



# Major Projects in Hong Kong



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# Organisation



Provision of  
Land and  
Infrastructure



Port and  
Marine  
Services



Geotechnical  
Services



Environmental  
and  
Sustainability  
Services

Director of Civil Engineering and Development

Headquarters

Civil  
Engineering  
Office

Geotechnical  
Engineering  
Office

East  
Development  
Office

South Development  
and Sustainable  
Lantau Office

West  
Development  
Office

North  
Development  
Office





# Our Major Services



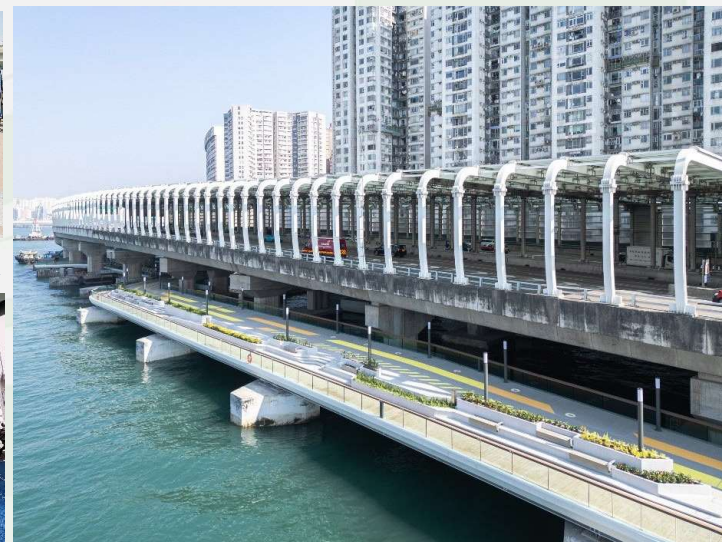
Provision of  
Land and  
Infrastructure



