. To engage a dialogue between new structures and preserved old trees to form an outdoor room with a blossoming garden.

### Design Features

1. Trees preservation from former Hoi Bun Road Park and interlace of existing trees in new planning.
2. The Green Oasis in the form of a circular lawn which functions as a multi-purpose gathering space for the outdoor theatre.
3. Newly built structures and green buffer to achieve noise impact reduction.
4. Create different outdoor rooms and enclosed sitting-out areas by carefully placing transparent screens and trellis within the park.
5. Eco-friendly material application throughout the park and reutilization of existing resources and minimise the environmental impact from the construction.
6. Utilisation of natural daylight and solar energy to reduce the electricity consumption from artificial lighting.

### Site context

It was sandwiched between an arterial road at the back and a flyover at the front towards the waterfront. Hoi Bun Road Park is a paradigm shift in designing small blocks in an urban park setting and implementing nature in a dense industrial fabric that allows pedestrian flow by bridging the inner city to the waterfront.

### Tree Preservation from the Former Hoi Bun Road Park

The original Hoi Bun Road Park was built in 1990 mainly to serve the industrial working population in the area. The park was bounded with solid boundaries, terraces and raised planters. Hoi Bun Road Park now targets on easily access by the public and is transparent in all ways. It is also the highlight place-making project in the whole master plan of Energizing Kowloon East promoted by the Government to make Kowloon East a vibrant and livable city CBD.

Existing trees, such as *Delonix regia*, *Araucaria heterophylla* and *Ficus religiosa* etc., were preserved and interlaced with the new planning in the park and blended in with the new planting.

### Tree Preservation : Interlace of Existing Trees

Layers created by mature existing trees, *Delonix regia*, and newly built architecture interlaced together to generate semi-open and permeable living spaces within the park. *Delonix regia*'s large canopy also provides a natural shelter

### Central Lawn

As a metaphor of traditional city blocks in a miniature, the cluster of service blocks and shelters embodies the green oasis in the form of a circular lawn that functions as a multipurpose gathering space for the outdoor theatre. The structures are regarded as pavilions, and green hedges strategically located along Wai Yip Street function as a 'noise barrier' to minimise the noise impact from the adjacent traffic, screen off the busy street and manifest a theatre backdrop and peaceful environment for Central Lawn.

### Outdoor Rooms

Openings are designed at the screening structures to create a dialogue between the tranquil park and the street outside. By carefully placing transparent screens and trellis within the park, different outdoor rooms of various characters are defined to allow the public to sit, play, and enjoy leisure at all times. Numerous activities vary from family gatherings at sitting-out areas, music busking at pavilions, elderlies working out at fitness areas, photo shooting the magnificent sunset views at the blossoming garden, and holding events at the multipurpose plaza.



# ARCHITECTURAL SERVICES DEPARTMENT, HKSAR GOVERNMENT

## HOI BUN ROAD PARK

### **Outdoor Rooms - Enclosed Sitting-out Area**

An enclosed sitting-out area with green buffer and a circular lawn is also created to provide visitors with an enclosed environment and privacy.

### **Eco-friendly Material Application & Reutilization of Existing Resources**

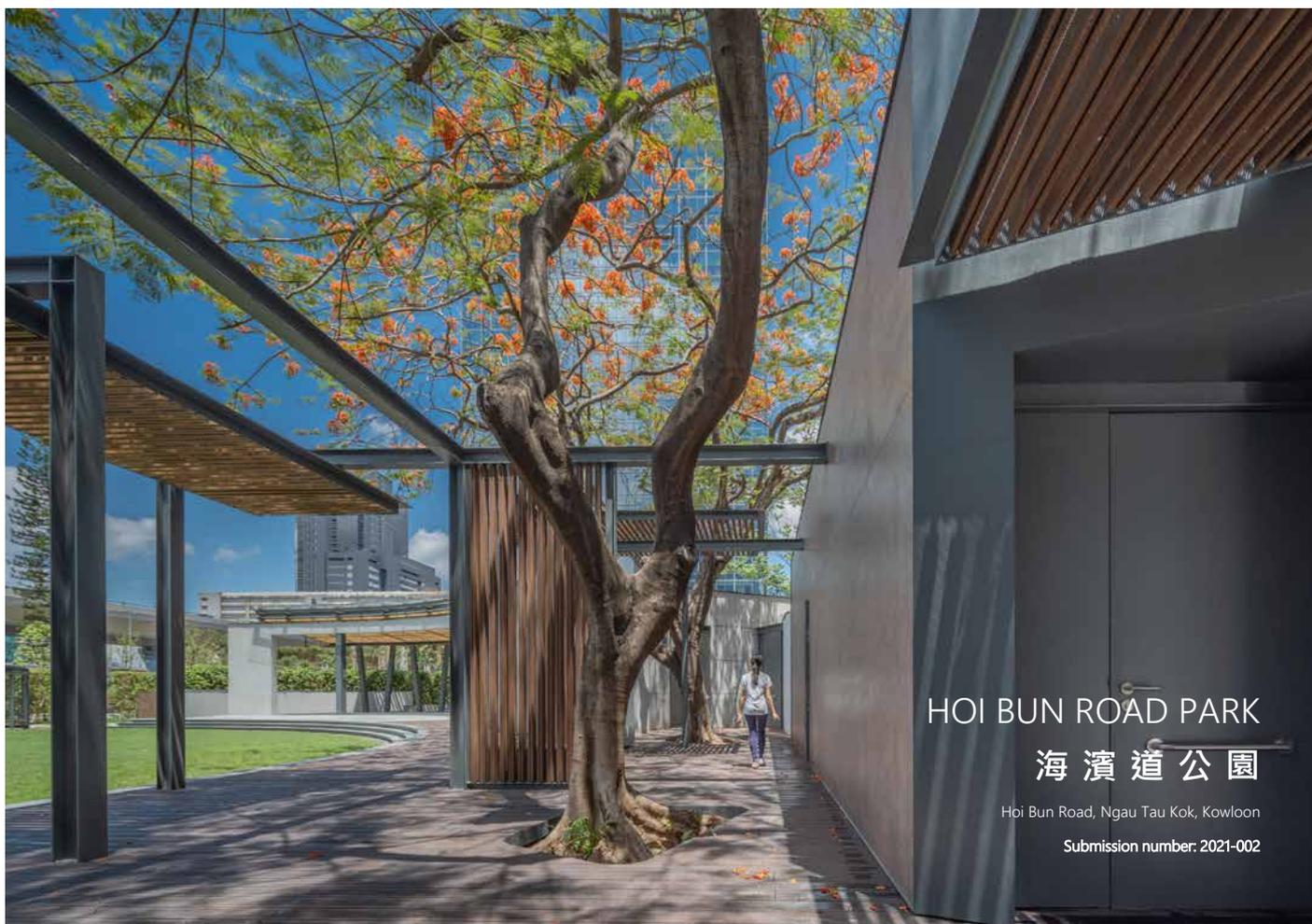
A rapidly renewable material, thermal pre-treated bamboo, has been adopted widely in the park, such as the wood deck area, fence wall, trellis, and outdoor seating. The thermal pre-treated bamboo is manufactured locally within 800km from the site so that carbon-dioxide emission from material delivery could be reduced. Over 50% of existing trees are preserved, and some of the woods collected from the felled trees were adopted for park furniture fabrication. Smaller gravel and soil remained from demolished existing structures and landscape have been re-used for constructing on-grade slabs to reduce waste and minimize the negative environmental impact from the construction.

### **Lighting Design: Utilization of natural daylight and solar energy**

Large skylights and glass block walls are introduced in toilet blocks to allow natural daylight to enter the interior to reduce the electricity consumption from artificial lighting. A solar hot water system is installed at the roof of toilet blocks to provide pre-heated water for the shower during the daytime.

At night, the lighting provides orientation and accent illumination to highlight unique objects of interest in the park such as starlight on the pavilion ceiling. It also offers indirect lighting with ambient illumination. Interactive lighting design is also designed to create an ever-changing aura and round-the-clock experience.





## HOI BUN ROAD PARK 海濱道公園

Hoi Bun Road, Ngau Tau Kok, Kowloon

Submission number: 2021-002

# The Urban Sanctuary

## Introduction

Hoi Bun Road Park is an urban sanctuary in a dense industrial/ commercial district. Flanked by the Flyover of Kwun Tong Bypass and the major traffic road, this urban park works as a connector that mediates a piece of nature in the midst of the city fabric and as a promenade that allows the pedestrian flow by bridging the inner city to the waterfront.

The former Hoi Bun Road Park was built in 1990. Subjected to the changing need of the working population and the general public, the park is revitalised and re-opened in 2021. The site is located at 123 Hoi Bun Road next to the Kwun Tong Promenade, with about 9 300m<sup>2</sup>.

## Design Strategies

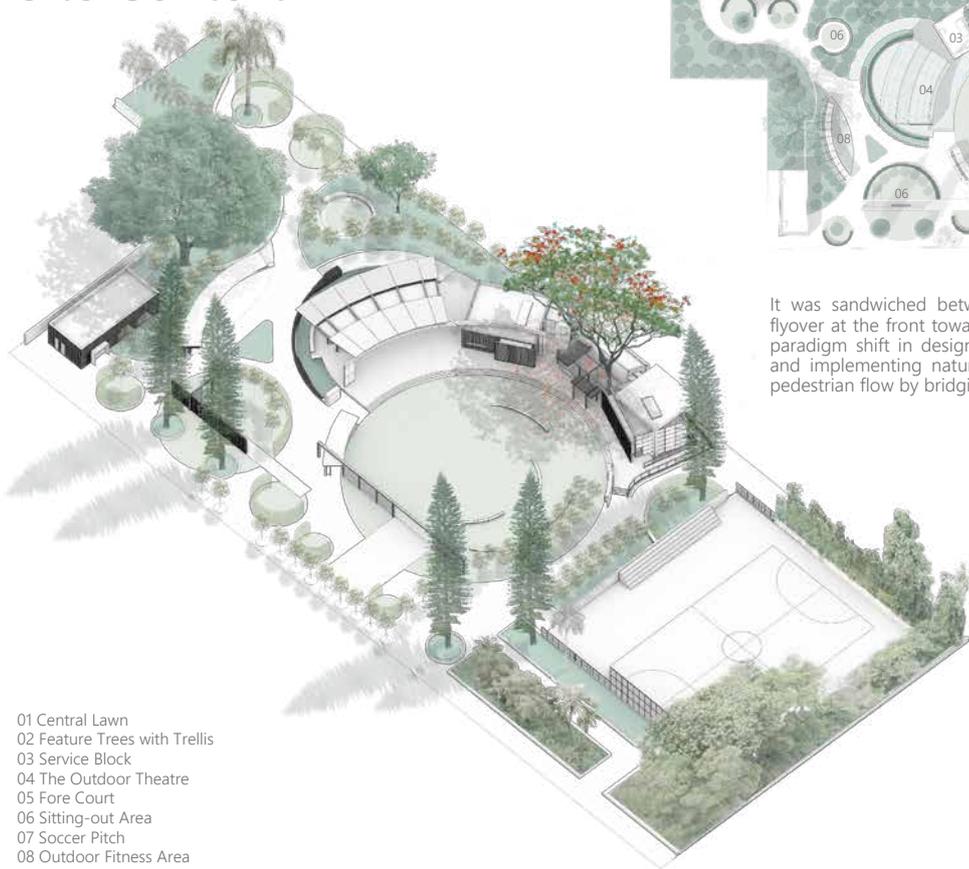
1. An **urban sanctuary** in the midst of a dense industrial area to **mediate between nature & urban fabric**.
2. Architecture and pavilions in the garden **embody a theatrical backdrop for the central lawn**.
3. To engage a **dialogue** between new structures and preserved old trees to form **an outdoor room with a blossoming garden**.

## Design Features

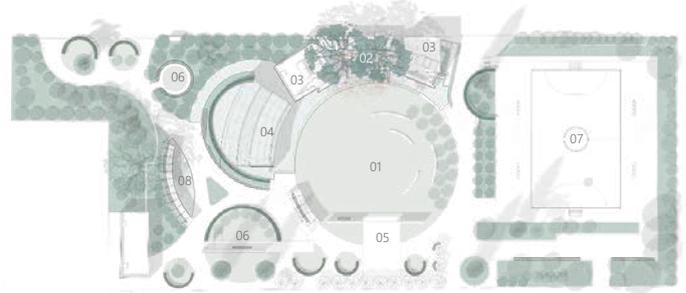
1. **Trees preservation** from former Hoi Bun Road Park and interlace of existing trees in new planning.
2. The **Green Oasis** in the form of a circular lawn which functions as a **multi-purpose gathering space** for the outdoor theatre.
3. Newly built structures and **green buffer** to achieve **noise impact reduction**.
4. Create different **outdoor rooms** and **enclosed sitting-out areas** by carefully placing transparent screens and trellis within the park.
5. **Eco-friendly material application** throughout the park and **reutilization of existing resources** to reduce waste and minimise the environmental impact from the construction.
6. **Utilisation of natural daylight and solar energy** to reduce the electricity consumption from artificial lighting.



