

SEMINAR SERIES ON “NEW HORIZON IN GREEN – SKYRISE GREENERY”

Skyrise Greenery in Urban Fabric of Hong Kong - a New Horizon and Beyond



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綠化及園境辦事處

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9/11/2010



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- **Holistic approach and establishment of Greening, Landscape and Tree Management Section (GLTMS) under Development Bureau (DEVB)**
- **New and diverse opportunities for innovative approach**



What is Skyrise Greening?

- An old idea – hanging gardens of Babylon (around 500 BC)
- Greening at the buildings or other structures beyond the ground level, including roof greening, vertical greening, sky gardens, terrace planting, etc.
- Roof greening and vertical greening



What is Skyrise Greening?

Roof greening

- **Vegetated space** that is structurally integrated on top of a man made structure
- **non at-grade planting**, with main focus on the **horizontal dimension**



Fu Shan Estate Wet Market

Source: Housing Department

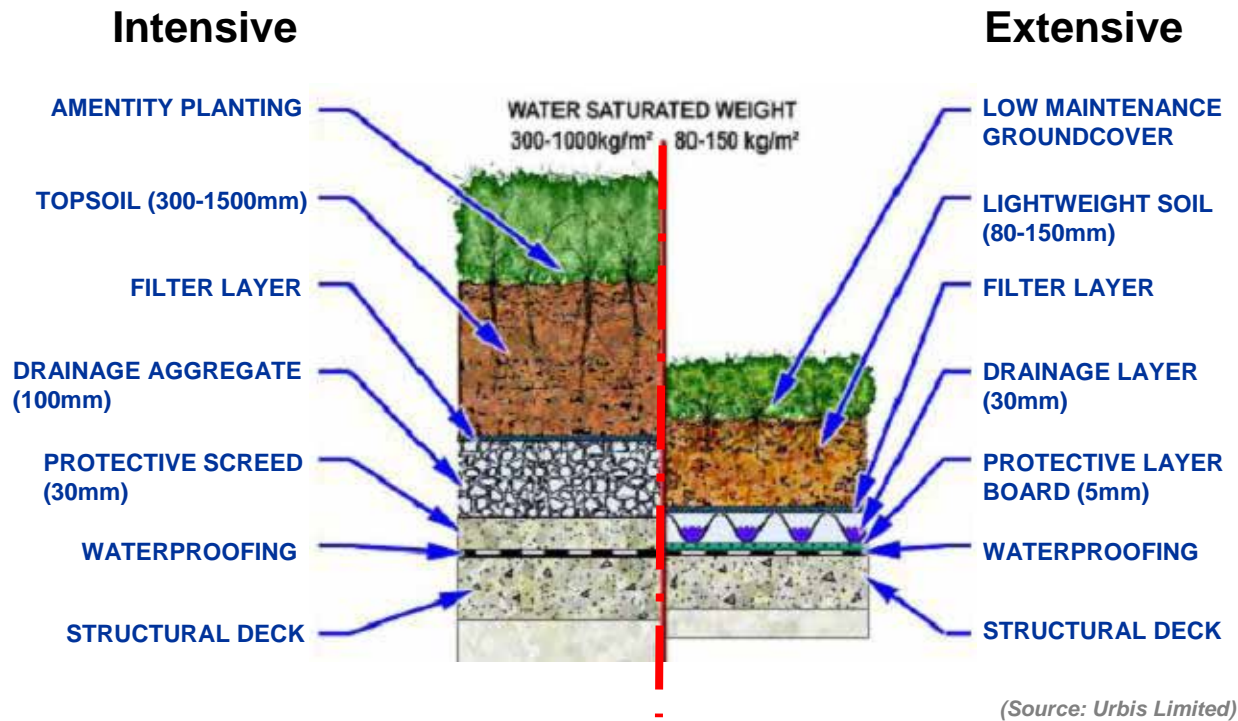


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What is Skyrise Greening?