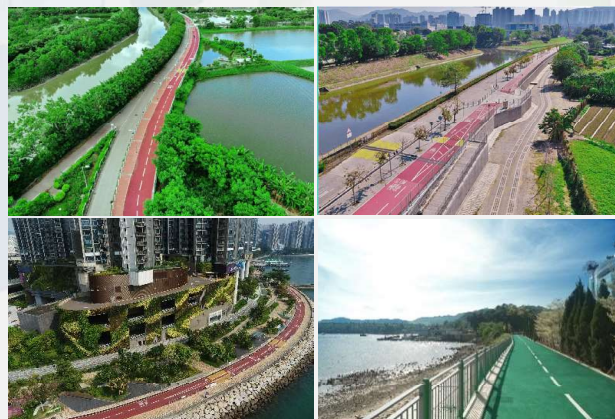
**Cross Bay Link**



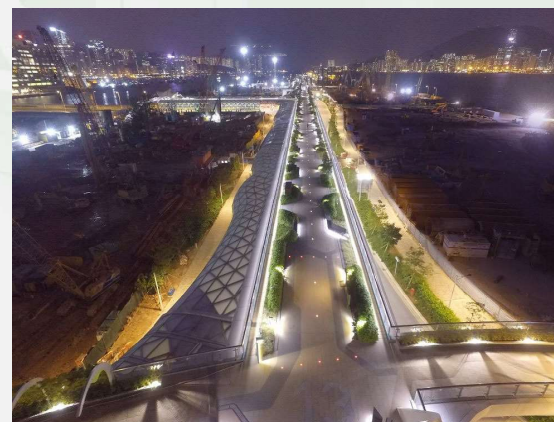
**East Coast Boardwalk**



**Tung Chung New Town Development**



**New Territories Cycle Track Network**



**Kai Tak Sky Garden**







# Our Major Services

## Management & Maintenance of Coastal Facilities



## Port and Marine Services



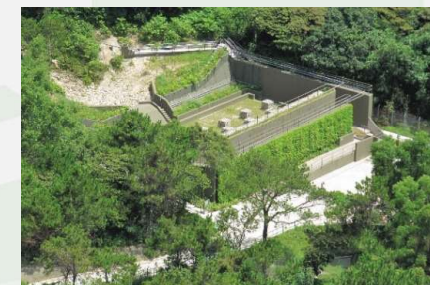
## Design Guidelines & Standards



## Geotechnical Services



## Design Guidelines & Standards



## Landslip Prevention and Mitigation Programme



## Slope Upgrading Works



## Standards and Testing





# Our Major Services



Environmental  
and  
Sustainability  
Services



**Long Valley Nature Park**



**Rocky Eco-shoreline**



**Vertical Eco-shoreline**



**> 100 different species  
of marine life**



**Mangrove Eco-shoreline**



**Greening Master Plan**

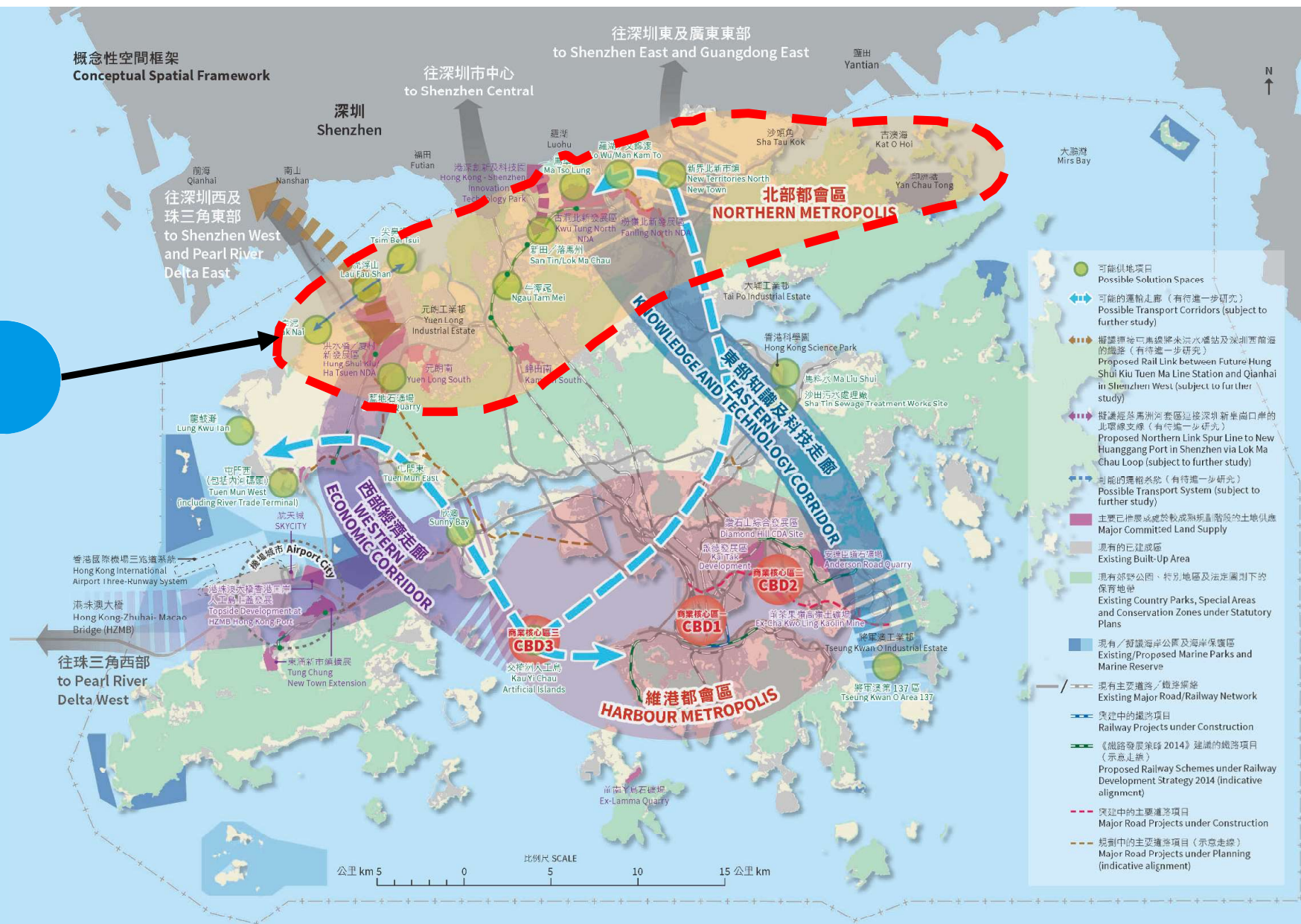


**Landscape Improvement  
Works in Ngong Ping**



**Overall Public Fill Strategy**







# Northern Metropolis Development

## Existing Land Use



*Lau Fau Shan*



*historical and cultural resources*



*Warehouses*



*Villages*



*Agricultural Land*



# Ecological Conservation

## – Long Valley Nature Park • Nature-people Connection



- Long Valley Nature Park (LVNP) comprises of ~37 ha area, a vital freshwater wetland of high ecological value in Hong Kong with various habitats
- Serves as breeding ground for different kinds of birds
- The development of LVNP showcases that development and conservation can co-exist harmoniously



# Ecological Conservation

– Long Valley Nature Park • Nature-people Connection

## Long Valley Nature Centre



### “Green” Building with Green Features



PROVISIONAL  
PLATINUM  
118 V1.2 2020  
HKGBR  
BEAM Plus



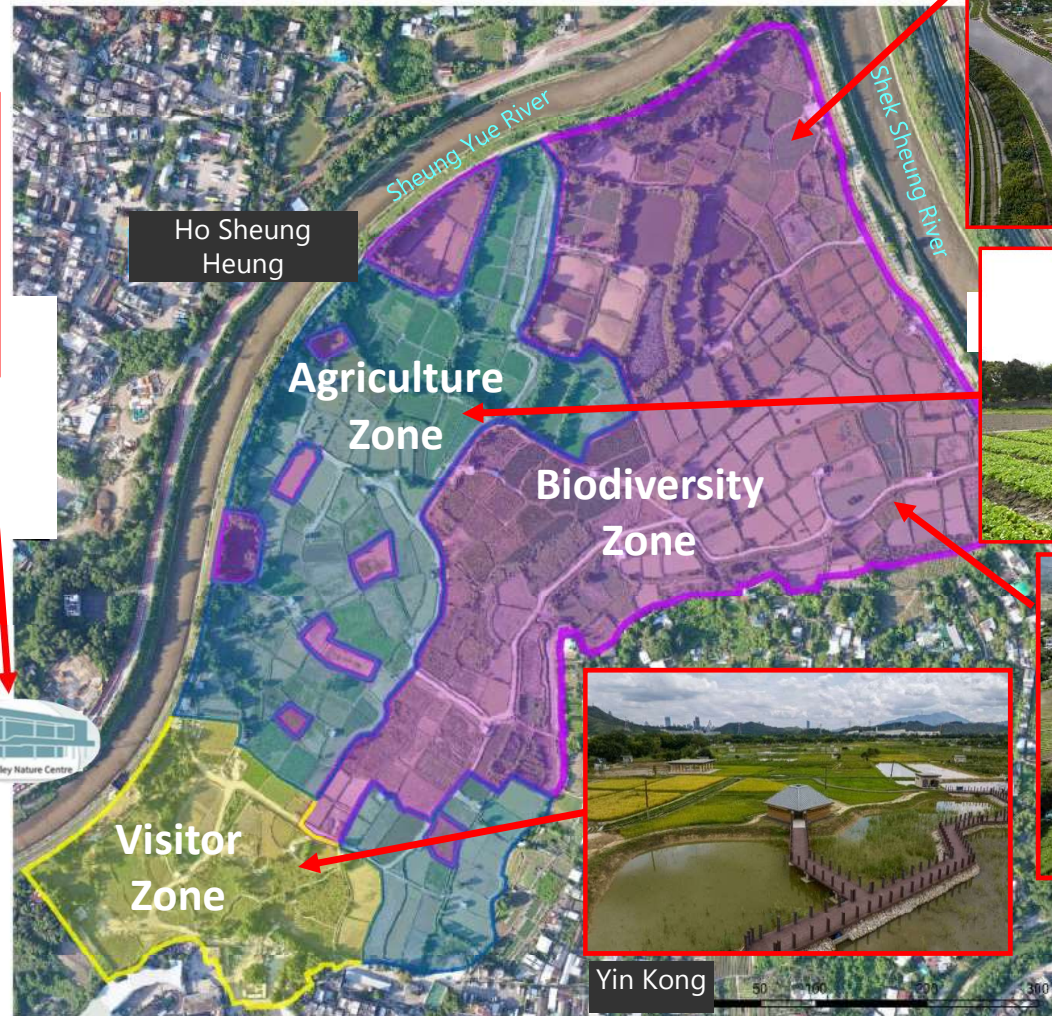
Use of recycled materials for the exterior surfacing



