



Experience Sharing of Green Infrastructure in DSD

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1. Introduction
2. Overview of DSD Sustainable Development – Application of Green Infrastructure Features
3. Greening Achievements
4. Sessions of This Morning





1. Introduction





1. Introduction

◆ *Objectives*

Experience sharing on green infrastructure

Promote sustainable development of Hong Kong

◆ *DSD's vision*

To provide world-class wastewater and stormwater drainage services enabling the sustainable development of Hong Kong





1. Introduction

◆ *Flood Prevention*

- Constructed > 79 km drainage channels since 1990s
- Completion of 27 village flood protection schemes
 - Covering > 240 hectares of low-lying areas
 - Greater protection for 30000 residents in 35 villages





1. Introduction

◆ *Sewage Treatment*

- Annual sewage treatment capacity: 981 million m³
- Coverage of public sewerage (population percentage): 93%
- Total number of sewage treatment facilities: 287nos





2. Overview of DSD Sustainable Development – Applications of New Greening Technology





2. Overview

Typical Components	Green Infrastructure Applications in DSD
Green Roofs	Total green roof area: >8500m ² (up to March 2013)
Green Walls	Total vertical green wall area: >6500m ² (up to March 2013)
Rain Water Harvesting	Adopted in new projects:- <ul style="list-style-type: none">• Kowloon City sewage pumping stations• <i>Lai Chi Kok drainage tunnel</i>• <i>Happy Valley underground stormwater storage scheme</i>
Reclaimed Water Reuse	Adopted in Sewage Treatment Works (STW):- <ul style="list-style-type: none">• Shatin STW (1000m³ per day),• Ngong Ping STW• Siu Ho Wan STW



2. Overview

Typical Components	Green Infrastructure Applications in DSD
Pervious Surface	Adopted in new projects: - <ul style="list-style-type: none">• Kowloon City SPSs• <i>Stonecutters Island STW</i>
Bioswale	<i>Under implementation in Stonecutters Island STW</i>
Rain Garden	A small scale rain garden in Kowloon City SPS
Others	<ul style="list-style-type: none">• Reuse of topsoil / river sediments• <i>River side planting</i>• <i>Green waste composting</i>• <i>Sludge composting</i>

Green Roof to be completed in the coming 5 years

Retrofit Green Roof

- 1. Shau Kei Wan PTW*
- 2. Tsueng Kwan O PTW*
- 3. Kwun Tong PTW*
- 4. Kai Tak No. 4 DWF/PS*
- 5. Lok Wo Sha SPS*

New Projects Green Roof

- 1. Shuen Wan SPS*
- 2. Tai Po STW*
- 3. Lam Tsuen SPS*
- 4. Nam Wa Po Trunk SPS*
- 5. Jordan Valley Box Culvert*
- 6. Lai Chi Kok Drainage Tunnel*
- 7. Hong Kong West Drainage Tunnel*
- 8. Ping Kong SPS*
- 9. Tai Wo Village SPS*
- 10. SCISTW Extension*
- 11. Happy Valley Underground Stormwater Storage Scheme*
- 12. Tsuen Wan Drainage Tunnel*