Intensive Green Roof vs Extensive Green Roof



What is Skyrise Greening?

Green 'roof' not confined to top of building; also includes:

- **Podium Garden**
- **Sky Garden**
- **Green Terraces**



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What is Skyrise Greening?

Vertical Greening

- formed by either planting **at-grade** or planting on **elevated planters**, aiming at creating greenery mainly on **vertical surface** of associated structures



Lantau Link Visitor Center, Tsing Ma

Source: SP Ng



Commercial building in Japan

Source: YT CHOW



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Skyrise Greening in an Urban Environment



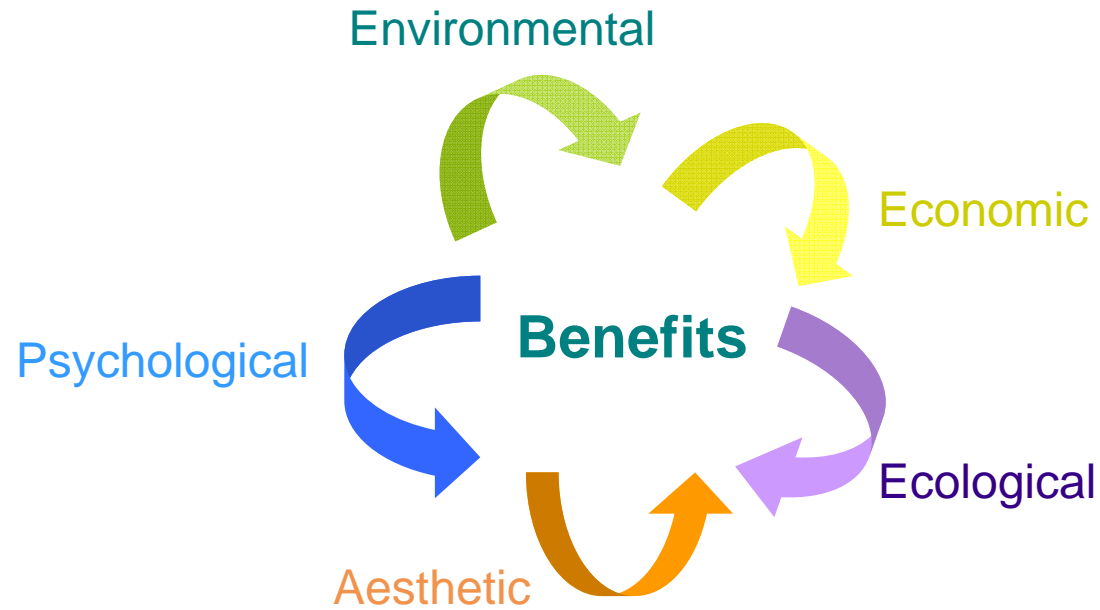
Why?



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Skyrise Greening in an Urban Environment



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Skyrise Greening in an Urban Environment

Environmental benefits:

- **Ameliorate heat island effect**
 - Temperature reduction
- **Improve air quality**
- **Controlling storm water runoff**
- **Reducing sound transmission through absorption, reflection and deflection**



Skyrise Greening in an Urban Environment



Ecological benefits

- creating wildlife habitat; provide links in the inner urban core

Economic benefits

- more usable and amenity space; reduce cooling resources through better insulation; food production

Aesthetic benefits

- improve aesthetic appeal; visual quality

Psychological benefits

- relaxing and soothing



Development of Skyrise Greening in Hong Kong



Need to improve the **QUALITY** of urban environment



How far have we achieved in Hong Kong?