Adoption of rainwater harvesting recycling facilities



Provision of a highly efficient air conditioning system, photovoltaic panels, etc. aiming to achieve > 30% annual energy saving





# A Future-Ready City

## Smart, Green and Resilient (SGR) Strategies



- (1) Sustainable Planning and Urban Design**
- (2) Integrated SGR Infrastructure System**
- (3) Smart and Green Mobility**



# (1) Sustainable Planning & Urban Design

## 15-minute Neighbourhood





# (1) Sustainable Planning & Urban Design

## Air Ventilation • Greening the Community

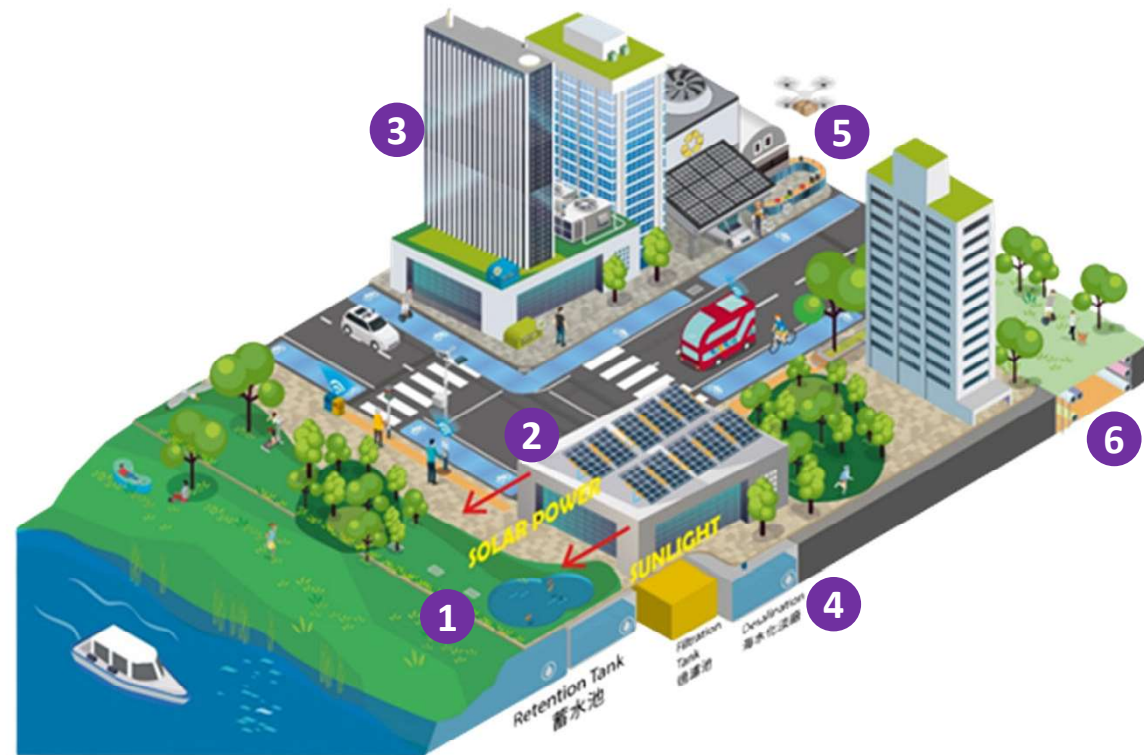
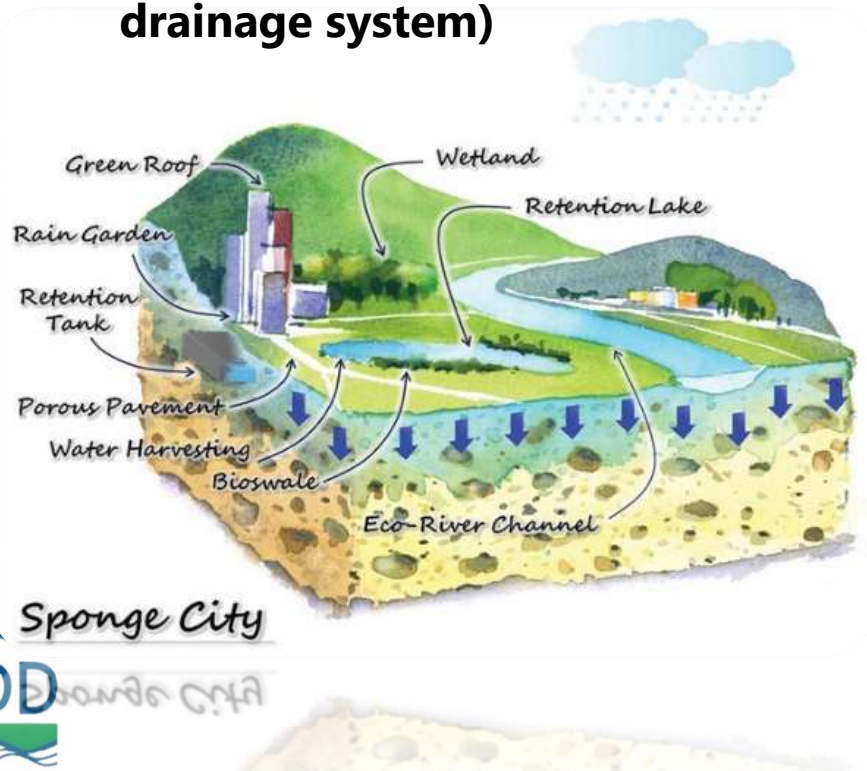