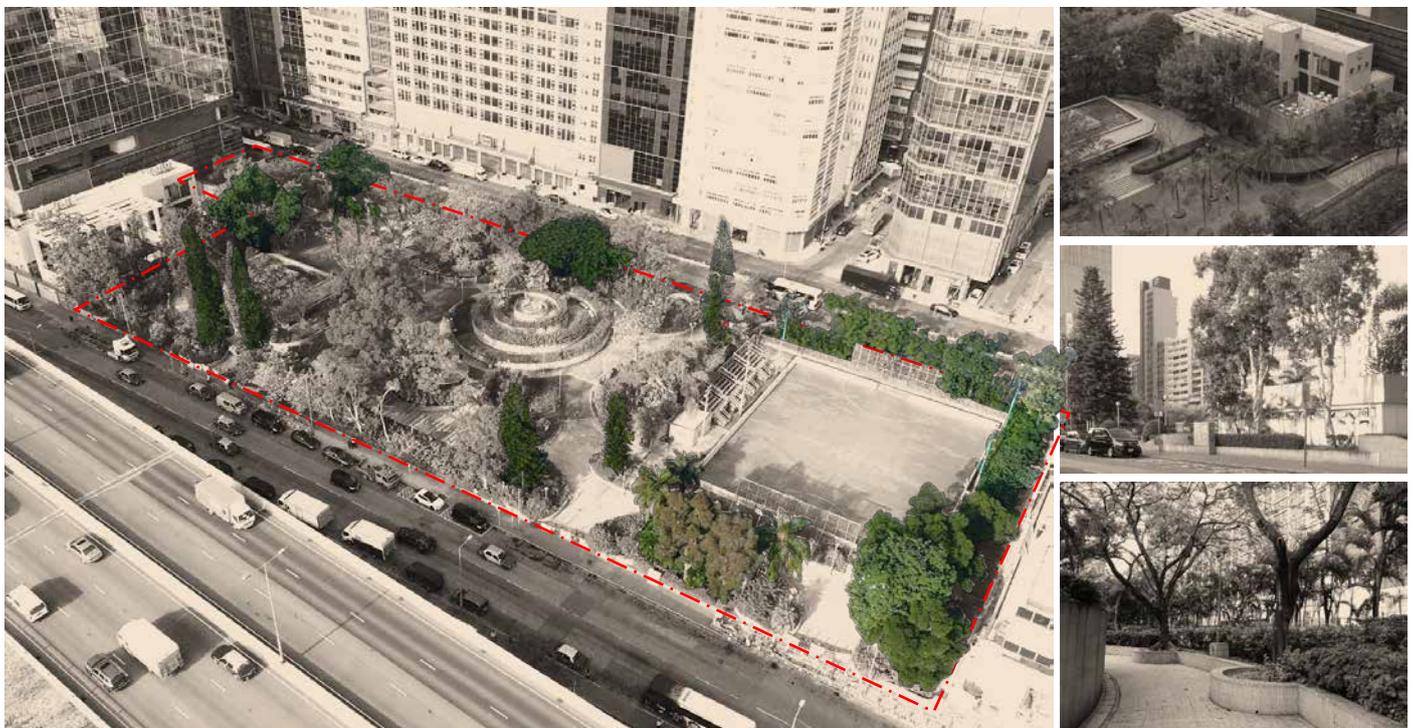
# Site Context



- 01 Central Lawn
- 02 Feature Trees with Trellis
- 03 Service Block
- 04 The Outdoor Theatre
- 05 Fore Court
- 06 Sitting-out Area
- 07 Soccer Pitch
- 08 Outdoor Fitness Area



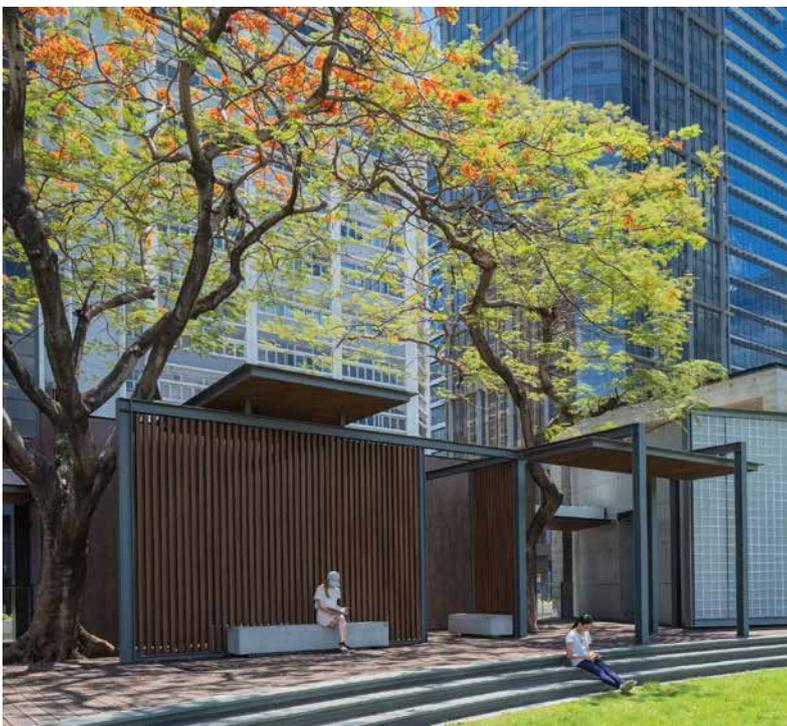
It was sandwiched between an arterial road at the back and a flyover at the front towards the waterfront. Hoi Bun Road Park is a paradigm shift in designing small blocks in an urban park setting and implementing nature in a dense industrial fabric that allows pedestrian flow by bridging the inner city to the waterfront.



## Tree Preservation from Former Hoi Bun Road Park

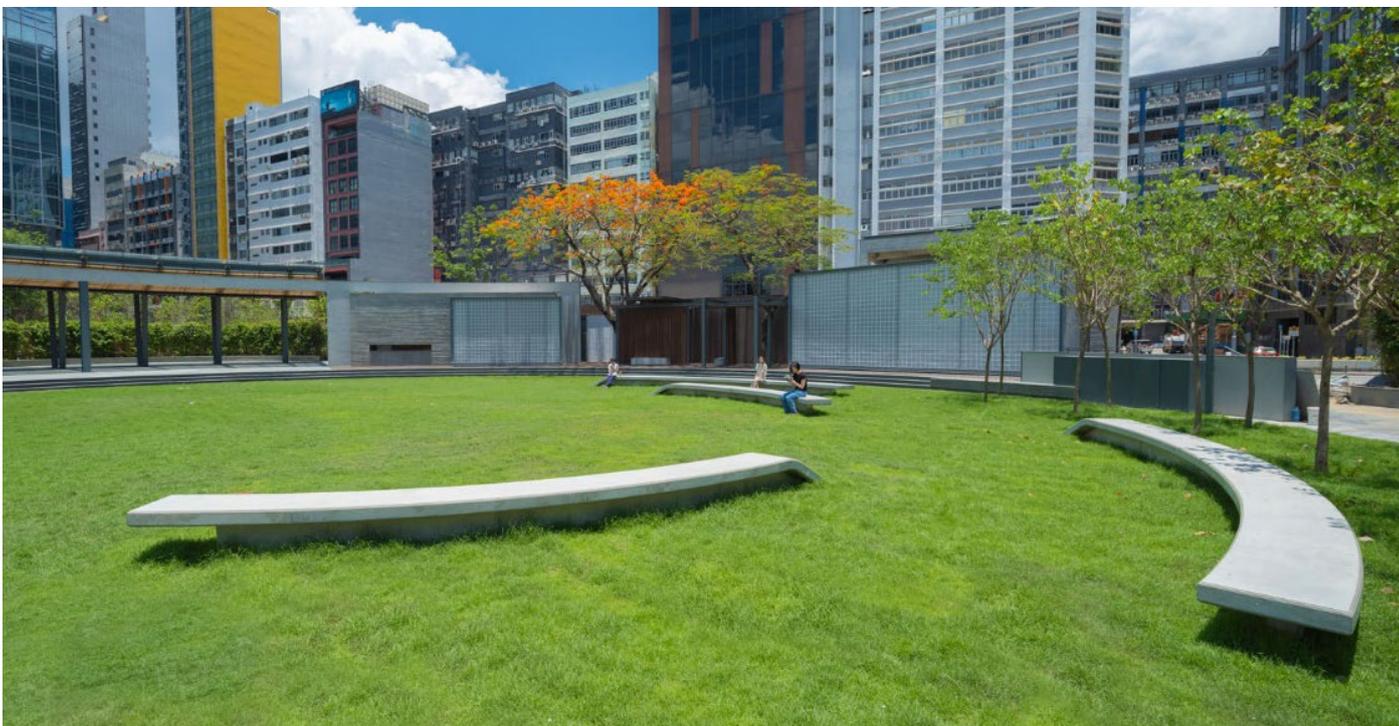
The original Hoi Bun Road Park was built in 1990 mainly to serve the industrial working population in the area. The park was bounded with solid boundaries, terraces and raised planters. Hoi Bun Road Park now targets on **easily access by the public** and is **transparent in all ways**. It is also the highlight **place-making** project in the whole master plan of Energizing Kowloon East promoted by the Government to make Kowloon East a **vibrant and livable city CBD**.

**Existing trees**, such as *Delonix regia*, *Araucaria heterophylla* and *Ficus religiosa* etc., were **preserved and interlaced with the new planning in the park** and blended in with the new planting.



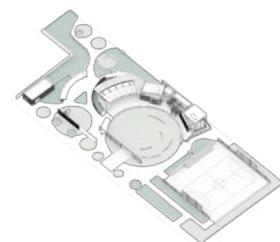
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## Central Lawn

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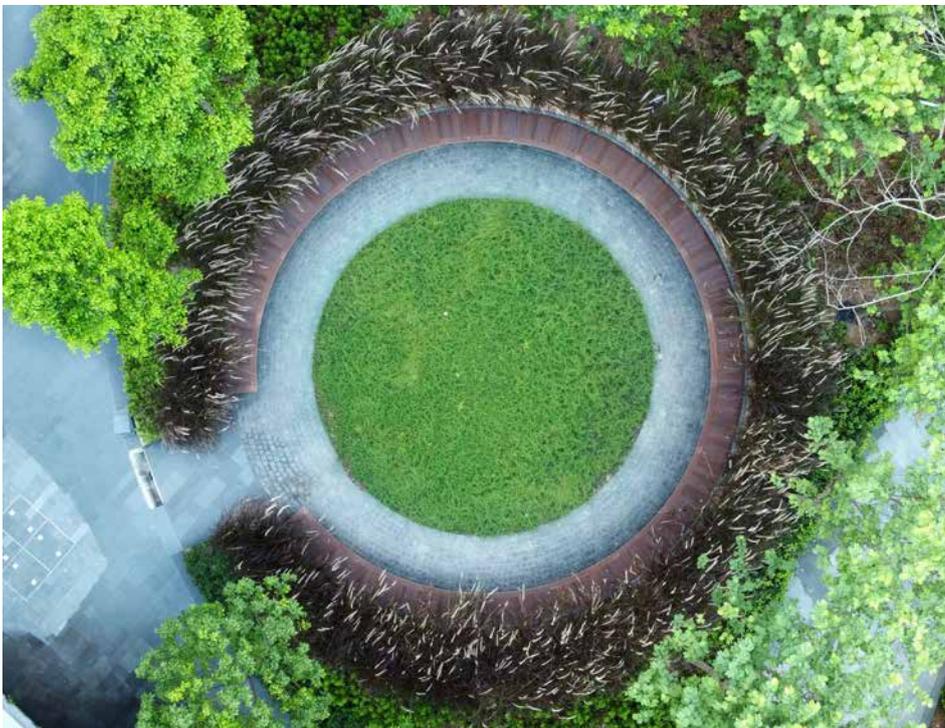
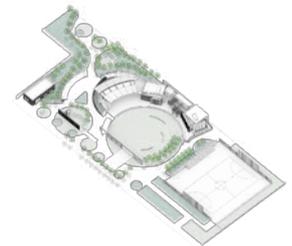




## Outdoor Rooms

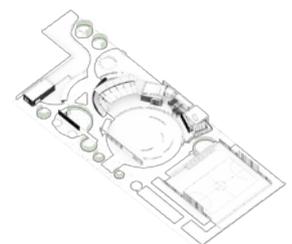
Openings are designed at the screening structures to create a **dialogue between the tranquil park and the street outside**.

By carefully placing **transparent screens and trellis** within the park, different **outdoor rooms** of various characters are defined to **allow the public to sit, play, and enjoy leisure at all times**. Numerous activities vary from family gatherings at sitting-out areas, music busking at pavilions, elderly working out at fitness areas, photo shooting the magnificent sunset views at the blossoming garden, and holding events at the multipurpose plaza.



## Outdoor Rooms - Enclosed Sitting-out Area

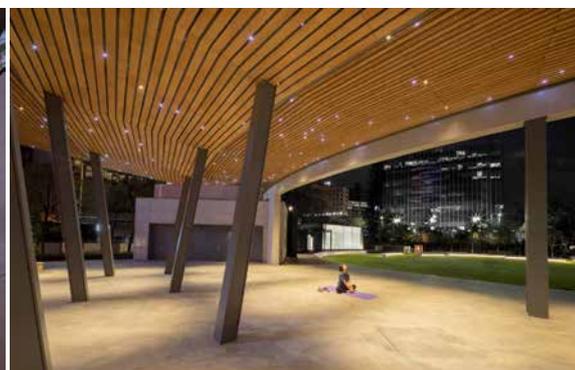
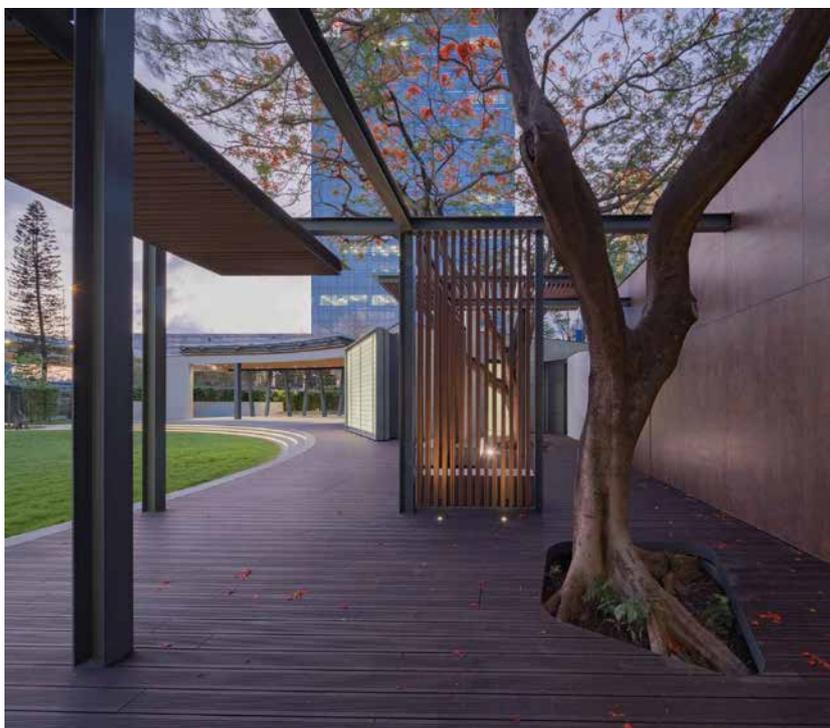
An **enclosed sitting-out area with green buffer** and a **circular lawn** is also created to provide visitors with an **enclosed environment and privacy**.





## Eco-friendly Material Application & Reutilization of Existing Resources

A rapidly renewable material, thermal pre-treated bamboo, has been adopted widely in the park, such as the wood deck area, fence wall, trellis, and outdoor seating. The thermal pre-treated bamboo is manufactured locally within 800km from the site so that carbon-dioxide emission from material delivery could be reduced. Over 50% of existing trees are preserved, and some of the woods collected from the felled trees were adopted for park furniture fabrication. Smaller gravel and soil remained from demolished existing structures and landscape have been re-used for constructing on-grade slabs to reduce waste and minimize the negative environmental impact from the construction.



## Lighting Design: Utilization of natural daylight and solar energy

Large skylights and glass block walls are introduced in toilet blocks to allow natural daylight to enter the interior to reduce the electricity consumption from artificial lighting. A solar hot water system is installed at the roof of toilet blocks to provide pre-heated water for the shower during the daytime.

At night, the lighting provides orientation and accent illumination to highlight unique objects of interest in the park such as starlight on the pavilion ceiling. It also offers indirect lighting with ambient illumination. Interactive lighting design is also designed to create an ever-changing aura and round-the-clock experience.