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Development of Skyrise Greening in Hong Kong

Problems with urban fabric:

- **Hard surface - Heat island effect**
- **limited greenery**

Potential areas for improvement:

- **explore greening opportunities beyond ground levels**
- **Integrate with urban design**



Development of Skyrise Greening in Hong Kong

Skyrise Greening Projects - Government's projects

Roof Greening

Year	Cumulative total up to Oct 2010	In progress	under planning
New Project and Retro-fit Project no.	159	62	32



Vertical Greening

Year	Cumulative total up to Oct 2010	In progress/ under planning
Project no.	45	28



Sources: Progress Report Of Works and Maintenance Committee On Greening, Steering Committee on Greening



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Development of Skyrise Greening in Hong Kong

Building/ open space projects

Hong Kong Wetland Park



Sources: www.eco-asia.info



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Development of Skyrise Greening in Hong Kong

Infrastructure



Development of Skyrise Greening in Hong Kong

Infrastructure



IFC footbridge

Source: TK Ng



Green Roof at Sha Tin STW Air Blower House

Source: Drainage Services Department



Vertical Greening at Tai Hang Tung Flood Pumping Station

Source: Drainage Services Department



Vertical Greening at Sha Tin Sewage Treatment Works

Source: Drainage Services Department



Development of Skyrise Greening in Hong Kong

Residential Development



Sau Mau Ping Estate
Source: Housing Department



Source: TK Ng



Yau Lai Estate
Source: Housing Department



Development of Skyrise Greening in Hong Kong

Community Facilities



Development of Skyrise Greening in Hong Kong

Schools



Cumberland Presbyterian Church Yao Dao Primary School

Source: SP Ng



Development of Skyrise Greening in Hong Kong

Commercial Development



Impetus for Change – ‘Green Building Movement’

- Council for Sustainable Development (SDC)
“*Building Design to Foster a Quality and Sustainable Built Environment*”
- Hong Kong Green Building Council (HKGBC)
 - Building Environment Assessment Method BEAM Society and BEAM Plus (Ver 1.1)
 - Government Buildings – BEAM Plus – April 2009
- Holistic approach to greening, landscape and tree management advocated in “*Report of Task Force on Tree Management*” and establishment of Greening, Landscape and Tree Management Section in DEVB
- New policy initiatives in 2010-11



Impetus for Change – ‘Green Building Movement’

Time Line

2011



Apr

New administrative means for submissions to Buildings Department

Oct

Government Response to the SDC Report

Jun

SDC’S Report on the Public Engagement Process

2010

Apr

Green building label:



BEAM Plus for New buildings (version 1.1)

BEAM Plus for Existing buildings (version 1.1)

Mar

Greening, Landscape and Tree Management Section under DEVB



Source: http://www.susdev.org.hk/download/ir_eng.pdf

2009



Nov

Hong Kong Green Building Council (HKGBC)



Jun - Oct

Council for Sustainable Development (SDC)
Public engagement process entitled “Building Design to Foster a Quality and Sustainable Built Environment”



Source: http://www.susdev.org.hk/download/ir_eng.pdf



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Impetus for Change – ‘Green Building Movement’

Building Design to Foster a Quality and Sustainable Built Environment

- A public engagement process launched by the **Council for Sustainable Development** (SDC) in collaboration with the **Development Bureau** (DEVB) and **Environment Bureau** in December 2008
- Strong **public aspirations** for a **quality** and **sustainable** built environment



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Impetus for Change – ‘Green Building Movement’

Building Design Foster a Quality and Sustainable Built Environment

Recommended new measures:

- (a) To promote **building setback** as a means to provide better pedestrian environment
- (b) **Building separation** to avoid **ventilation** blockage and wall-effect of buildings
- (c) More site **coverage of greenery (20% - 30%)** in buildings to mitigation against urban heat island effect and to improve the environment

The Government responded to the SDC recommendations -

- outlined implementation details where there are call for immediate action
- **administrative means**, such as issuing **Practices Notes** for building professionals by Building Department – **April 2011**



Impetus for Change – ‘Green Building Movement’