## (2) Integrated SGR Infrastructure System

### Blue-Green Infrastructure

- 1 Adopt "Sponge City" design (including sustainable urban drainage system)

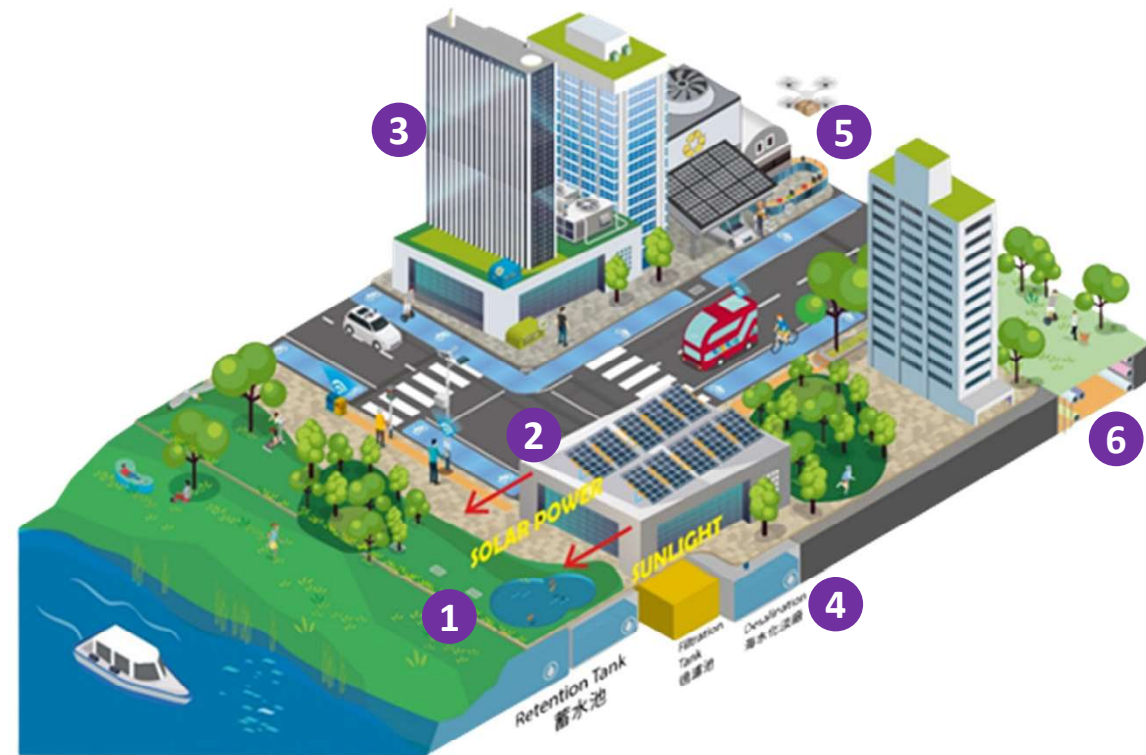




## (2) Integrated SGR Infrastructure System

### Blue-Green Infrastructure

#### 2 Use renewable energy





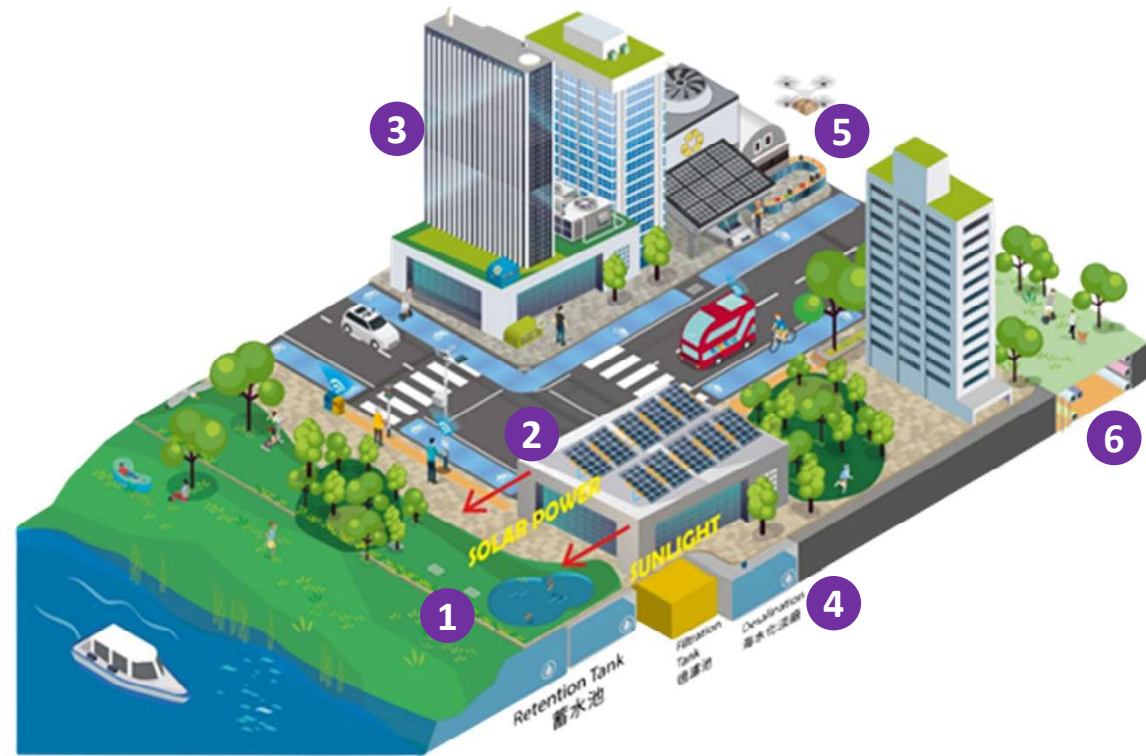




## (2) Integrated SGR Infrastructure System

### Blue-Green Infrastructure

- 5 Construct food waste/ sewage sludge anaerobic co-digestion facilities

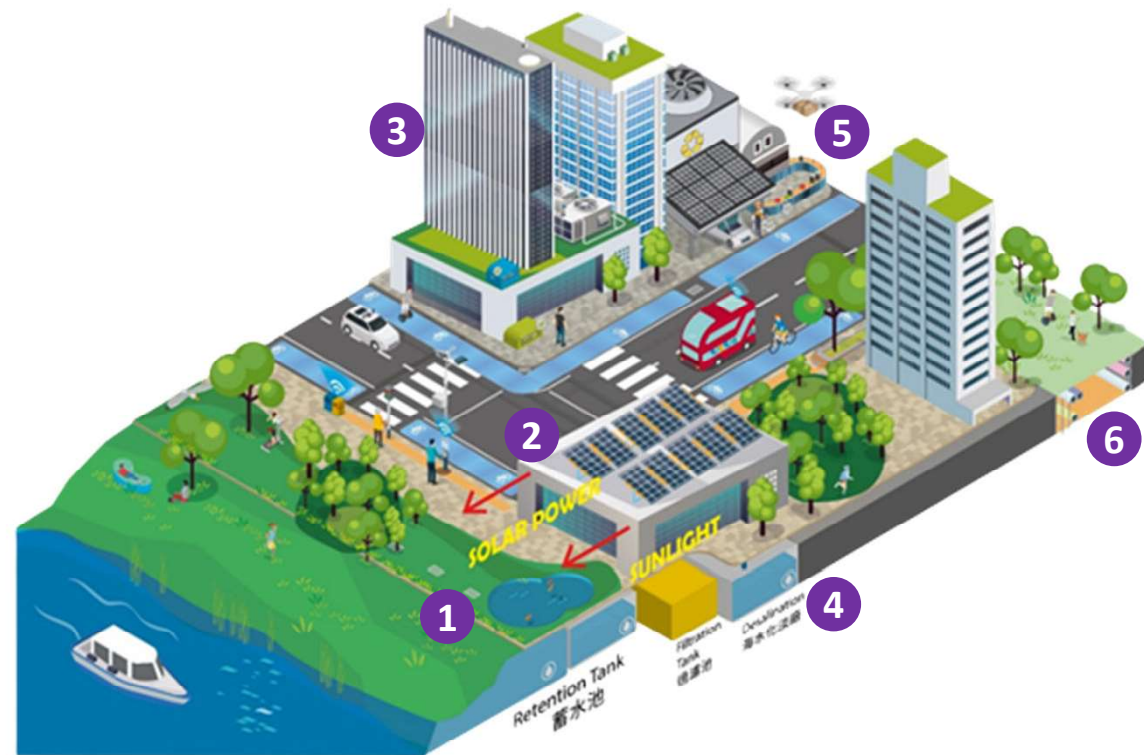