# ARCHITECTURAL SERVICES DEPARTMENT, HKSAR GOVERNMENT

## PIERSIDE PRECINCT AT WAN CHAI HARBOURFRONT

### Introduction

The Pierside Precinct is located between the Hong Kong Convention and Exhibition Centre and Wan Chai Pier, which is a reclaimed land from the Wan Chai Development Phase II Project. The length of the Precinct is 1 Km with 20m width, its size of about 2,750 square meters was opened in Mar 2021. The Precinct mainly comprises simple fair-faced concrete and wooden structures. With its clear and rectilinear layout and earth-tone colours, the new space features a stylish touch providing quality open space for public enjoyment.

### Design Concept: Connectivity, Permeability and Garden embankment

In order to better capture the magnificent harbour view, a design concept with photo frames and neon lights has been used to decorate the new space, offering lots of check-in spots for photo shooting. Visitors can not only take photos with berthing Star Ferry vessels and Tsim Sha Tsui on the opposite side of the harbour as backdrops, but may also carry out a diverse range of activities at the many spacious covered areas.

This Project has made use of neon light decorations and maps to introduce the changes to the approximately 1km of coastline north of Queen's Road East during the period. The space is also lined with trees to offer ample shade. Coupled with pebble paths and numerous seats and tables of various designs, the space lets the public enjoy the harbourfront in relaxing ways. The promenade is a pet-friendly site where pets on leashes are welcome to visit.

### The Garden Embankment

The promenade is designed to emphasize connectivity, permeability and garden embankment in the urban context. Meandering by the sea is a gift to the people living in a congested city.

### Infuse Nature in Between

With the aim of mediating the dense urban fabric and Victor Harbour, the promenade infuses nature in between. A series of portals and pavilions are set in the landscape, intervened with a meandering path, bringing the public from the dense inner city to the harbour. Canopies and lawns provide relief from summer and intimacy with nature.

### Installations with Local Charactera

The promenade mainly comprises simple fair-faced concrete and wooden structures. With its clear and rectilinear layout and earth-tone colours, the promenade features a stylish touch. Authentic "red-white-blue" is used as accent colours in street furniture, echoing the overall direction of making every section special in harbourfront development.

In order to infuse the promenade with local characters, sittable installations with neon lights are strategically located. Street signs of the old streets in Wan Chai are used in the neon light installations evoking collective memories in the neighbourhood. Framed views with neon light installations are also strategically located to offer check-in spots for photo shooting to capture a magnificent harbour view.

### Feature Coastline Evolution Exhibit

The promenade has introduced a feature coastline evolution exhibit to showcase the changes of approximately 1km of coastline north of Queen's Road East from a number of reclamation projects carried out in Wan Chai over the past century or more. Visual permeability by means of transparent barriers and shelter by the sea bring the public closer to the sea and the Kowloon cityscape beyond.

### Framed Views

Sight lines are carefully designed by setting a series of framed views of resting spaces along the waterfront and towards Victoria Harbour round the clock, offering alternative perspectives.

### Round-the-clock Experience

People from all walks of life enjoy the space round the clock. In the daytime, numerous activities vary from family gatherings at sitting-out areas, jogging by the harbour, elderly working out at pavilions, to photo shooting of the magnificent sunset views. At night, the area turns into a place full of ambient light and features neon-like lighting installations. The lighting design infuses vibrancy to the waterfront with a vibe that changes with time. The waterfront has been successfully transformed and has become a vibrant and attractive public space by the Victoria Harbour, enhancing the quality of life and giving a unique identity to the neighbourhood.

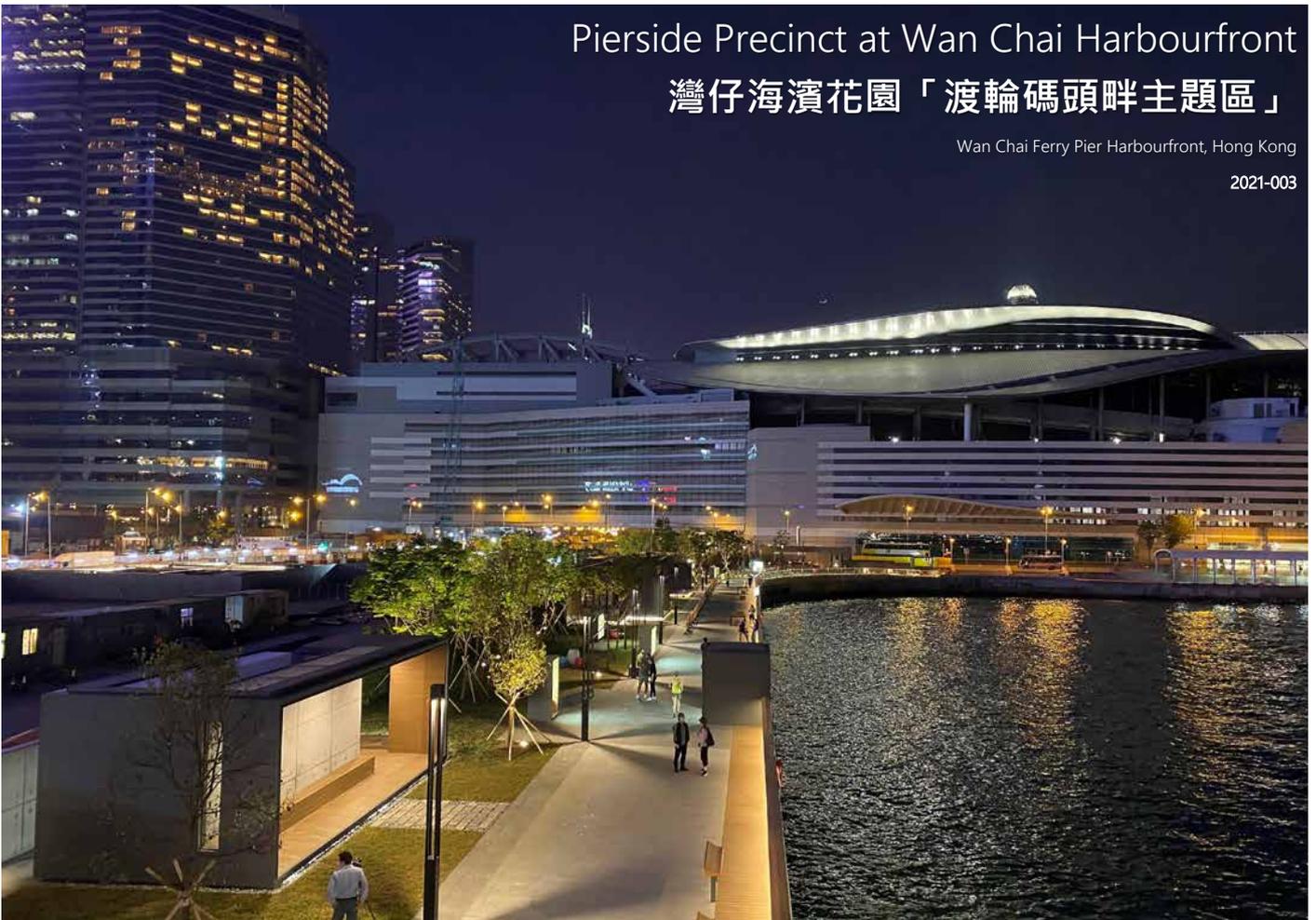


# Pierside Precinct at Wan Chai Harbourfront

## 灣仔海濱花園「渡輪碼頭畔主題區」

Wan Chai Ferry Pier Harbourfront, Hong Kong

2021-003



## Pierside Precinct at Wan Chai Harbourfront

### Introduction

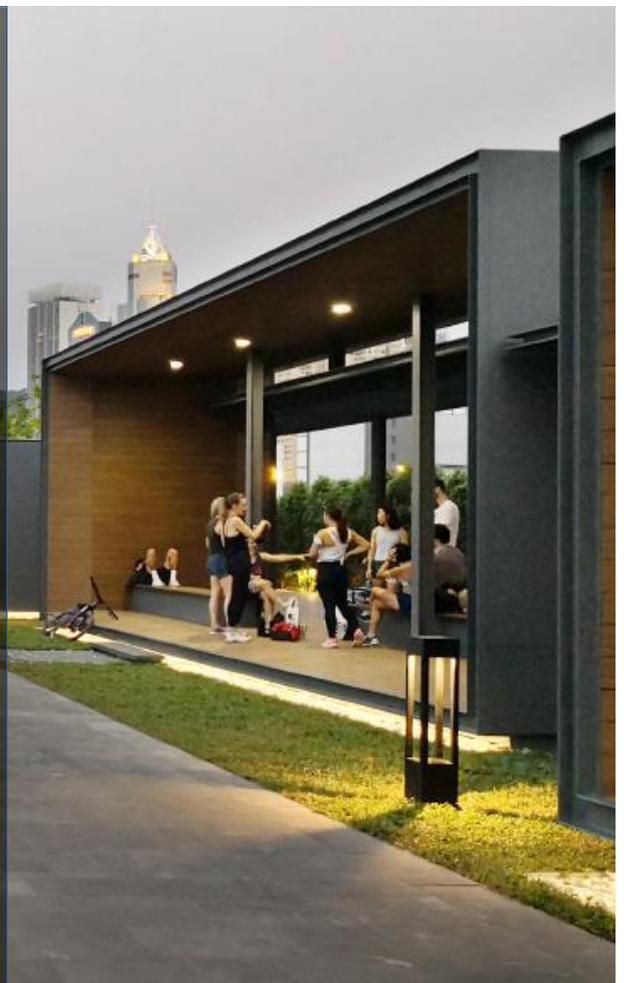
The Pierside Precinct is located between the Hong Kong Convention and Exhibition Centre and Wan Chai Pier, which is a reclaimed land from the Wan Chai Development Phase II Project. The length of the Precinct is 1 Km with 20m width, its size of about 2,750 square meters was opened in Mar 2021.

The Precinct mainly comprises simple fair-faced concrete and wooden structures. With its clear and rectilinear layout and earth-tone colours, the new space features a stylish touch providing quality open space for public enjoyment.

### Design Concept: Connectivity, Permeability and Garden embankment

To better capture the magnificent harbour view, a design concept with photo frames and neon lights has been adopted to enhance the new space, offering lots of attractive spots for photo taking. Visitors not only can take photos with berthing Star Ferry vessels and Tsim Sha Tsui on the opposite side of the harbour as backdrops but may also carry out a diverse range of activities at many spacious sheltered areas.

This project has made use of neon light decorations and maps to introduce the changes to the approximately 1km of coastline north of Queen's Road East. The space is also lined with trees to offer ample shade. Coupled with pebble paths and well-designed seats and tables, the space lets the public appreciate the harbourfront in relaxing ways. The promenade is a pet-friendly site where pets on leashes are welcome to visit.

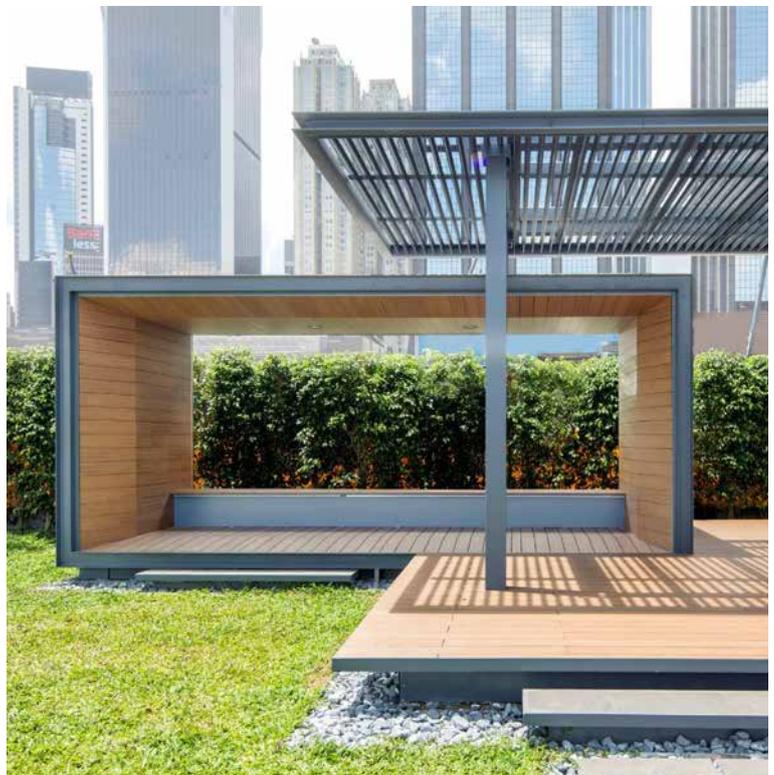




- |                               |                              |
|-------------------------------|------------------------------|
| 1 Roll Call Centre            | 7 Service Block              |
| 2 Sitting-Out Area            | 8 Wan Chai Ferry Pier        |
| 3 Multi-Purpose Space         | 9 To Inner City              |
| 4 Landscape Area & Seating    | 10 To Golden Bauhinia Square |
| 5 Pavilion                    | 11 Victoria Harbour          |
| 6 Coastline Evolution Exhibit |                              |

## The Garden Embankment

The promenade is designed to emphasize connectivity, permeability and garden embankment in the urban context. Meandering by the sea is a gift to the people living in a congested city.