SDC’s Recommendations and Key Issues related to Skyrise Greening

(a) Sustainable building design guidelines

SDC’s Recommendations	Outlined implementation details
<p><u>Site Coverage of Greenery</u></p> <p>To impose mandatory requirement to provide greenery for sites no less than 1,000m² in new building developments or redevelopments with fixed planting areas equivalent to 20% to 30% of the site areas, including greenery at the ground level as a priority, and podium and roof levels, depending on the size of the site</p>	<ul style="list-style-type: none">•Currently, a green coverage of 20-30% and a minimum green coverage at ground (or at-grade) level are usually specified in planning studies and planning brief for new development or comprehensive redevelopment areas/site.•Will implement in a more systematic manner:<ul style="list-style-type: none">- impose new requirement in lease conditions of new land sale sites or lease modifications / land exchanges- impose conditions in planning approvals of Town Planning Board
<p><u>Site Coverage of Greenery – Monitoring Mechanism</u></p> <p>To establish a monitoring mechanism with sanctions to ensure proper maintenance of greenery throughout the life of building</p>	<ul style="list-style-type: none">•Impractical to put in place a Government monitoring mechanism•Will step up public education to encourage public’s proper maintenance of greenery in their properties



Impetus for Change – ‘Green Building Movement’

SDC’s Recommendations and Key Issues related to Skyrise Greening

(a) Sustainable building design guidelines

SDC’s Recommendations	Outlined implementation details
<p><u>Site Coverage of Greenery – Existing Buildings</u> To provide technical and/or financial assistance in collaboration with other public bodies, professional bodies, and /or NGOs where appropriate to promote greening in existing buildings.</p>	<ul style="list-style-type: none">•collaboration has been adopted to promote greening in existing building•LCSD’s award schemes to recognize good practices in housing estates•Newly established Greening and Landscape Office in DEVB will also help to promote greening in existing buildings, in particular skyrise greening, with collaboration with relevant stakeholders.•Current financial assistance on greening projects from Environment and Conservation Fund to non-profit-making bodies
<p><u>Site Coverage of Greenery – Vertical Greening</u> To further explore and promote vertical greening for buildings by the Government and its partners</p>	<ul style="list-style-type: none">•Support wider adoption of vertical greening in Hong Kong•Incorporating vertical greening in Government’s new and retrofitting building projects wherever practicable.•Continue to promote awareness of vertical greening•Carrying out research to lower technical threshold and knowledge sharing



Impetus for Change – ‘Green Building Movement’

SDC’s Recommendations and Key Issues related to Skyrise Greening

(b) Gross Floor Area (GFA) concession – classification and overall cap

- will promote green features with community benefit such as communal podium gardens and sky gardens

(c) Energy Efficiency of Building

- Since April 2009, all new Government Buildings (construction floor area > 10,000 m²) should aim to attain the second highest rating in a local or overseas assessment system, including Building Environment Assessment Method (BEAM) Plus Assessment conferred by the Hong Kong Green Building Council
- Will require to obtain BEAM Plus Assessment for
 - all new buildings
 - estimation of energy consumption of the common parts of a domestic development (including clubhouses) and of the entire non-domestic development as additional prerequisites to seek GFA concessions for communal podium / sky gardens and other relevant green and amenity features



Impetus for Change – ‘Green Building Movement’

Building Department : Consultancy Study on Building Design that Supports Sustainable Urban Living Space in HK

Site Coverage of Greenery

“ According to the “Consultancy Study on Building Design that Supports Sustainable Urban Living Space in Hong Kong” commissioned by the BD on which the proposed **greenery coverage** in the IR document is based, for site area of 1,000 m² or more, there should be a minimum of **20% site coverage of greenery**. For site area of **two hectares and above**, there should be a **minimum of 30% site coverage of greenery**.”