## (2) Integrated SGR Infrastructure System

### Blue-Green Infrastructure

#### 6 Construct common utility tunnel







# **San Tin Technopole – A Sustainable Nature-based New I&T Hub**

**Sustainable Planning • Integrated Blue-Green Network for Stormwater Management**

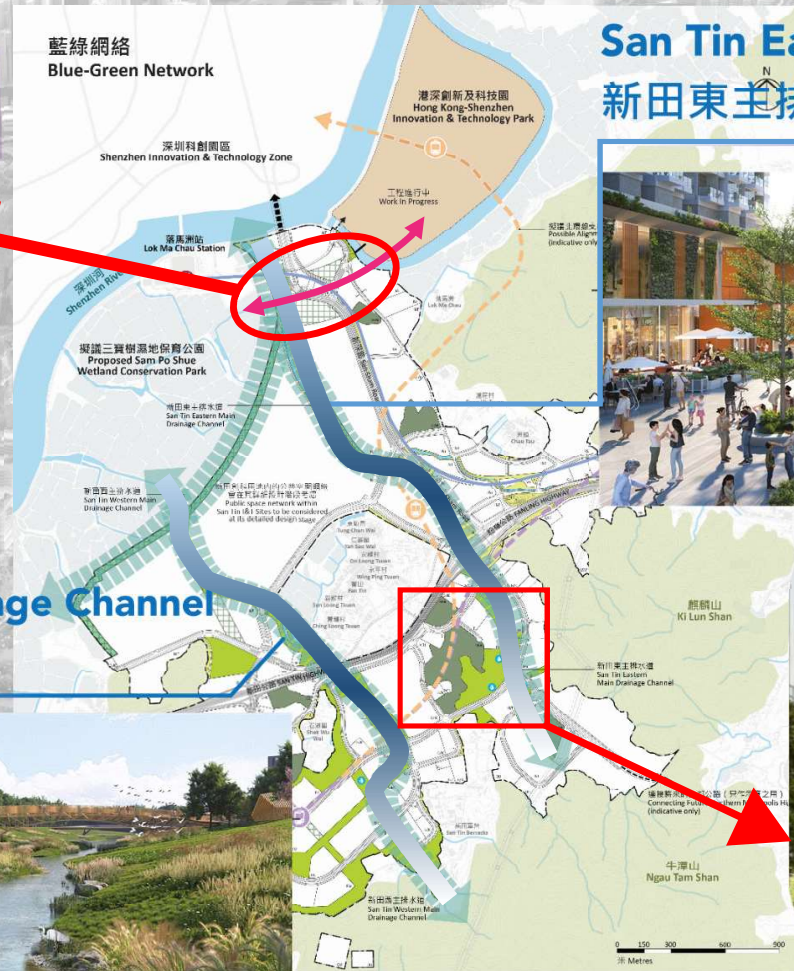


# San Tin Technopole – A Sustainable Nature-based New I&T Hub

## Sustainable Planning • Integrated Blue-Green Network for Stormwater Management



San Tin Western Main Drainage Channel  
新田西主排水道



San Tin Eastern Main Drainage Channel  
新田東主排水道





### (3) Smart and Green Mobility

## Integrated SGR Infrastructure System

#### 7 Plan comprehensive pedestrian and