## Infuse Nature in Between

With the aim of mediating the dense urban fabric and Victor Harbour, the promenade infuses nature in between. A series of portals and pavilions are set in the landscape, intervened with a meandering path, bringing the public from the dense inner city to the harbour. Canopies and lawns provide relief from summer and intimacy with nature



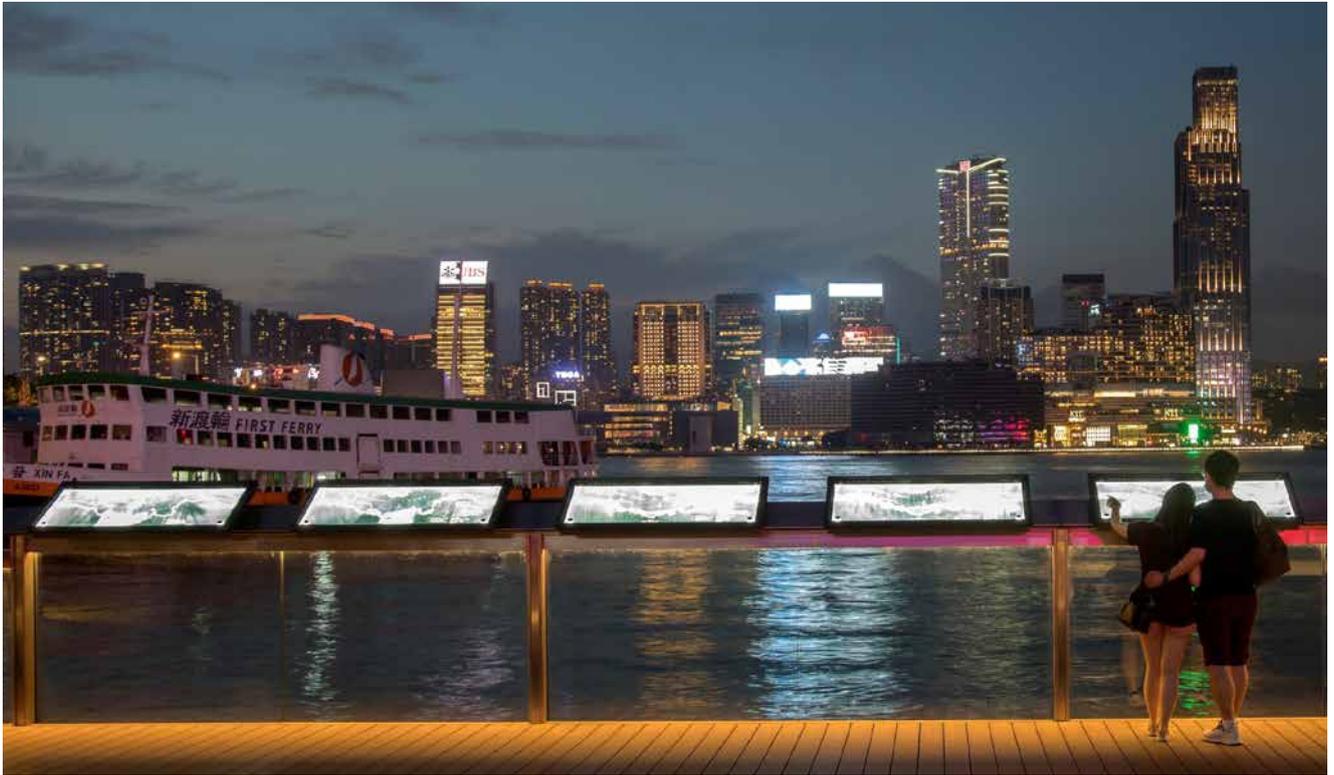
## Installations with Local Character

The promenade mainly comprises simple fair-faced concrete and wooden structures. With its clear and rectilinear layout and earth-tone colours, the promenade features a stylish touch. Authentic “red-white-blue” is used as accent colours in street furniture, echoing the overall direction of making every section special in harbourfront development.



## Installations with Local Character

In order to infuse the promenade with local characters, sittable installations with neon lights are strategically located. Street signs of the old streets in Wan Chai are used in the neon light installations evoking collective memories in the neighbourhood. Framed views with neon light installations are also strategically located to offer check-in spots for photo shooting to capture a magnificent harbour view.



## Feature Coastline Evolution Exhibit

The promenade has introduced a feature coastline evolution exhibit to showcase the changes of approximately 1km of coastline north of Queen's Road East from a number of reclamation projects carried out in Wan Chai over the past century or more. Visual permeability by means of transparent barriers and shelter by the sea bring the public closer to the sea and the Kowloon cityscape beyond.



## Framed Views

Sight lines are carefully designed by setting a series of framed views of resting spaces along the waterfront and towards Victoria Harbour round the clock, offering alternative perspectives.



## Round-the-clock Experience

People from all walks of life enjoy the space round the clock. In the daytime, numerous activities vary from family gatherings at sitting-out areas, jogging by the harbour, elderlyies working out at pavilions, to photo shooting of the magnificent sunset views.



## Round-the-clock Experience

At night, the area turns into a place full of ambient light and features neon-like lighting installations. The lighting design infuses vibrancy to the waterfront with a vibe that changes with time. The waterfront has been successfully transformed and has become a vibrant and attractive public space by the Victoria Harbour, enhancing the quality of life and giving a unique identity to the neighbourhood.

# URBIS LIMITED

## SOUTH EAST NEW TERRITORIES (SENT) LANDFILL LANDSCAPE RESTORATION: ONE-OFF INTERIM MONITORING EXERCISE

### Overview of Project

Analysis and review of the success of plant establishment (with particular regard to native woodland species) at the ongoing landscape restoration at the South East New Territories (SENT) Landfill in Hong Kong. The restoration masterplan for the landfill envisages a network of native woodland, scrub and grassland that can be used for rural recreation, with links to the adjacent Government designated Country Park. The landfill restoration began in 1994 and to date 12 of 20 proposed phases of restoration have been completed. It is a demanding site for landscape works due to its location, climatic factors and landfill engineering requirements. The focus of the research was on the performance of native plant species which have been used in the restoration to enhance biodiversity, habitat creation and to further the Hong Kong Government's sustainability goals. Native plants are recognised locally as being difficult to establish on Hong Kong's exposed uplands and coastal sites, with their poor soils. As a further issue, over the 24 years of the restoration, the environmental background at the landfill has changed. These changes have included climate change (typhoons of increased severity, warmer winters and hotter summers); the recent surge in the population of wild boar (*Sus scrofa*) and the arrival in Hong Kong of Red Imported Fire Ants (*Solenopsis invicta*), all of which have posed problems not foreseen at the outset of the restoration. The team was interested to know which species had adapted best to these changes.

The focus of the research exercise was not an academic one but instead, the methodology aimed to derive practical results that could be meaningfully used by future landscape designers and managers. The research work was carried out by URBIS Limited's team of horticulturists over the course of more than a year and employed a rigorous methodology that was intended to be as objective and scientifically valid as circumstances allowed. The work included detailed site measurements, taken over the course of many weeks, of growth, morbidity and mortality of every species used over the course of restoration. This data was then analysed to produce a wealth of information on the performance of individual species and their effectiveness in achieving landscape restoration objectives. In addition, by using statistical analysis to compare original planting plans to those species found on site, an index of those (native) species best adapted to the site conditions was produced (what was termed a 'Relative Performance Index' or RPI). Climatic, biotic and abiotic external influences on plant establishment were also

analysed, resulting in recommendations for amendments to planting techniques and management actions for future phases of restoration. This rigorously executed and fully quantified and documented piece of horticultural research is believed to be the first comprehensively quantified and statistically verified research of this type and on this scale in Hong Kong. Its potential benefits (particularly the RPI of native plants) to future phases of this restoration and also to similar future projects in Hong Kong is believed to be significant.

### Background to Landscape Restoration at SENT and its Objectives

The South East New Territories (SENT) Landfill is one of Hong Kong's strategic waste disposal facilities and is located south of the town of Tseung Kwan O in Hong Kong's South East New Territories. The client of the SENT landfill is the Environmental Protection Department of the Hong Kong SAR Government. In 1993, Green Valley Landfill, Limited was awarded the contract to design, construct, operate, restore and aftercare the SENT Landfill under Contract No. EP/SP/10/91. The project Supplementary Environmental Impact Assessment (SEIA) report was approved in 1994. Landfilling operations commenced in September 1994 after reclamation and infrastructure works had been carried out. As part of its environmental objectives, 20 phases of progressive landscape restoration work on the landfill need to be carried out after the filling and capping of each phase, in order to blend the reclaimed landfill areas into the existing natural hillside landscape of the adjacent Clear Water Bay Country Park.

The first phase of landscape restoration began in 1997 and the latest (Phase 12) was completed in 2016. The objectives of the restoration are stated in the 'Final Restoration: Landscape Masterplan Design Report' (December 1996), as follows: "It is envisaged that the after use of the site will be as an informal recreational facility. Such a facility will complement recreational activity in Clearwater Bay Country Park. Only after the complete landfilling and restoration of the site will it be opened to the public...It is likely that the restored site will act as a dual facility. With a car park perhaps located on the site of the current infrastructure area, visitors could either use the site as a transitional area permitting access to Clearwater Bay Country Park, or as a recreational facility in its own right. It is perceived that the facility should cater for the following activities: Hiking and strolling; Picnics; Mountain Biking; Kite and model aeroplane flying; Sitting out and taking in views of the seascape and landscape."

Importantly, the Landscape Masterplan Design Report envisages the recreation of diverse, well-structured native woodland and scrubland in order to further biodiversity and sustainability policies and also native habitat creation. This was to be achieved by the well-recognized forestry technique of using hardy, fast growing non-native nurse species to establish optimal micro-climatic conditions for slower growing native species to establish before gradually removing nurse species over the course of several years to favour native species.

## Background to Landscape Restoration Monitoring at SENT and its Objectives

The initial monitoring regime for the landscape restoration at SENT is set out in the SENT 'Landscape Management Plan' (July 1997): namely, initial monitoring of Phases 1 and 2 of the restoration to allow "lessons learned in any given phase of restoration to be implemented in a subsequent phase". Phases 1 and 2 were monitored by a joint team from Hong Kong Polytechnic University and Hong Kong Baptist University and published in 2002.

Subsequently, annual monitoring of each phase of landscape restoration has been carried out for the four years after planting. Monitoring results suggested that while there had been success in establishing a cover of woodland across the restoration, the establishment of native plants was not as successful as was originally intended. Native woodland species are recognised as being difficult to establish in Hong Kong due to its poor soils, dry winters and hot summers.

Added to this, the open and exposed coastal location of the landfill means that desiccation and high solar irradiance pose challenges to plant establishment. Furthermore, the engineering and operational requirements of the landfill (including very high levels of final cover compaction and steep slope gradients) mean that water retention and rooting environment are challenging.

As a further issue, over the 23 years since restoration began, the environmental background at the landfill has changed. This has included climate change (typhoons of increased severity, warmer winters and hotter summers); the recent surge in the population of wild boar (*Sus scrofa*) and the arrival in Hong Kong of Red Imported Fire Ants (*Solenopsis invicta*), all of which have posed problems not foreseen at the outset of the restoration. Therefore, in 2018, URBIS Limited's team of horticulturists was appointed to carry out a comprehensive survey, review and assessment of the success of the landscape restoration to date with a view to determining how the establishment of native planting might be enhanced. This horticultural research exercise is the subject of this award entry.



HKILA Awards Submission No. 2021-021

# South East New Territories (SENT) Landfill Landscape Restoration: One-off Interim Monitoring Exercise

## 1.1 Project Location Plan



## Introduction & Overview

The project is a landscape **research study**, comprising **analysis of the success of plant establishment** (with particular regard to native woodland species) at the ongoing **landscape restoration** at the South East New Territories (SENT) Landfill in Hong Kong.

The restoration masterplan for the landfill envisages a network of native woodland, scrub and grassland that can be used for rural recreation, with links to the adjacent Country Park.

The landfill restoration began in 1994 and to date, 12 of 20 proposed restoration phases have been completed. It is a demanding site for landscape works due to its location, climatic factors and landfill engineering requirements. The focus of the research was on the **performance of native plant species** which have been used in the restoration to enhance biodiversity, habitat creation and to further Government's sustainability goals.

Native plants are recognised as being challenging to establish on Hong Kong's exposed uplands and coastal sites, with their poor soils. As a further issue over the 24 years of the restoration, the environmental background at the landfill has changed. These changes have included climate change; the recent surge in the population of wild boar and the arrival in Hong Kong of Red Imported Fire Ants, all of which have posed problems not foreseen at the outset of the restoration. The team was interested to know which species had adapted best to these changes.

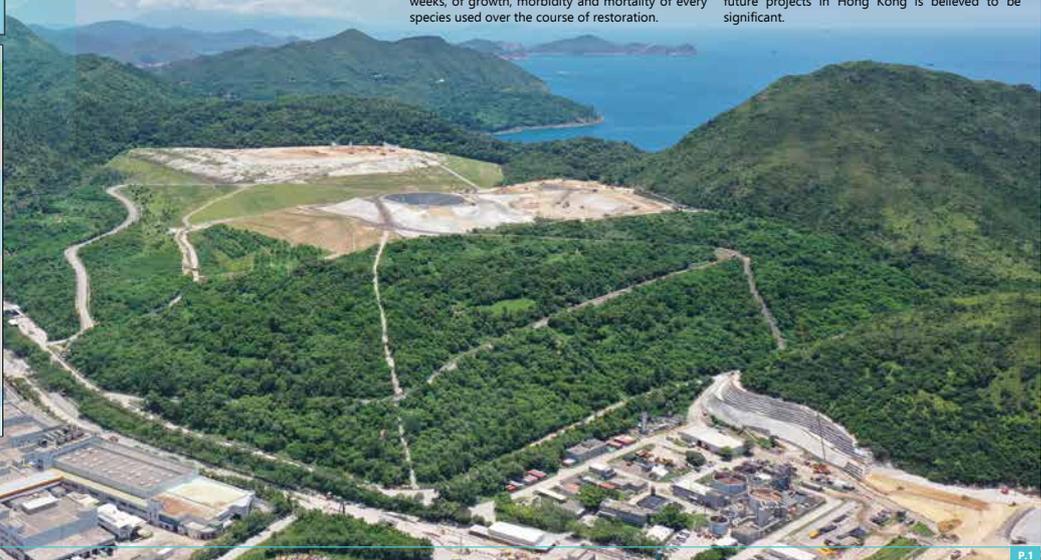
The focus of the research exercise was not an academic one. Rather, the methodology aimed to derive practical results that could be meaningfully used by future landscape designers and managers.

The research work was carried out by a team of landscape architects and horticulturists with rigorous methodology that was intended to be as objective and scientifically valid as circumstances allowed. The work included detailed **site measurements**, taken over the course of many weeks, of growth, morbidity and mortality of every species used over the course of restoration.

This data was then analysed to produce a wealth of information on the performance of individual species and their effectiveness in achieving landscape restoration objectives. In addition, by using statistical standard deviation analysis to compare original planting plans to those species found on site, an index of those (native) species best adapted to the site conditions was produced (what was termed a **Relative Performance Index** or **RPI**).

Climatic, biotic and abiotic **external influences** on plant establishment were also analysed, resulting in recommendations for amendments to planting techniques and management actions for future phases of restoration.

This rigorously executed and fully quantified and documented piece of horticultural research is believed to be the first comprehensively quantified and statistically verified research at this level of detail and on this scale in Hong Kong. Its potential benefits (particularly the RPI of native plants) to future phases of this restoration and also to similar future projects in Hong Kong is believed to be significant.



P.1

## 2 Background

South East New Territories (SENT) Landfill Landscape Restoration: One-off Interim Monitoring Exercise

### Background to Landscape Restoration at SENT and its Objectives

The South East New Territories (SENT) Landfill is one of Hong Kong's strategic waste disposal facilities located at south of Tseung Kwan O in Hong Kong's South East New Territories. In 1993, a specialist landfill contractor was awarded the contract to design, construct, operate, restore and aftercare the SENT Landfill under Contract No. EP/ SP/10/91. The project Supplementary Environmental Impact Assessment (SEIA) Report was approved in 1994. Landfilling operations commenced in September 1994 after reclamation and infrastructure works had been carried out.