Green Walls

Total green wall area > 6500 m³ up to March 2013

Tai Hang Tung
Floodwater Pumping Station



North Point PTW



Sha Tin STW

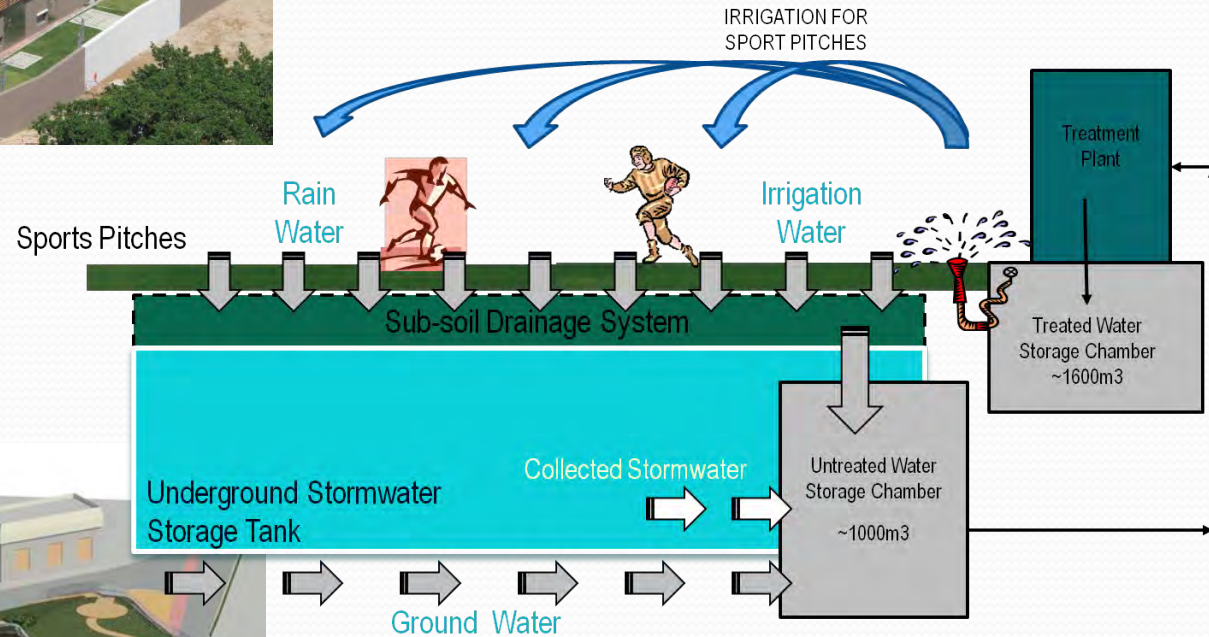


Indoor green wall
– Stanley STW

Rainwater Harvesting



Kowloon City SPS



Happy Valley underground stormwater storage scheme

Reclaimed Water Reused

Ngong Ping STW



Sha Tin STW



Water Reclamation Information Centre – Sha Tin STW

Other Applications

Reuse river sediments use as backfilling material



Reuse Ping Yuen River sediments to backfill the demolished aeration lagoon at Tseung Kwan O PTW

Other Applications

Reuse preserved topsoil / natural substrate



Luk Tei Tong River



Other Applications (*under review/ development*)

River side planting



Granite Block Wall
Cladding with Angled
Planter Pockets



Other Applications (*under review/ development*)

Pervious surface



Bioswale



Green waste/sludge composting



Rain garden





3. Greening Achievements



3. Greening Achievements

Year	Awards
2010	<i>HKILA Design Award 2010:</i> - Gold Award - Silver Award and Merit Award under the Environmental Design Projects Category
2011	- First prize of Civil Engineering Paper of the Year Award 2011 by the Civil Division of the HKIE
2012	<i>Skyrise Greenery Award 2012:</i> - Silver Award and Merit Award under Government Projects Category - Merit Award under Planning/ Research Projects Category <i>HKILA Design Award 2012:</i> - Merit Award under the Environmental Design/Greening Category - Merit Award under the Landscape Planning/ Research Category
2013	<i>2012 Environmental Paper Award:</i> - Merit Award by the Environmental Division of the HKIE



4. Sessions of this Morning





4. Coming Sessions in this Morning

1. Eco-hydraulics Study on Green Channels

- Develop guidelines for green channel design
- Review of river biodiversity

2. Experience Sharing on Attachment Programme to PUB in Singapore – ABC Waters Programme: Sustainable Stormwater Management

- What strategies Singapore adopted?
- Any lessons learnt for HK?



4. Coming Sessions in this Morning

3. DSD Projects

Continuous applications of green infrastructure features

4. R&D in DSD

R&D to enhance guidelines for new developments



Thank You



Year	Awards
2010	<p><i>HKILA Design Award 2010:</i></p> <ul style="list-style-type: none"> - Gold Award - Silver Award and Merit Award under the Environmental Design Projects Category <p>Shatin STW landscape enhancement</p>
2011	<ul style="list-style-type: none"> - First prize of Civil Engineering Paper of the Year Award 2011 by the Civil Division of the HKIE <p>3+1 Shatin STW landscape enhancement, VG and Green Roof, Reclaimed Water</p>
2012	<p><i>Skyrise Greenery Award 2012:</i></p> <ul style="list-style-type: none"> - Silver Award and Merit Award under Government Projects Category <p>Green Roofs at Shatin STW VG at Tai Hang Tung Storwater Pumping Station</p> <ul style="list-style-type: none"> - Merit Award under Planning/ Research Projects Category <p>Vertical Greening Study at Shatin STW</p> <p><i>HKILA Design Award 2012:</i></p> <ul style="list-style-type: none"> - Merit Award under the Environmental Design/Greening Category <p>Vertical Greening Study at Shatin STW</p> <ul style="list-style-type: none"> - Merit Award under the Landscape Planning/ Research Category - Transplanting works at Jordan Valley Box
2013	<p><i>2012 Environmental Paper Award:</i></p> <ul style="list-style-type: none"> - Merit Award by the Environmental Division of the HKIE <p>Green Roof Data Bank</p>