Source: <http://www.bd.gov.hk/english/documents/CSBD/CSBD.pdf>



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Impetus for Change – ‘Green Building Movement’

Hong Kong Green Building Council (HKGBC) since 2009

Objectives

- Create awareness on green building concepts
- Expose the participants to the latest global trends in green buildings
- Exhibit green building products and technologies
- Provide a platform for networking
- Facilitate exploring new business opportunities
- Enable market transformation of green products and equipment



Vision:

To aspire for quality and sustainability at every stage of the building life cycle and embrace these principles as a mark of excellence

Mission:

To lead the market transformation to a sustainable built environment in Hong Kong by guiding the development of industry standards, best practices, education, and research in green buildings

Source:<http://www.hkgbc.org.hk/eng/AboutHKGBC.aspx>

Focus Areas

- Architectural perspectives in green buildings
- National & International experiences on green building concepts
- Green Building Movement – Global & National trends
- Case studies on green buildings – National & International
- Green building rating systems
- Green Building materials, equipment & technologies
- Public policies

Source:<http://www.hkgbc.org.hk/eng/events/IGBCcongress2010.aspx>



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Impetus for Change – ‘Green Building Movement’

New administrative measures:

New requirements from April 2011

- ***require BEAM Plus green building certificate as prerequisite for certain gross floor area concessions in new building development***
- ***publish BEAM Plus rating of these developments after completion on Building Department’s website***
- ***include provisional BEAM Plus rating of uncompleted new private residential development in sales brochures***



Impetus for Change – ‘Green Building Movement’

2010-11 Policy Agenda

Chapter 2 : Quality City and Quality Life

New initiatives -

*“Introduce a package of measures to enhance **building design** to foster a **quality and sustainable built environment**”*