cycle track network





### (3) Smart and Green Mobility

## Integrated SGR Infrastructure System

- 8 Provide supporting facilities for electric and other new energy vehicles

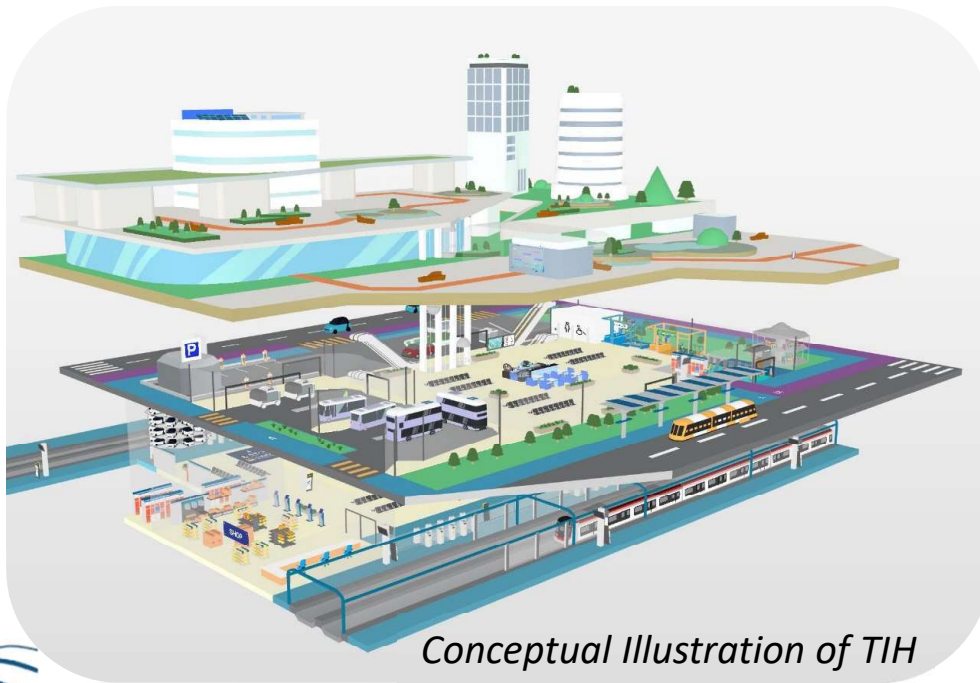




### (3) Smart and Green Mobility

## Integrated SGR Infrastructure System

#### 9 New Generation Transport Interchange Hubs



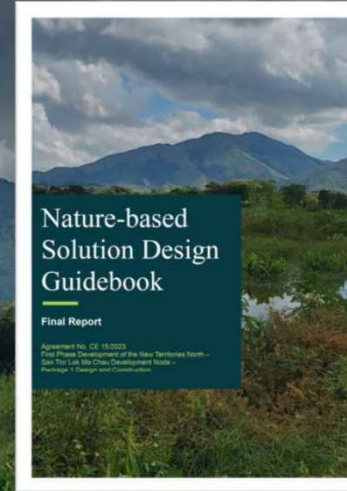


# Nature-based Solutions (NbS) Guidebook

## Objectives

- Facilitate NbS adoption in our projects
- Design NbS consistently

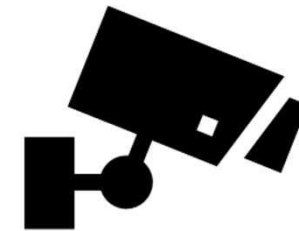
## Methodology



Literature  
Review



NbS Guidebook  