As part of its environmental objectives, 20 phases of progressive landscape restoration works on the landfill need to be carried out after the filling and capping of each phase, in order to blend the reclaimed landfill areas into the existing natural hillside landscape of the adjacent Clear Water Bay Country Park. The objectives of the restoration are stated in the 'Final Restoration: Landscape Masterplan Design Report' (December 1996), as follows:

*'It is envisaged that the afteruse of the site will be as an informal recreational facility. Such a facility will complement recreational activity in Clearwater Bay Country Park. Only after the complete landfilling and restoration of the site will it be opened to the public. It is likely that the restored site will act as a dual facility. With a car park perhaps located on the site of the current infrastructure area, visitors could either use the site as a transitional area permitting access to Clearwater Bay Country Park, or as a recreational facility in its own right. It is perceived that the facility should cater for the following activities:*

- Hiking and strolling
- Mountain Biking
- Sitting out and taking in views of the seascape and landscape"
- Picnics
- Kite and model aeroplane flying

Importantly, the Landscape Masterplan Design Report envisages the recreation of diverse, well-structured native woodland and scrubland in order to further biodiversity and sustainability policies and also native habitat creation. This was to be achieved by the well-recognized forestry technique of using hardy, fast growing non-native nurse species to establish optimal micro-climatic conditions for slower growing native species to establish before gradually removing nurse species over the course of several years to favour native species.

### 2.1 View of SENT Landfill with towards Clear Water Bay Country Park



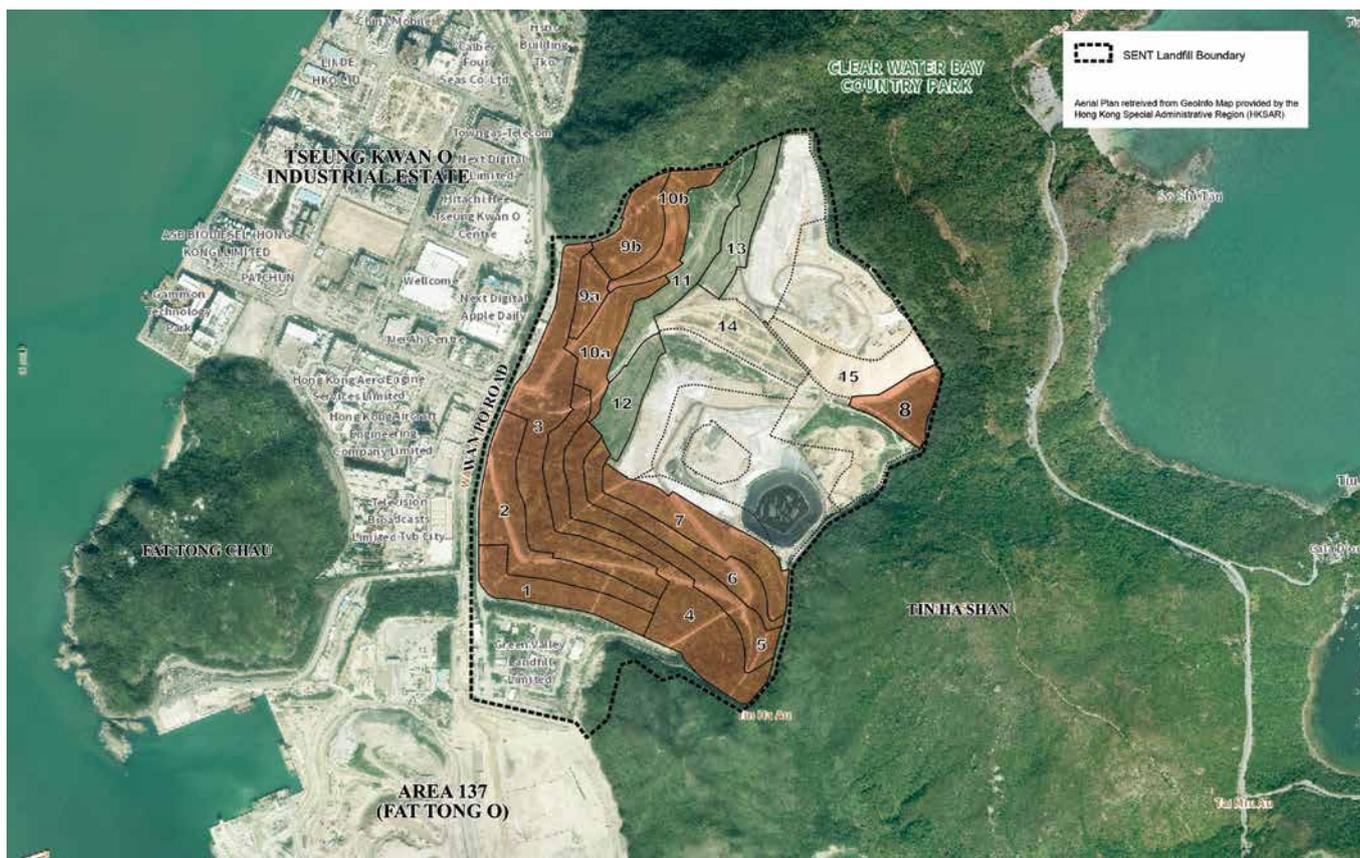
### 2.2 SENT Landscape Master Plan



P.2

3 Locations of Phases 1 to 10 of Landscape Restoration

South East New Territories (SENT) Landfill  
Landscape Restoration:  
One-off Interim Monitoring Exercise



P.3

4 Typical Condition of Phases 1-10 of Landscape Restoration (2019)

South East New Territories (SENT) Landfill  
Landscape Restoration:  
One-off Interim Monitoring Exercise

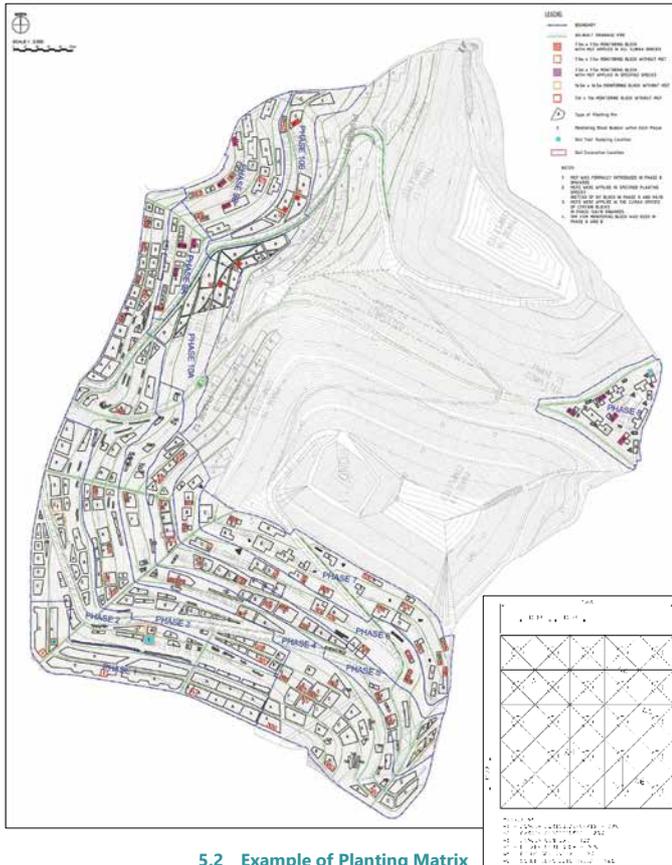
4.1 Phases 1 to 10 Photographic Records of Individual Monitoring Blocks



P.4

## 5 Methodology – Overview of Baseline: (As Built) Planting and Survey Blocks

### 5.1 Landscape Restoration Master Survey Plan



5.2 Example of Planting Matrix

### Approach to Plant Survey

The landscape restoration consists of a number of different woodland and scrubland mixes. The One-off Monitoring survey comprised examination of two samples of each woodland or scrub mix types in each phase.

In certain phases, the planting of any given woodland type may in some cases be differentiated by certain factors, namely:

- topography (planting on relatively sheltered landward slopes and planting on more exposed seaward slopes);
- the use of Microclimatic Growth Tubes (MGT) or not.

In such cases, an example of each circumstance is identified for each planting type where possible / relevant.

Most of the planting mixes have been planted in blocks which comprise an individual matrix of plants laid out in a grid of plants with 1m or 1.5m spacing. Survey blocks were selected to be of size 7.5m x 7.5m to yield 25 plants each. Generally, each survey block consists of two contiguous 7.5m x 7.5m planting matrices or a 7.5m x 15m block (i.e. 112.5 sq.m.). However, in some earlier phases, such as Phase 1 and Phase 2, larger survey blocks of 11m x 11m or 16.5m x 16.5m were surveyed to monitor the larger designed and planted matrix.

Monitoring blocks were located where possible near drainage channels or access roads to allow both for ease of identification and for ease of access (which might prove very difficult in dense or overgrown woodland that now characterizes older phases).

### Plant Survey Methodology

On this basis, the following plant data has been collected for monitoring within each phase of the restoration:

- For each survey block, identify existing plant species composition by recording all plant species found;
- Quantify the number of plants for each of the plant species;
- Record average estimated size by sample measurements and estimation of the overall average plant height and spread of each of the plant species;
- In grassland areas, estimate the percentage cover of grass;
- Make a single photographic record of each sample area with location recorded on plan;
- Make observation of signs of biotic health problems e.g. pest and / or disease problems;
- Make observation of abiotic problems (wind-burn, fire, animal or human interference);
- Make an observation of any invasive or adventitious species (i.e. those not originally planted);
- Make an assessment of woodland structure by recording presence of vegetation layers, to include: Ground Layer (<0.1m); Herb Layer (<0.5m); Sub-Climax Layer (<10m) and Climax Layer (≥10m); and
- Record the specification of the soil used.

### Soil Survey Methodology

Soil samples were taken from each phase of the restoration to determine developments in soil structure, organic matter and NPK values over the course of the restoration.

In addition, a one-off, 5m long trial trench was excavated to a depth of 1.5m at a location agreed on site. This location was to take in the root zone of a number of trees so that it might be possible to observe and photographically record the development of roots and also soil strata as well as any potential effect of roots on the liner system.

The collected data was then collected and formatted into table / schedule forms for ease of understanding and to allow conclusions to be drawn.

## 6 Methodology – Standard Deviation Approach Used to Determine Species Suitability

### Introduction

To date, the selection of plant species for the SENT landscape restoration has evolved by learning from past experience, where in every forthcoming phase, plant species of high mortality or of notably poor growth in preceding phase(s) have been replaced by a newly introduced species or an existing species proven to have relatively better performance relative to other species in a phase.

While this responsive approach is helpful in providing empirical evidence of plant performance (in terms of growth and survival) in each phase, there has been until now a lack of systematic assessment of all restoration plant species used based on the same parameters and criteria over the course of restoration. This poses limitations on determining the overall success / failure of a plant species. In addition, one should not overlook the fact that management regimes of plants have changed over the course of restoration, notably the introduction and selective use of microclimatic growth tubes (MGTs) to protect seedlings from wind desiccation and foraging wildlife. This needs to be differentiated and reflected over the course of restoration.

Under these considerations and to allow in future, project landscape architects to identify more accurately and efficiently highly successful and resilient plant species with appropriate management approaches (such as use of MGTs), the following plant suitability analysis has been formulated and conducted.

### Relative Performance Index (RPI) and Method of Calculation

Based on a consistent evaluation of plant performance in terms of their survival ability, growth and health, as well as their difference in performance with and without the use of MGTs, a "Relative Performance Index" (RPI) has been defined in order to draw comparisons regarding the suitability and performance of a plant species compared to the entire plant pool monitored from Phases 1 to 10. A similar "Relative Performance Index" was adopted by the Center for Urban Forestry Research at University of California, Davis in a 2004 study, where the proportion of public tree species classified as "good" was divided by the average total population classified as "good" to define the relative performance of a public tree species.

Since our assessment of restoration plant species includes more than one parameter, standard deviation is applied to provide a composite index, i.e. a combination of indices measuring survival, growth rate and health respectively to indicate the overall plant performance. It is defined as:

$$RPI = 50\% * ZS + 25\% * ZH + 12.5\% * ZHE + 12.5\% * ZSP$$

- **ZS** refers to the number of standard deviation of a native (or exotic) plant species from the **mean survival rate** of all monitored native (or exotic) plants from Phases 1 to 10;
  - **ZH** refers to the number of standard deviation of a native (or exotic) plant species from the **mean percentage of plants in good or health conditions** of all monitored native (or exotic) plants from Phases 1 to 10;
  - **ZHE** refers to the number of standard deviation of a native (or exotic) plant species from the **mean growth rate in terms of height** (mm/year) of all monitored native (or exotic) plants from Phases 1 to 10; and
  - **ZSP** refers to the number of standard deviation of a native (or exotic) plant species from the **mean growth rate in terms of spread** (mm/year) of all monitored native (or exotic) plants from Phases 1 to 10.
- The standard deviation is calculated based on the field data of plant species collected from each block, such that:

$$\sigma = \sqrt{\frac{\sum (X - \bar{X})^2}{n - 1}}$$

- The Z score is calculated based on the resulted standard deviation, such that:

$$z_i = \frac{x_i - \bar{x}}{s}$$

- The weighting (in %) of value comparing survival ability of a plant species is higher than that comparing the health performance and growth of the plant species, considering that survival is the precondition for plant establishment and therefore of utmost importance for this restoration.

Under this mechanism, a plant species with a higher RPI have a better overall performance in terms of their survival ability, capacity for maintaining continuous growth and good (or fair) health, relative to the average performance of all plants monitored from Phases 1 to 10, and vice versa. It is however acknowledged that a RPI is unable to reflect differences in plant performance incurred by specific site conditions such as soil, solar irradiance, etc. resulting from variations due to soil sourcing and engineered topography. Although the SENT Landfill is of a limited scale and with limited variation in form and therefore unlikely to result in drastic changes in site conditions, an evaluation of the site's physical characteristics is still an important factor to consider in addition to using RPI.

The set of RPIs for each native species with or without the use of MGTs is a helpful indicator. This compares, in overall terms, whether a particular plant species performs better or worse with the use of MGTs. "Spiral shelter" MGTs have been introduced in later phases to protect seedlings from wind desiccation and foraging animals. While MGTs appear superficially to have advantages from past experience in terms of lower mortality for native species, there are also concerns that they may be resulting in significant leaf shedding and little horizontal growth due to overheating within the rigid enclosure.

Field data collected in each monitoring block for calculating RPI includes the following:

- Average mortality by plant species;
- Average mortality by plant species with and without MGT;
- Average growth rate per by plant species since planting;
- Average growth rate per plant species with and without MGT since planting;
- Observations on health by plant species; and
- Observations on health by plant species with and without MGT.