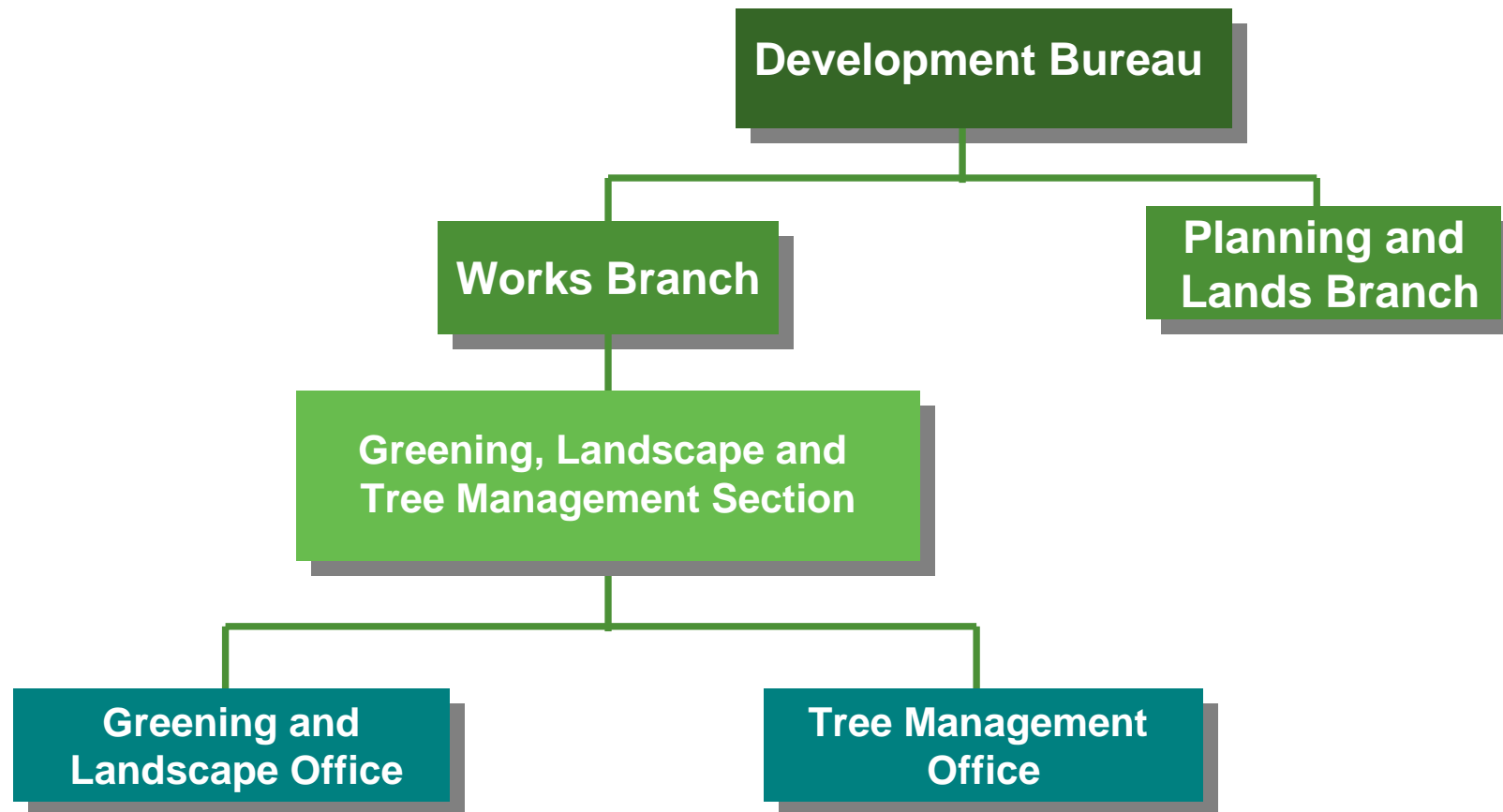
On-going initiatives -

*“Continuing to improve the **greening, landscape and tree management** regime through the adoption of a **holistic approach** embracing **quality landscape planning and design in the upstream** to professional vegetation management in the **downstream**, effective steer and co-ordination across departments in tree management, enhancement of professional expertise and increased community involvement”*