setting

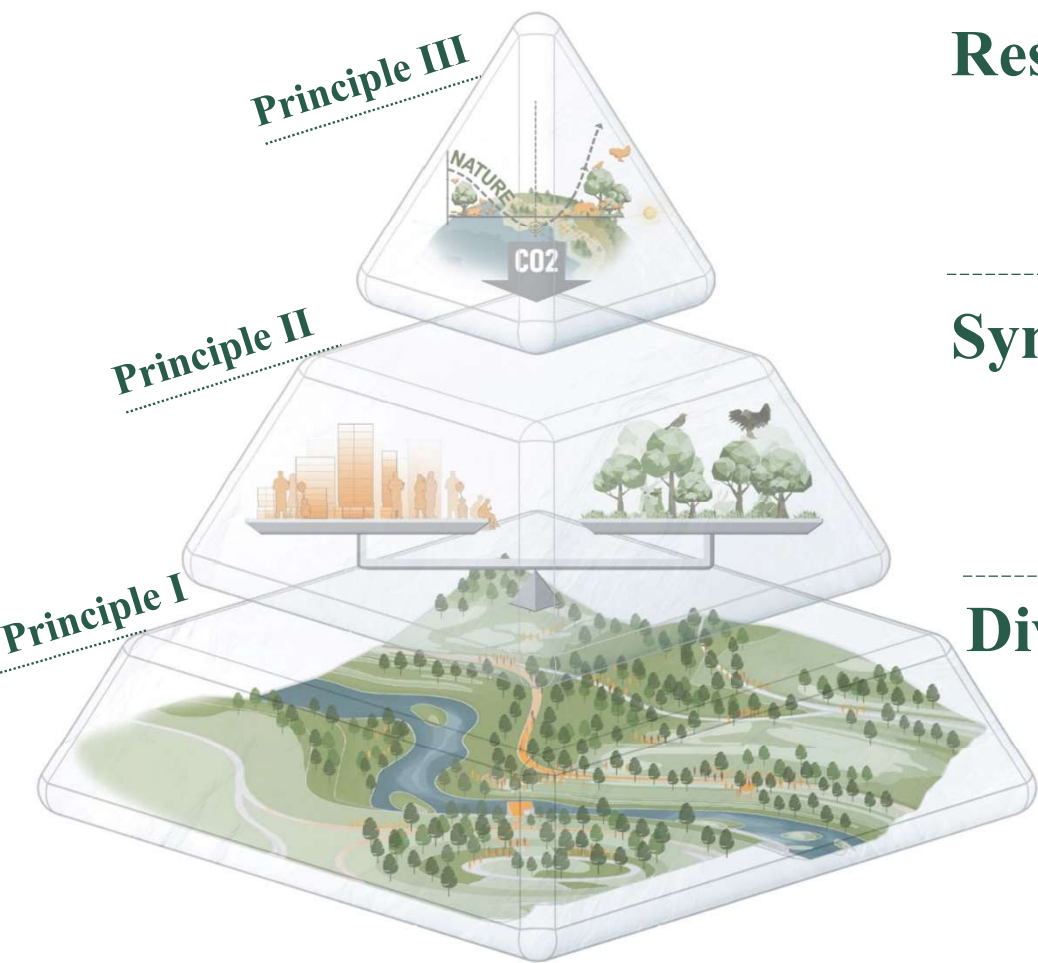


Performance  
Monitoring



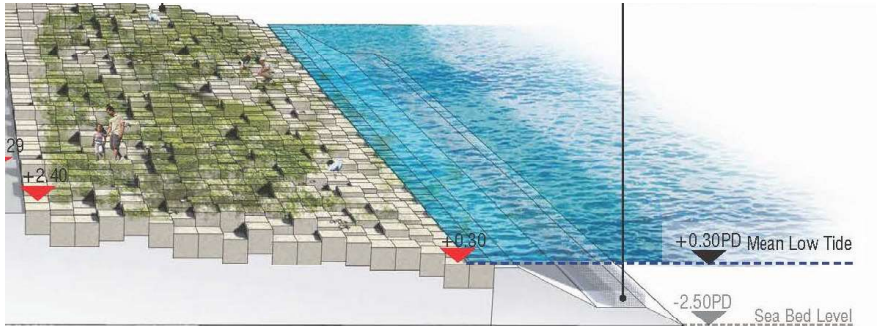
# Nature-based Solutions (NbS) Guidebook

## Principles and Frameworks



Graphic Source: AECOM (2024) Design Principles for High-performance Ecosystems

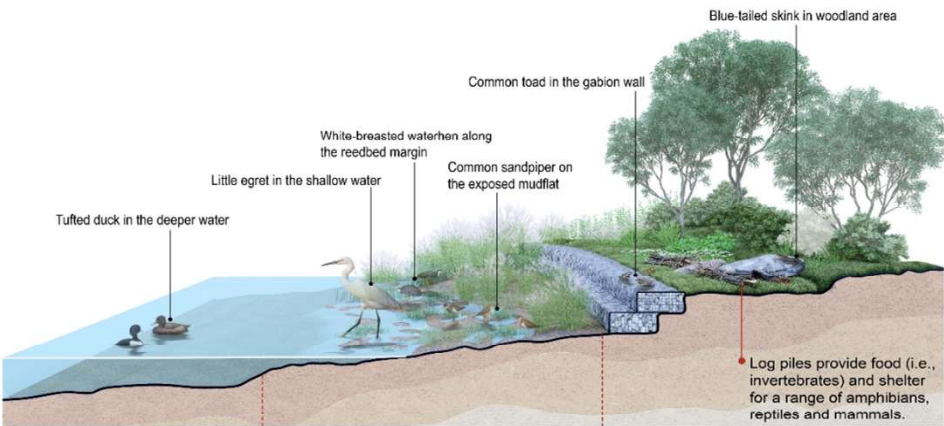
### Resilience



### Symbiotic



### Diversity



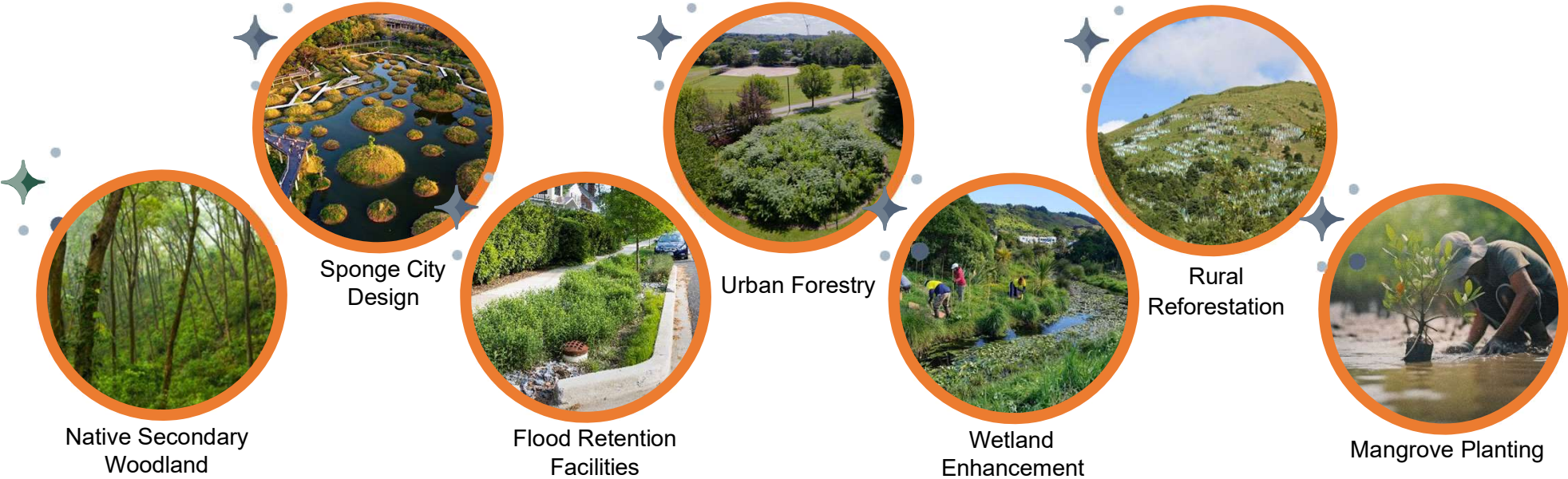


# Nature-based Solutions (NbS) Guidebook

## 5 Key Performance Indicators



Biodiversity Gain		Other Key Ecosystem Services			Carbon Sequestration
Biodiversity Unit		Water	Air	Soil	tCO <sub>2</sub> e