### 6.1 Ongoing Phased Landscape Restoration Works (2020)

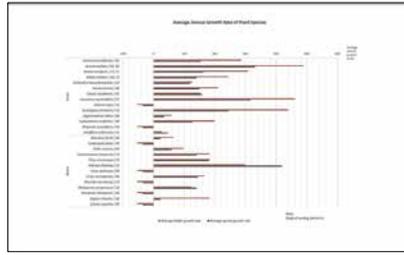


7 Example of Analysis of Plant Species Performance and Key Issues

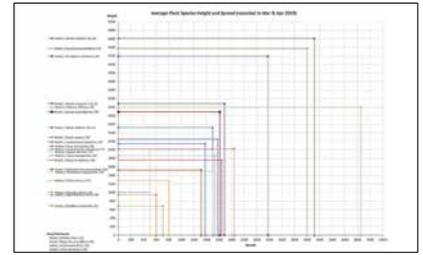
South East New Territories (SENT) Landfill Landscape Restoration: One-off Interim Monitoring Exercise



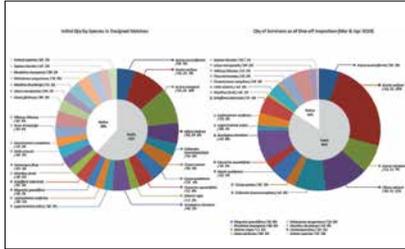
Average Mortality by Plant Species



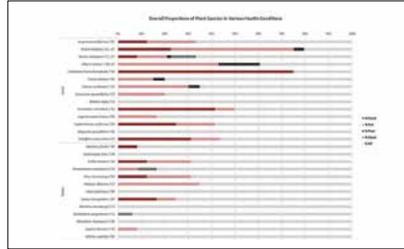
Average Annual Growth Rate of Plant Species



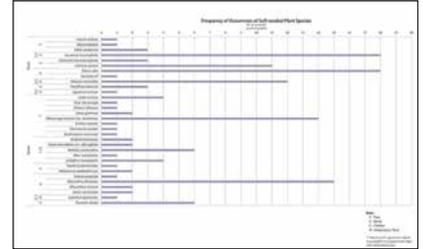
Average Plant Species Height and Spread (recorded in Mar & Apr 2019)



Native / Exotic Proportions of the Designed Planting Matrices



Overall Proportions of Plant Species in Various Health Conditions



Frequency of Occurrence of Self-seeded Plant Species



Examples of Dominant Self-seeded Plant Species



Examples of Biotic Disturbance Observations: Sign of Boars & Mounds of *Solanopsis invicta*

P.7

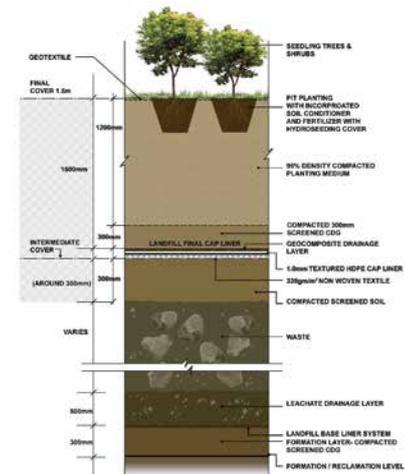
8 Site Factors Affecting Phases 1 to 10 of Landscape Restoration – Soils

South East New Territories (SENT) Landfill Landscape Restoration: One-off Interim Monitoring Exercise

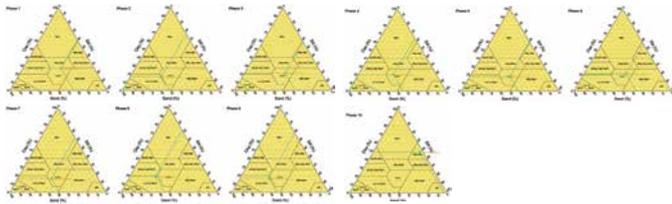
Soils

In terms of soils (outside planting pits), soil test results showed some variation across the site, but with generally very low levels of nutrient and organic matter. Soil excavations showed little or no development of soil strata over 20 years with very low levels of root penetration beyond the A-layer. This is almost certainly due to the high level of compaction (95%) that final cover at SENT must undergo under Contract requirements in order to ensure slope stability and limitation of ingress of water.

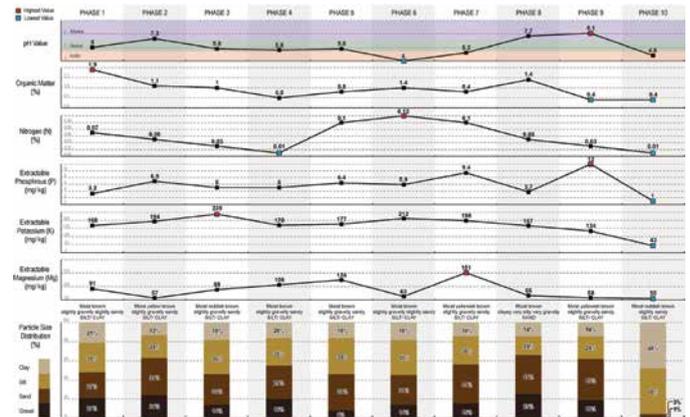
8.1 Existing Soil Profile



8.2 Soil Test Reports & Soil Texture Triangles



8.3 Phase 1 to Phase 10 Soil Test Result



8.4 Soil Excavation Result



P.8

## 9 External Influences Affecting Phases 1 to 10 of Landscape Restoration

In addition to species performance, the influence of aggressive and invasive weed species (especially *Leucaena leucocephala* and *Mikania micrantha*) has had negative effects on the development of planting at SENT. These weeds are widespread in Hong Kong and recognised as being very difficult to combat. This has affected vegetation structure, which is on occasion, not as well developed as intended. In specific locations, there has also been a negative impact on planting from the activity of wild boar (*Sus scrofa*), which have in recent years been found increasingly in areas of the urban periphery in Hong Kong. Also evident was the presence of Red Imported Fire Ant (*Solenopsis invicta*) communities and nests in open areas of the restoration. Red Imported Fire Ants are a fairly recent arrival in Hong Kong from abroad and are now a demanding management issue in grasslands across the territory. Their arrival poses a management issue with regard to the use of restored landfill as a recreational venue (though not to planting). All of these management issues should be addressed both in completed, but also in future phases of restoration.

### 9.1 Invasive Weed Species



Invasive species, namely *Leucaena leucocephala* and *Mikania micrantha* were commonly seen in Phase 1 to Phase 10 monitoring blocks. The presence of *Leucaena leucocephala* were recorded as "High" in Phases 1, 2, 3, 4, 6, 7, 8 and 9, while the presence of *Mikania micrantha* were recorded as "High" in Phases 2 and 3. *Leucaena leucocephala* is widely considered to be an invasive 'weed' tree, as this species grows and spreads rapidly.



It can establish quickly on disturbed sites, forming dense monospecific thickets which threaten native species. *Mikania micrantha* is a climbing plant which has become a common 'weed' in Hong Kong and produces large amounts of flowers and huge amounts of seed with a very high germination rate. This climber will smother plants beneath it and will lead to inadequate sunlight penetrating to the plants underneath that could eventually kill them by cutting off sunlight for photosynthesis.

### 9.2 Typhoons Damage



Between 1997 and 2014, there were records of two super-typhoons in Hong Kong, namely Typhoon York in 1999 and Typhoon Vicente in 2012. It is believed that the strong wind and heavy rain during the typhoons caused damage to SENT restoration planting. For instance, large fallen tree



trunks were observed during inspection in some phases. It is believed that the typhoon may have contributed to a large extent to the low survival rates particularly in Phases 1 and 8.

### 9.3 Wild Boar (*Sus scrofa*)



Traces of wild boar (*Sus scrofa*), such as tracks and droppings were observed in Phases 5, 6, 7 and 9. Soil erosion at SENT is believed to be linked to wild boar activity, specifically food foraging. The possible soil erosion created by boar



may contribute to the death of plants, as planting can be uprooted and tuberous roots eaten by wild boar.

### 9.4 Red Imported Fire Ants (*Solenopsis invicta*)



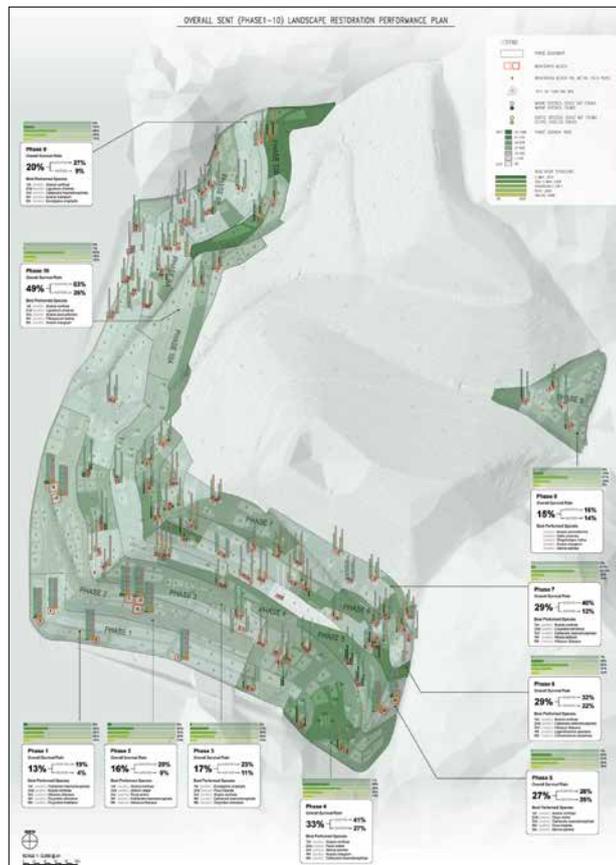
Nest mounds of *Solenopsis invicta*, or Red Imported Fire Ants, were observed in Phases 5 to 10. The numbers of mounds observed in Phases 7, 9 and 10 are the highest among all phases. It is understood that Red Imported Fire Ants favour open areas with sunlight, such as grassland and drainage channel perimeters, and this would explain the reason for not seeing Red Imported Fire Ants in earlier,



more established densely vegetated phases. The Red Imported Fire Ants attack anything that disturbs its nest mounds and their sting can cause pain and mild to severe medical complications to humans. They are not believed to be a significant influence on plant development outside grasslands.

## 10 Overall Performance, Key Issues and Recommendations

### 10.1 Overall SENT (Phase 1 to 10) Landscape Restoration Performance Plan



### Plant Performance

Data on plant species mortality was subject to statistical analysis to produce **Relative Performance Index (RPI)** for reference in future restoration phases. This analysis highlighted those species which should be avoided in future restorations as being badly adapted to the SENT environment. In the development of the RPI, certain variables (mainly site / locational variables) were not taken into account either because they were too difficult to measure (e.g. wind direction and speed over time) or because the required statistical multivariate analysis is beyond the expertise of the survey team as Landscape Architects. In addition to the RPI, a locational analysis of **plant mortality** across the site was produced as an Overall SENT (Phases 1-10) Landscape Restoration Plant Species Performance Plan. This summarises the overall survival rate of monitoring blocks related to site topography, vegetation structure and identifies the best performing species for each phase. Given the data derived, it has been possible to make some common sense observations regarding site issues as they affect plant development.

### Summary of Key Issues in Phases 1 to 10

Key Issues -	Phase - (Year)	1 (1997)	2 (2000)	3 (2001)	4 (2002)	5 (2003)	6 (2004)	7 (2010)	8 (2012)	9 (2013)	10 (2014)	Frequency
<b>A</b> Low Survival Rate		13%	16%	17%	33%	27%	29%	29%	15%	20%	49%	Overall Average: 25%
<b>B</b> Limited Soil Volume		•	•	•	•	•	•	•	•	•	•	High
<b>C</b> Cruds Condition at Initial Stage		•	•	•	•	•	•	•	•	•	•	High
<b>D</b> Lack of Ground Layer				•						•		Low
<b>E</b> Typhoon		• York (1999)		•	•	•			• Vicente (2012)			Low
<b>F</b> Invasive Spp. • <i>Leucaena leucocephala</i> *		•	•	•	•	•	•	•	•	•	•	High
• <i>Mikania micrantha</i> *		•	•	•	•	•	•	•	•	•	•	High
<b>G</b> Soil Erosion						•						Low
<b>H</b> Wild Boar							•			•		Medium
<b>I</b> Red Fire Ants*							•	•	•	•	•	Medium

\* (F) Occurrence frequency is classified as:  
 • "High": occurrence in monitoring blocks = 61% to 100%  
 • "Medium": occurrence in monitoring blocks = 31% to 60%  
 • "Low": the occurrence in monitoring blocks = 0 to 30%

# (I) Occurrence frequency is classified as:  
 • "High": large no. (≥4) of Fire Ants mounds  
 • "Medium": moderate n.o. (2 to 3) of Fire Ants mounds  
 • "Low": insubstantial no. (≤1) of Fire Ants mounds

### Recommendations

- Enhancements to Planting Approach**
- Withdrawal of Unsuccessful Species (Based on RPI)
  - Increased Use of Successful Native Species (Based on RPI)
  - More Limited Use of Exotic Nurse Species
  - Introduction of Native Nurse Species
  - Increase in Planting Pit Sizes
  - Trialing Biochar as Soil Additive
  - Trialing Alternative Type of Microclimatic Growth Tubes (MGT)
  - Amendment to Application Time of MGT
  - Phased Introduction of Native Climax Species
- Enhancements to Planting Approaches**
- Increased Irrigation Over Winter Months in Initial Years
  - Enhanced Woodland Management and Thinning
  - Erosion Control (Using Geotextile)
  - Control of Red Imported Fire Ants (*Solenopsis invicta*)
  - Humane Trapping of Wild Boar (*Sus scrofa*)
  - Control of Aggressive Invasive Species
- Leucaena leucocephala*      *Mikania micrantha*  
*Lygodium japonicum*      *Pueraria spp.*

# HONG KONG 2022 INTERNATIONAL URBAN FORESTRY CONFERENCE

Organized by Development Bureau, the Hong Kong 2022 International Urban Forestry Conference with the theme "Well-being: Our Urban Forest . Our Community" topics on urban forestry's relationship with infrastructure planning and design, wellness and health of people, and its sustainable management will be explored. The sub-theme of the four plenary sessions are Well-being Cities, Urban Forestry in the Greater Bay Area, Landscape Design for Health and Well-being and Healthy Urban Forest.