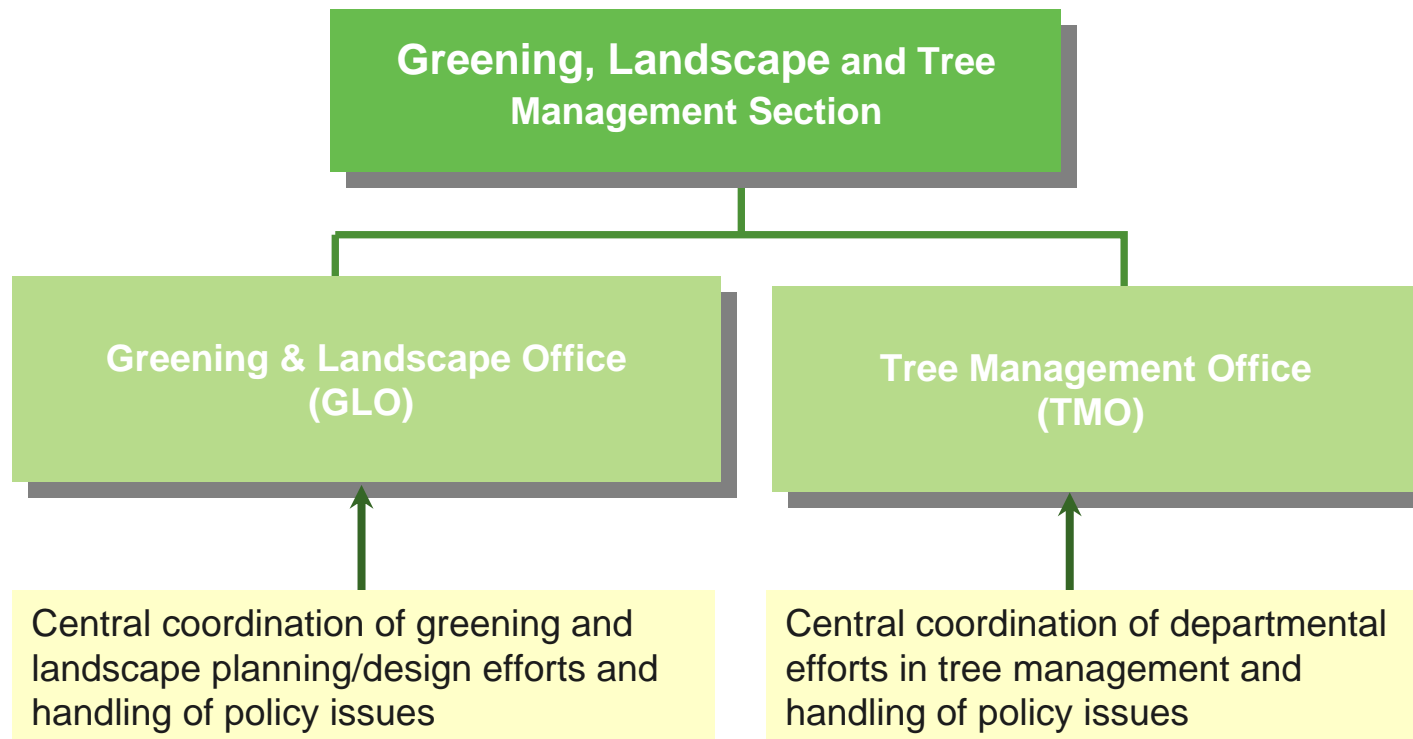


Holistic Approach & Establishment of GLTMS under DEVB

- **The Greening, Landscape and Tree Management (GLTM) Section was established in DEVB in March 2010**



Holistic Approach & Establishment of GLTMS under DEVB



Holistic Approach & Establishment of GLTMS under DEVB

Work Focus of Greening and Landscape Office

- Provision of quality greening opportunities in landuse planning and project design stages
- Promotion of diversities of greening with quality and quantity
- Formulation and implementation of Greening Master Plans
- Promotion of new greening technologies
- Enhancement of public education and community involvement



Holistic Approach & Establishment of GLTMS under DEVB

Provision of quality greening opportunities during landuse planning and project design stages

- To involve in the planning stage of new development areas and large-scale urban renewal projects for setting requirements for greening and allowing space for greening
- To promote wider adoption of greenery during project design stage



Holistic Approach & Establishment of GLTMS under DEVB

Promotion of diversities of greening with quality and quantity

- To use diversities of methods for greening, including skyrise greening
- To advocate quality greening and landscape design



Holistic Approach & Establishment of GLTMS under DEVB

Promotion of New Greening Technologies

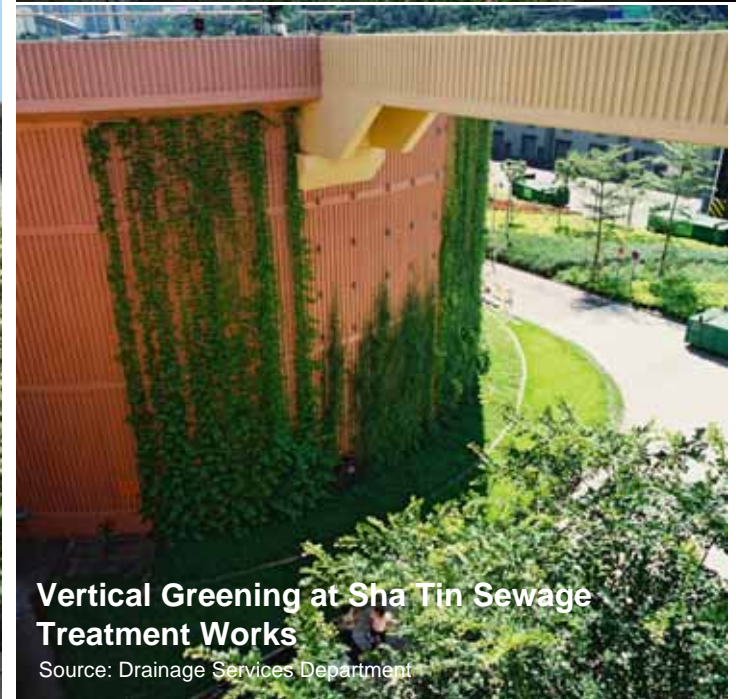
- To promote roof greening and vertical greening
 - Cyber Manual for Greening for departments
 - DEVB's Greening Website for communities at large
- To coordinate planting trials and studies of departments and overcome the technical hurdles
 - will issue guideline on potentially suitable plant species for skyrise greening