# Development of Urban Rural Integration Implementation Guideline









# New Era • Climate Resilience Water Supplies



## Sustainable Water from Sustainable Waterworks Construction



*Tseung Kwan O  
Desalination Plant  
(TKODP)*

*Image source: WSD Annual Report 2023/24*

- **The commissioning of the first stage :  
December 2023**
  - **Production capacity:  
5% of Hong Kong's total  
daily fresh water demand**  
(i.e. ~135 000 cubic metres per day)





# Sustainable Water from Sustainable Waterworks Construction

## *Tseung Kwan O Desalination Plant (TKODP)*



*Image source: WSD Annual Report 2023/24*

- **Project Scope of the Coming of Second Stage :**  
**Further expansion** to ultimate water production capacity up to **270 000 m<sup>3</sup> per day**  
(i.e. ~10% of Hong Kong's total daily fresh water demand)



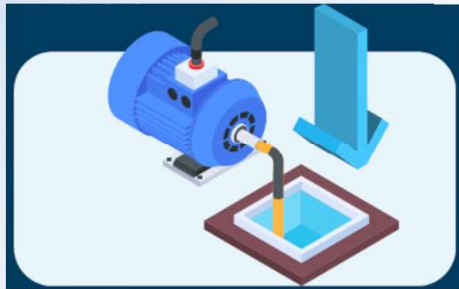


# Sustainable Water from Sustainable Waterworks Construction

## Some of Green Features of TKO Desalination Plant

*Use of the Latest Reverse Osmosis (RO) Desalination Technology*

*Reduce the required pumping energy by up to 50%*



*Use of Solar Photovoltaics (PV) Farm and Solar PV Panels on Rooftops*

*Generate renewable energy for desalination plant and reduce carbon emissions*



**Tseung Kwan O  
Desalination Plant (TKODP)**



*Image source: WSD Annual Report 2023/24*

*Conservation / Reuse of Water*

*Rainwater harvesting for irrigation; reuse of bleed-off water from cooling towers for flushing*



*Incorporate Energy Efficiency Features*

*Large high-pressure pumps and ActiDAFF, an integrated structure combining flotation and filtration processes*





# Sewerage and Drainage Infrastructure



## Some Ongoing / Planned Works in Northern Metropolis

**San Tin Technopole**  
(Phase 1 Stage 1 Works including  
drainage & sewerage systems  
commenced in December 2024)



**Hung Shui Kiu  
Effluent Polishing Plant**  
(Phase 1 commenced in June 2025 and  
scheduled for completion in 2031)



**Yuen Long  
Effluent Polishing Plant**  
(To be completed in 2027)



**Shek Wu Hui  
Effluent Polishing Plant**  
(The 1<sup>st</sup> Phase commenced in Q3 2019 and the  
final phase scheduled for completion by 2034)





# Enhancement in Drainage Infrastructure



## Sewage Treatment

### Yuen Long Effluent Polishing Plant (YLEPP)



Stage 1 Works commenced in November 2020 for completion in 2027

- **Project Scope:**

- Increase the treatment capacity of existing Yuen Long Sewage Treatment Works for > 50% (i.e. from 70 000 m<sup>3</sup> to 150 000 m<sup>3</sup> per day)
- Upgrade the sewage treatment level to enhance the water quality in Shan Pui River and Deep Bay

- **Project Cost:**

~\$6.9B (Stage 1 Works)

## Net-zero Carbon Emission Sewage Treatment Plant

- **Sustainable Features Designed towards Energy Neutrality:**

1<sup>st</sup>

Sewage Treatment Plant  
in HK

- Adopting advanced technology of **Aerobic Granular Sludge (AGS)** for biological treatment

➡ **Less energy demand** than traditional biological treatment process

- **Energy harvesting** by installation of >5000 nos. **PV panels** and the **use of biogas** generated from the treatment process



Extensive provision of PV panels in YLEPP

➡ **Maximise energy generation** to fulfil the power consumption demand of YLEPP



# Enhancement in Drainage Infrastructure



## Flood Prevention

### *Yuen Long Barrage and Nullah Improvement Schemes*



The works commenced in May 2023 for completion in 2030

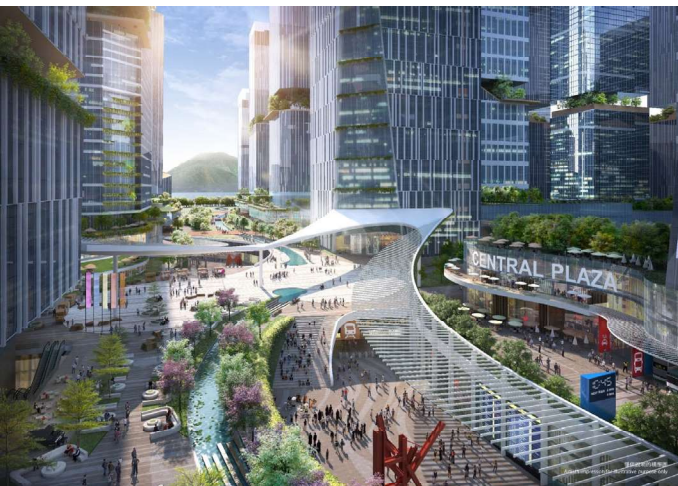
- **Project Scope:**

- Construct an **automatic flood barrier**, stormwater pumping station, a dry weather flow (DWF) interception system, etc.
- Revitalisation of a section of the Yuen Long Nullah

- **Project Cost:**

- ~\$3.78B (Yuen Long Barrage Scheme);
- ~\$860M (Improvement of Yuen Long Town Nullah)









Thank You  
Thank You