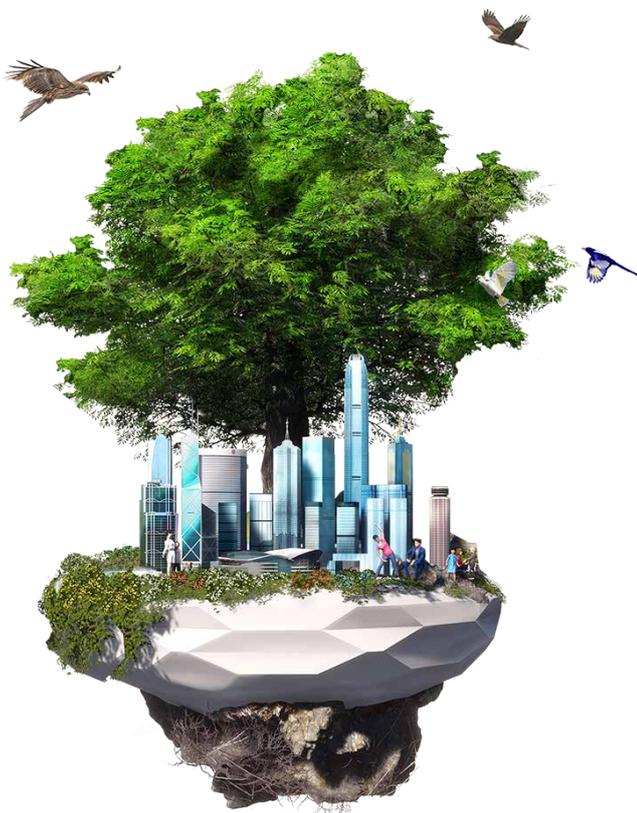
## Conference details:

Date: 2-4 March 2022  
Time: 9:00am – 5:30pm  
Format: hybrid mode  
Admission: free of charge  
Language: simultaneous interpretation in English / Cantonese / Putonghua is available  
Official website: <https://www.hk2022iufc.hk/registration/>  
Online registration: <https://www.hk2022iufc.hk/registration/>

## CPD details:

2 Mar 2022 (Day One: 9 seminars)  
Activity type 1, 3, 4 & 5  
Level 3  
2.5 CPD points

3 Mar 2022 (Day Two: 11 seminars)  
Activity type 1, 2, 3 & 4  
Level 3  
2.5 CPD points



## Session 1: Well-being Cities

**Urban Nature and Its Health Relevance**  
Mr Matthias BRAUBACH

**City in a Forest: The Vision of Biophilic Cities**  
Professor Timothy BEATLEY

**Healing the World's Cities: Sponge Cities and Sponge Planet Inspired by Ancient Wisdom**  
Professor YU Kong-jian

**Re-greening Urban Riverscape: Shared Goal and Joint Effort in the Greater Bay Area**  
Dr Wendy Y CHEN

## Session 2: Urban Forestry in the Greater Bay Area

**Research on Wind Resistance of Landscape Trees and Practical Solutions**  
Professor XIAO Jieshu

**Engineering a Safer Urban Forest under Extreme Storms**  
Dr Anthony LEUNG Kwan

**Identification and Control of Major Landscape Pests in South China**  
Professor WEN Xiujun

**The Technology and Cases of Urban Tree Management in South China City**  
Ms HUANG Songyi

**Soil Properties in Relation to Tree Performance across Urban Green Space Types in HK**  
Dr Allen ZHANG Hao

## Session 3: Landscape Design for Health and Well-being

**Case Study of Supe-Chiyu (Forest Therapy) Activities for Urban People in Korea**  
Professor Bum-jin PARK

**Urban Landscape & Healthy City: Mechanisms and Research Questions regarding the Impacts of Urban Green Landscapes on Public Health and Well-being**  
Dr JIANG Bin

**Revitalisation of Tai Wai Nullah: Creation of Blue Green Space for Close Contact with Nature in Urban Area**  
Ir Thomas H. L. WONG

**Greening Blocks: Evidence-based Design Strategies to Integrate Health & Climate Resilience Co-benefits of Urban Greening**  
Dr Sara BARRON

**A Study on Stationary Behaviors in High-density Residential Estates in Hong Kong**  
Dr SHI Shulin

**The Future Urban Forest at Tung Chung New Town Extension, HK**  
Ms N.T. PONG

## Session 4: Healthy Urban Forest

**Principles and Methods of Plant Selection in Response to Climate Change for Landscaping and Urban Forestry**  
Professor ZHANG Deshun

**When the Biological and Physical Clash, Mash and Trash - or How Healthy Soil is (un)Made**  
Dr Alexia STOKES

**A New Fast Method to Assess Urban Trees' Growth Sensitivity in Response to Habitat Stress: A Case Study of Urban Trees under Drought Stress in Saxony, Germany**  
Dr LIU Ming

**Green Barriers to Reduce Pollution: Results of a Long-Term Experiment**  
Professor Francesco FERRINI

**(Title to be updated)**  
Dr Linda CHALKER-SCOTT

# 'RESILIENT CITIES' UNDER 'INTERNATIONAL WORKSHOP ON URBAN LANDSCAPES (IWUL) 2021

## About the IWUL and the Exhibition

International Workshop on Urban Landscape (IWUL) is an annual international workshop held by landscape architecture undergraduate programmes from Asian universities in Tokyo, Seoul, Bangkok, Istanbul, and Hong Kong. This year, THEi's landscape architecture program had the honour to host IWUL with the theme 'Resilient Cities'. The research site is Pokfulam Village, one of the last remaining squatter village on Hong Kong Island. The workshop had five main research themes, namely district-level water systems, village-level water systems, hygiene and waste, culture and land, and vacant land and underused sites. IWUL 2021 was held online from 2 to 10 August, including 8 public online seminars on various topics of landscape resilience, virtual site visits to Pokfulam Village and other relevant sites, design workshops, and a final presentation.

## Post-workshop exhibition

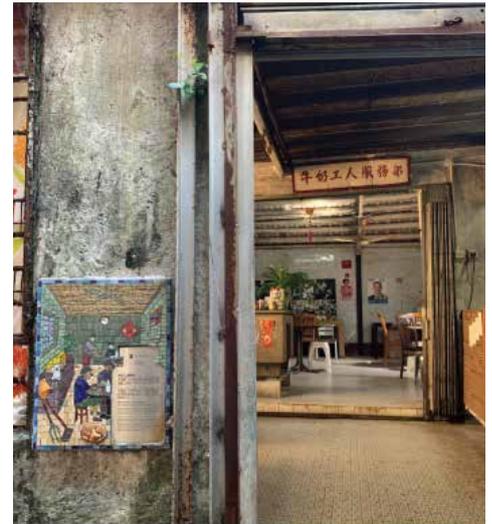
Activity type 1, 4 & 5  
Level 3  
1.5 CPD points

Date: 9-23 Dec 2021  
Time: Opens daily from 11am - 6pm  
Venue: Dairy Farm Union Corp & House No.87

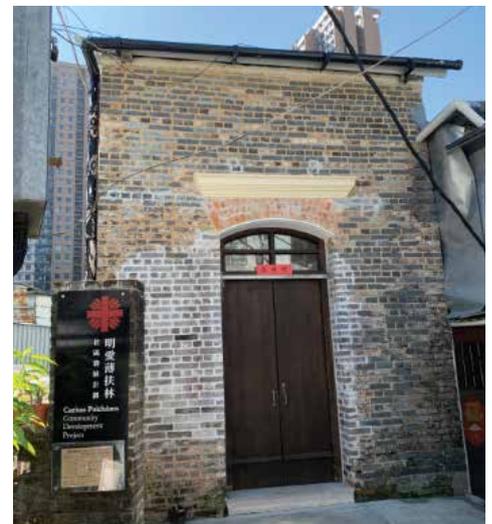
## One-hour post-workshop exhibition tour

Activity type 1, 4 & 5  
Level 3  
0.5 CPD points

Exhibition opening: 12-Dec-2021, 11am -12pm  
Date: 11 / 12 / 18 / 19 Dec  
Time: 11am-12pm & 3-4pm



▲ Venue 1: Dairy Farm Union Corp



▲ Venue 2: House No. 87



▲ Village guided tours

# 生物炭的應用

日の丸產業有限公司 – 郭堅銘

## 前言

現代農業及園林業普遍使用化學肥料，因而引致土地貧瘠、水質污染等環境影響，同時農產品亦經常出現殘留農藥的問題。有鑑於此，農業從業者千方百計發掘既安全又有效的種植方法。若要農作物健康的生長和滿意的收成，水和泥土是箇中最重要的因素，而泥土還可以通過加入生物木炭來提升質量。生物木炭中的備長炭，是經過特別處理而成的高效品種。我們的「土壤改良炭」-炭の花含有高純度的生物炭，在現今日本及各國農業界和園林界中，此產品被廣泛應用來改良土質，當中包括日本三景其中，京都天橋立和宮島（世界文化遺產）、台灣石門山和香港一些農場等地。生物炭的多孔質表面能夠淨化水質，而其介乎pH7至8的弱鹼性，使用在酸性土壤上能達到中和作用。

## 生物炭的特性

- 多孔質表面能淨化水質
- 改善土壤之儲水性及保水性
- 能使土壤中CO<sub>2</sub>約增2倍的濃度，增加泥土氧份
- 使用弱鹼性木炭粉，能達到pH中和作用
- 能強化植物根部，增強根的活性
- 促使根粒菌，根瘤菌，放線菌，絲狀菌等增生
- 令植物可全面吸收土壤及肥料中的養份

## 生物炭對植物的好處

「土壤改良生物炭」-炭の花，是由日本國內針葉樹、硬木和疏伐木製成的生物木炭。由於具有多孔結構，因此可以改善保溫、保水、保肥、通氣和透水性，促進土壤中有益微生物的活化。將輾碎的生物炭加進土壤後，土壤中的根瘤菌、放線菌、絲狀菌等會增加，使周邊土壤的微生物產生變化。當其中的氮素儲積起來時，會吸引植物的根部伸延過來，一種與根共生之菌（內生菌根菌）因而成長，同時促進其他微生物的繁殖。菌根菌是植物生長必須，因此泥土可以使植物生長得更健康，從而提高農作物的收成。此外，生物炭中所含的礦物質，能補充土壤中不足的微量元素（鐵、錳等），使其變得肥沃，提供植物所需要的各種養份。

## 生物炭能實踐可持續廢物管理和減碳理念

生物炭被視為一種固碳材料，並且有效減少每年堆填的廢木料。伐木材製成的樹皮生物木炭不含任何廢木，不易變質，將其灑在土壤上可以改良土質，並且固定二氧化碳，一舉兩得。2019年第49屆政府間氣候變化專門委員會（IPCC）大會通過的「2019年改進的IPCC指南」中增加了一項計算與生物炭輸入相關的固碳量的方法。對此，日本農林漁業部於2020年開始計算並報告農用地使用生物炭相關的碳儲存量。根據研究結果，用於土壤改良（例如田地）的一袋（45升）炭の花約可以固定27.8公斤的二氧化碳。於香港推動以園林廢物如伐木材轉化為生物炭，有助園境行業實踐於「香港資源循環藍圖2035」訂立的減廢目標及碳中和的理想。

## 生物炭能緩減褐根病

移除「樹癌」褐根病感染的樹木為最有效的管理手法，以保障公眾安全及防止真菌蔓延至鄰近樹木。然而近年於台灣、印度及肯雅等地皆有研究指出褐根病好發於土壤環境不佳之區域，適量使用生物炭並配合有機肥等改良物質可改善土壤通氣性、保水性、微生態、調節土壤酸鹼值，以增強樹木對病原體的抵抗力，盼藉此改善初期的褐根病，減少砍伐古樹名木、稀有樹木品種以及具有文化、歷史或重要紀念意義的樹木，讓城市更綠意盎然。



▲圖一、二：於日本廣島縣嚴島使用生物炭種植的例子。



▲圖三：於台北桃園石門水庫使用生物炭種植的例子。

# 「城市林務發展基金-見習生計劃」

## 資助僱主聘請見習生 培育樹藝從業員

建造業議會

### 前言

政府近年積極推廣樹木安全，隨着大眾的意識提升，對人才需求亦增加。發展局於2020年8月推出「城市林務發展基金-見習生計劃」（下稱「見習生計劃」），以提升樹藝行業對青年人的吸引力，讓青年人看到行業前景，幫助他們考取專業資格以及提供津貼作誘因。發展局委託建造業議會（下稱議會）管理見習生計劃，鼓勵樹藝行業僱主以「先聘請、後培訓」形式聘請樹藝和樹木管理課程的畢業生成為見習生。議會透過僱主，向見習生提供相等於議定的每月薪酬水平約三成的培訓津貼。見習生完成培訓並考獲相關工種的專業資格將可獲發放獎金。

### 資助見習生三成薪金

#### 考取專業資格可獲發獎金

見習生計劃設有兩項工種——樹藝師見習生和攀樹員見習生。參與的僱主須以全職形式聘請見習生，並為見習生安排一位符合計劃要求的培訓導師。

樹藝師見習生及攀樹員見習生首年最低月薪要求分別為\$14,500及\$15,000，議會將按工種每月津貼僱主分別為\$4,500及\$5,000。最低月薪要求及議會的津貼額會隨見習生的年資增加。完成培訓後一年內考獲相關專業資格，樹藝師見習生可獲獎金\$30,000，攀樹員見習生獎金為\$20,000。

### 培訓內容多元化 助掌握專業技能

培訓導師與見習生需根據議會制定的培訓方案進行培訓，議會每三個月作實地巡查，了解見習生的培訓進度。為提升見習生工作技術，幫助他們建立良好職場人際關係及改善團隊合作精神，議會亦會安排見習生參與實力鞏固課程，以分組活動、講座等輕鬆學習模式助見習生掌握專業技能。見習生亦會參與期中及終期評核，確保見習生的進度合乎預期理想水平，並為他們將來考取專業資格作準備。

### 僱主反應熱烈 全年接受報名

計劃於2020年8月開始，現時已有近100名見習生參與培訓計劃，首批參與的見習生將於2022年3月完成培訓。參與計劃的公司涵蓋政府部門、園境顧問公司、樹木工程公司、建築公司等。有意參與的僱主，只須持有一年或以上的政府或私人機構簽訂樹木檢查/樹木工作相關合約，並僱有最少一名符合相關工種的培訓導師。

見習生需畢業於資歷架構第三至第五級的樹藝、樹木管理和樹藝工作課程。僱主須先聘用合資格的見習生，交齊申請文件後起計於15個工作天內完成審批。「城市林務發展基金-見習生計劃」全年接受申請。有興趣的僱主可登入 [www.cic.hk/ufsf-tp](http://www.cic.hk/ufsf-tp) 查看詳情，致電2100 9000或電郵至 [ufsf-tp@cic.hk](mailto:ufsf-tp@cic.hk) 與議會職員聯絡。

### 關於城市林務發展基金

發展局已於2020年年中推出二億元的「城市林務發展基金」（下稱「基金」），目的是吸引更多青年人投身樹藝及園藝業，全面提升從業員的專業水平，同時加強妥善護養樹木的公眾教育和推廣工作。基金會用作推行多項新措施，包括：

- 學習資助計劃
- 見習生計劃
- 國際城市林務研討會
- 公眾教育及推廣活動

#### 樹藝師見習生的導師

須具備：

- 資歷架構第四級或以上樹藝相關學歷；及
- 樹藝專業資歷；及
- 完成及通過樹木管理辦事處舉辦或認可的樹木風險評估及管理課程；及
- 樹木作業相關職業安全 and 健康培訓資歷；及
- 具7年或以上樹木護養工作經驗