New and Diverse Opportunities for Innovative Approach

Skyrise greenery

- an opportunity to provide additional greenery in congested urban environment, not just planting by itself



New and Diverse Opportunities for Innovative Approach

Key issue -

- to integrate skyrise greenery in **quality building design**



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New and Diverse Opportunities for Innovative Approach

- Skyrise greenery should be considered in the **planning stage**
- providing **adequate soil volume** and **effective planting**
- **adequate space** should be provided for planting and **linked with the surrounding open space**



ARCOS at Fukuoka, Japan

- ***An outstanding example of skyrise greenery***
- ***People can use the terraces as an open space and as an extension of the adjacent urban green spaces***

Source: TK Ng



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New and Diverse Opportunities for Innovative Approach

Global trend

- **Expanded scope, proportion, number; more integrated design**
- **more variations**
- **more organic form of planting**



New and Diverse Opportunities for Innovative Approach

Global trend

- **multi-purpose**
- **fulfilling functional and greening/landscape, recreational requirements**



Millennium Park, Chicago

◀ The park is a roof garden with car park below

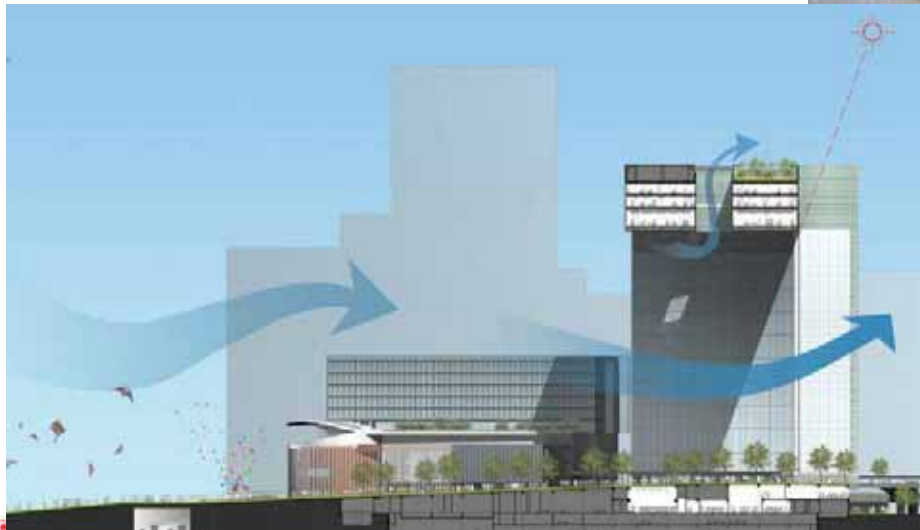


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New and Diverse Opportunities for Innovative Approach

Forthcoming Projects with Skyrise Greening



source: www.admwing.gov.hk

Tamar Development Project



New and Diverse Opportunities for Innovative Approach



source: source: www.ktd.gov.hk

New Cruise Terminal at Kai Tak





With...

- **The knowledge and expertise of skyrise greening**
- **New initiatives on sustainable building design**
- **Institutional framework for promotion of skyrise greening**

Aim...

- **To achieve sustainable development of a quality and greener environment**

Participation and collaboration of all relevant parties is needed

Thank you