#### 攀樹員見習生的導師

須具備：

- 樹木工作相關職業安全 and 健康培訓資歷；及
- 具相關專業資歷或經認可訓練，包括使用纜索攀爬樹木、使用鏈鋸和高空救援；及
- 具3年或以上樹木護養及攀樹工作經驗

▲ 參與的僱主須為見習生安排一位符合計劃要求的培訓導師。



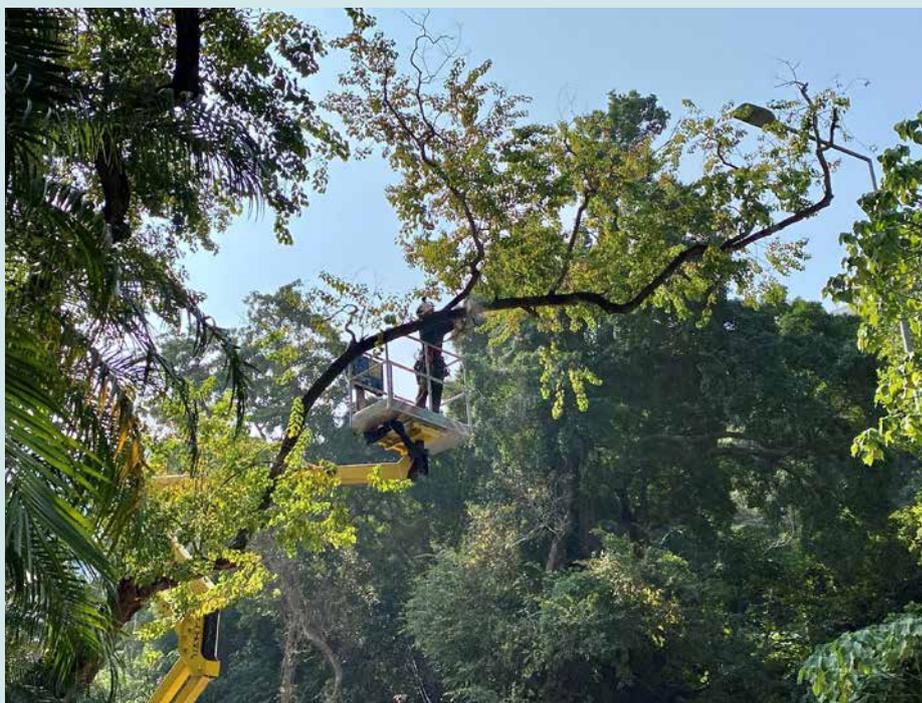
▲ 攀樹員日常工作情況。



▲ 樹藝師見習生學習使用聲納探測儀檢查樹木的健康。



▲ 攀樹員培訓導師根據培訓方案和見習生進行練習。



▲ 攀樹員見習生嘗試在升降台上修剪樹木。



▲ 建造業議會每一至兩個月會安排見習生參加實力鞏固課程，當中包括實地考察。



▲ 軟實力鞏固課程，旨在提升見習生的團體合作精神和溝通能力。



▲ 建造業議會亦會實地探訪見習生，了解他們的日常工作和培訓進度。

# DESIGN COMPETITION FOR TRANSFORMATION OF SENSORY GARDEN AT KWUN TONG PROMENADE

## BACKGROUND

The Energizing Kowloon East Office of the Development Bureau and the Hong Kong Institute of Architects are launching a single-stage design competition for the transformation of Sensory Garden at Kwun Tong Promenade. The Competition opens to Professional Group and Student Group to collect innovative design and concepts.

## ELIGIBILITY

For Professional Group, one participant shall be a Hong Kong resident and a Full Member of HKIA and the team leader shall be a Full Member of HKIA, HKILA, HKIP or HKIUD.

Student Group is open to all students who are studying full-time in universities/ post-secondary institutes in Hong Kong or overseas and the team leader shall be a Hong Kong resident.

## KEY DATES

10 Dec 2021	Open for Registration
17 Dec 2021	Online Briefing
11 Jan 2022	Closing of Competition Enquiry
18 Jan 2022	Completion of Replies to Enquiries
24 Jan 2022	Closing of Registration
21 Feb 2022	Closing of Submission Entry
April 2022	Adjudication
End April 2022	Announcement of Results

## OFFICIAL CONTACT

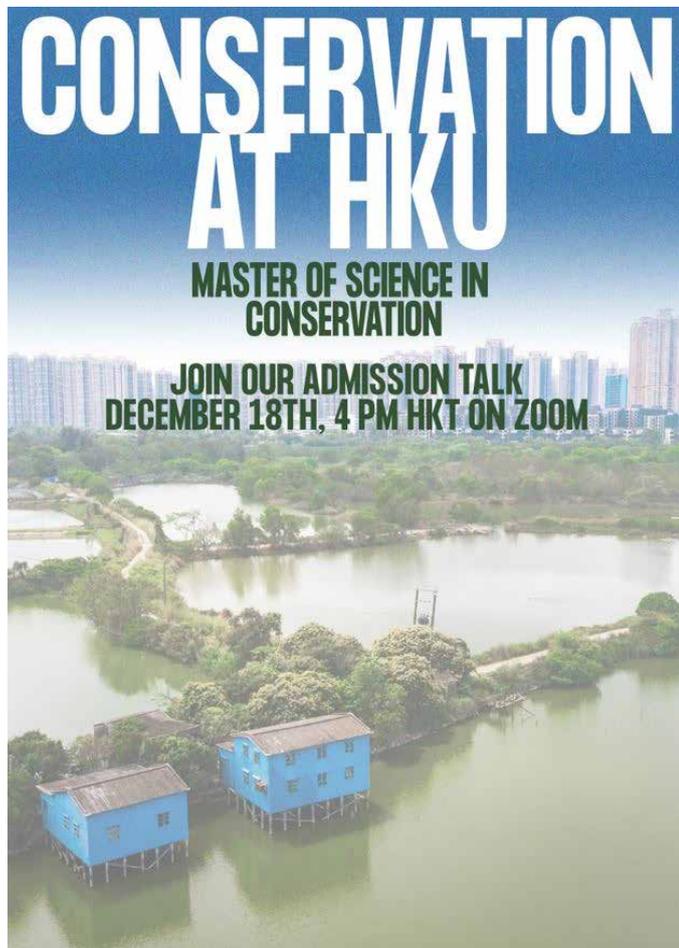
sensorygardencompetition@hkia.net

## REGISTRATION

<https://docs.google.com/forms/d/e/1FAIpQLSd1FHveGiY416U83l8YKRKi7XYOwPN3CtIIAHTV7gk-Z60jPg/viewform>



## ADMISSION TALK: HKU MASTER OF SCIENCE IN CONSERVATION



The Division of Landscape Architecture at HKU is re-launching the Master of Science in Conservation program and they are now accepting applications for the 2022 intake. The online admission talk will be held with following details. Welcome to share the information with your friends.

Admission Talk: Master of Science in Conservation  
Date & Time: 16:00-17:00, December 18, 2021 (Saturday)  
Venue: Zoom Meeting  
Speakers: Dr. Cecilia Chu & Dr. Ying Zhou

## HKU LANDSCAPE ARCHITECTURE OPEN HOUSE



HKU are hosting an Open House event on campus from 10-12 am this Saturday, and we cordially invite you to join us and get to know us!

During the two-hour Open House, we will present the top works of our BALS, MLA and PDLA students and visitors will get a chance to learn more about the following five programmes offered by the Division of Landscape Architecture of HKU:

- Bachelor of Arts in Landscape Studies (BALS)
- Master of Landscape Architecture (MLA)
- Postgraduate Degree in Landscape Architecture (PDLA)
- Master of Science in Sustainable Environmental Design (MScSED)\*
- Master of Science in Conservation [MSc(Cons)]\*

\*New programmes

You are also welcome to share this email with your family, friends and colleagues who might be interested in applying for any landscape programmes at HKU :)

## CHANGE OF MEMBERSHIP AND NEW MEMBERS

from 1 July 2021 to 31 December 2021

### Change from Associate Members to Professional Members

M307	CHOW Chi Hung Vincent	周智雄	M310	LAU Yuen Yee	劉婉儀
M308	YU Kin Hoi	余建海	M311	CHUNG Wai Ho	鍾偉豪
M309	YU Siu Lun	余兆倫			

### New Associate Members

G524	WONG Yee Fung	黃以峰	G538	KWONG Wai Lam	鄺慧琳
G525	HO Man Ching	何敏靖	G539	LEUNG Wai Yan	梁煒恩
G526	LEUNG Lok Sze	梁樂施	G540	LIN Zhizhen	林祉真
G527	LAI Hin Wai	黎軒璋	G541	TANG Wing Suet	鄧穎雪
G528	OR Chun Hin, Justin	柯雋軒	G542	CHAN Chu Hang	陳柱亨
G529	CHEUNG Wing Ka	張詠嘉	G543	CHU Kai Yin	朱啟彥
G530	LAI So Man	黎素雯	G544	NORMAN, Adrian Langford	-
G531	LAM Ping Ling	林冰靈	G545	SO Chun Pong Ricky	蘇振邦
G532	LIU On Yi	廖安兒	G546	WONG Wai Ching Ivan	黃煒程
G533	YAU Ka Lee	邱珈莉	G547	CHUI Shin Keng	崔善芹
G534	HO Yu Ming	何裕明	G548	KWAN Oi Wa	關愛華
G535	LEUNG King Man	梁競文	G549	WEN Zhi Xin	溫芷欣
G536	LO Wai Ching	盧懷清	G550	WONG Yuen Ning	黃沅寧
G537	NG Tsz Lung	吳梓龍	G551	WONG Nok Yan	黃諾恩

### New Graduate Members

Gd035	YUEN Chun Wing	袁雋穎
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### New Registered Practices

Adrian L. Norman Limited

## HKILA RECORD (SEPTEMBER 2021 – JANUARY 2022)

## EVENTS ATTENDED BY HKILA REPRESENTATIVES

Date	Event	Representative(s)
1 Sep 21	HKIUD Urban Design Award 2021 - adjudication	Iris Hoi
2 Sep 21	Phone call with CityU Dr. Talamini	Iris Hoi
2 Sep 21	40th meeting of the Harbourfront Commission's Task Force on Harbourfront Developments in Kowloon, Tsuen Wan and Kwai Tsing	Iris Hoi
3 Sep 21	Hong Kong Horizontal Metropolis: A paradigm shift	Iris Hoi
7 Sep 21	香港規劃、建築及相關工程領域融入粵港澳大灣區發展座談會	Iris Hoi
11 Sep 21	建築、測量、都市規劃及園境界立法會議員及選舉委員會當然委員與業界交流會 by PMSA	Iris Hoi
13 Sep 21	Discussion Meeting on Smart Lampposts	Iris Hoi
17 Sep 21	HKPASEA: 專資會「十五周年誌慶典禮」	Iris Hoi
18 Sep 21	PT 2.0 Public Toilet Design Competition - Invitation to Prize Award Ceremony	Iris Hoi
24 Sep 21	National Day Celebration Dinner by SCAACPA	Iris Hoi
25 Sep 21	香港科技界慶祝中華人民共和國成立七十二週年科技論壇	Iris Hoi
25 Sep 21	香港科技界慶祝中華人民共和國成立七十二週年科技論壇 - 午宴	Iris Hoi
27 Sep 21	香港建造界慶祝中華人民共和國成立 72 周年國慶典禮	Iris Hoi
28 Sep 21	72nd National Day Celebration for the Accountancy Profession	Iris Hoi
28 Sep 21	[HC/Kai Tak Task Force] 41 <sup>st</sup> meeting	Paul Chan
5 Oct 21	CIC Construction Luncheon (Retirement of Ir LAM Sai-hung)	Iris Hoi, Paul Chan
21 Oct 21	Land and Development Advisory Committee	Iris Hoi
21 Oct 21	Best Landscape Award for Private Property Development 2022 - 1 <sup>st</sup> OC Meeting	Tak Wong
23 Oct 21	Speak at the Collaborate HK Capacity Building Workshop	Paul Chan
9 & 10 Oct 21	Green Building Award 2021 – Juror Final Judging of the Finalists which comprises site visit cum presentations	Iris Hoi
27 Oct 21	ArchSD 35A Event Night	Paul Chan
9 Nov 21	CTBUH International Conference	Iris Hoi
10 Nov 21	Discussion: 2022 Accreditation of MLA Program at HKU	Iris Hoi, S.C. Lo
11 Nov 21	11 <sup>th</sup> Anniversary Celebration Dinner of BEAM Society Limited	Iris Hoi
12 Nov 21	HKICPA Annual Dinner 2021	Iris Hoi
22 Nov 21	CIC-BIM Network Sharing Session	Enzo Lam
26 Nov 21	CIOB (HK) Annual Dinner 2021	Iris Hoi
30 Nov 21	DSD Event Invitation: proposed works under PWP Items 4178CD and 4161CD	Paul Chan
3 Dec 21	Celebration of 20th Anniversary of the establishment of the Hong Kong Coalition of Professional Services (HKCPS) Seminar cum Luncheon	Iris Hoi, Paul Chan, S.C. Lo, Patrick Lau
7 Dec 21	28 <sup>th</sup> Communication Meeting between HKILA, ALC and ArchSD	Iris Hoi
16 Dec 21	粵港合作項目推介會	Iris Hoi
17 Dec 21	The Completion Ceremony of Water Sports and Recreation Precincts (Phase 2)	Paul Chan
18 Dec 21	Jury Adjudication - Design Competition on Green Link in Wong Chuk Hang	Iris Hoi
31 Dec 21	HKDA Annual Ball cum 70 <sup>th</sup> Anniversary	Iris Hoi
4 Jan 22	Design Competition on Green Link in Wong Chuk Hang - Prize-giving Ceremony	Iris Hoi
5 Jan 22	PGBC Annual General Meeting 2021 and 5 <sup>th</sup> Council Meeting	Tak Wong
18 Jan 22	Coalition Board Meeting and AGM	Patrick Lau
21 Jan 22	Adjudication: 'Living with BLUE-GREEN Design' Drawing Competition	Iris Hoi
24 Jan 22	Land and Development Advisory Committee	Iris Hoi

## EVENTS HKILA AS SUPPORTING ORGANISATION

Date	Event	Organizer(s)
28 Sep 21	The Best Landscape Award for Private Property Development 2022	Leisure and Cultural Services Department (LCSD)
28 Sep 21	Hong Kong Awards for Environmental Excellence (HKAEE) 2021: (i) Hong Kong Green Innovations Awards and (ii) Outstanding Green Achiever Commendation Scheme	Hong Kong Productivity Council
29 Oct 21	25A City Dress-up Design Competition	HKSAR
2 Nov 21	Living with BLUE-GREEN Design' Drawing Competition	CEDD
22 Nov 21	Design Competition on Transformation of Sensory Garden at Kwun Tong	HKIA
22 Dec 21	二零二二年香港花卉展覽 - 植物展品比賽	康樂及文化事務署
6 Jan 22	Greening School Project Award 2021/22	Leisure and Cultural Services Department (LCSD)