

Skyrise Greenery Awards 2012 Exemplary Skyrise Greenery Projects in Hong Kong

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Photography as credited

Overview of Skyrise Greening in Hong Kong

Hong Kong is known to many as a place of skyscrapers, with extensive infrastructure dominating the urban landscape, but it is interesting to note that Hong Kong is also endowed with pristine natural areas and countryside covering up to 70 percent of the total land area. The majority of Hong Kong's population of over seven million people are concentrated in less than 20 percent of the land. Its highly concentrated development and scarcity of land in the urban areas pose a great challenge in providing greenery in the built up areas of the city.

The Hong Kong Government has thus long been seeking opportunities for greening, by involving itself in the early planning and design stages of new developments and urban renewal as well as promoting more integrated greening in building works, for their environmental benefits as well as to enhance the aesthetic quality of the urban landscape of Hong Kong. In fact, the enhancement of greenery provisions to maximise greening in a dense urban context is one of the main focuses of the Greening,

Landscape and Tree Management (GLTM) Section, which was established under the Works Branch of the Development Bureau in March 2010. As policy makers, the GLTM Section's main objective is to promote the adoption of a holistic and visionary approach for developing a greener urban environment in Hong Kong. To this end, it has been proactively promoting innovative greening techniques, such as skyrise greening, in both the public and private sectors, so as to provide a quality and sustainable living environment to people in Hong Kong.

The Government has taken the lead in promoting skyrise greenery in public works through the formulation of guidelines and standards. For instance, guidance on the standards and methods of measurement and calculation of skyrise greenery is provided. Required site greenery stipulates a minimum of 30 percent of greenery coverage for a site area of 20,000 square metres or more and a minimum of 20 percent of greenery coverage for a site area equal or above 1,000 square metres but less than

20,000 square metres. Similarly, site greenery coverage requirements have been incorporated as a prerequisite for granting Gross Floor Area concessions in building plan submissions to promote sustainable green building design in the private sector.

Besides, a dedicated working group made up of members from government departments has been set up under the GLTM Section to coordinate different departments' efforts on promoting new greening technologies, including skyrise greening. This serves as a valuable forum for exchanging information and experience on projects and research for the advancement of skyrise greenery. Apart from these, seminars are organised to share professional expertise and experience on skyrise greenery. The GLTM Section also collaborates with the Environment and Conservation Fund to promote wider adoption of skyrise greenery in schools and non-governmental organisations (NGOs). To lower the technical barriers to the application of skyrise greening, the latest information and knowledge on skyrise green-

ery is posted on the Greening website of the Hong Kong Government, to be shared with schools, NGOs, practitioners, and the general public.¹ The quarterly newsletter *Greening* also reports on new initiatives and outstanding skyrise greenery projects.

Skyrise greening encompasses all greening in buildings or other structures above the ground level, including roof and vertical greening. Though not new in Hong Kong, it represents an alternative to the conventional at-grade greening to optimise space for urban greenery. In general, roof greening in Hong Kong takes the forms of sky gardens, podium gardens, and extensive green roofs. On the other hand, vertical greening is becoming more popular in recent years. It has been the established practice to promote roof greening and vertical greening in government buildings and facilities, along with other energy-saving measures, such as the installation of energy-efficient lighting and appliances. As of March 2013, over 300 government buildings, facilities, and public housing projects have been installed

with green roofs. The private sector has also been applying skyrise greenery to new and existing developments, including residences, hotels, offices, and so forth. There has also been a growing trend to make use of greenery for other functions, including that of educational and therapeutic purposes.

Skyrise Greenery Awards 2012

In 2012, to further promote the application of skyrise greenery, the GLTM Section launched a new award scheme, "Skyrise Greenery Awards", with professional institutions as co-organisers. Its objective is to raise public awareness about skyrise greening and engage wider participation and support for the development of quality skyrise greening projects in Hong Kong.

The first of its kind in Hong Kong, the Skyrise Greenery Awards scheme has been well received by the industry. A total of 113 entries of local projects were received in four categories: Government Projects; Private Development Projects; School and Non-Government Organisation Projects;

and Planning / Research Projects. The entries were assessed by a jury panel consisting of representatives from the Development Bureau, as well as professionals, academics, and experts, based on the following criteria:

1. Integration of the design of the building and landscape
2. Quality of greenery, with attention to the appropriate use of plant species and maintenance consideration
3. Sustainable design and cost effectiveness
4. Improvement of cityscape as a whole and the environment
5. Innovation and creativity
6. Community engagement and social interaction

A total of 1 Gold Award, 9 Silver Awards, and 16 Merit Awards were presented at the awards ceremony in 2012.² The Gold and Silver highlights are outlined.



Gold Award Winner

Project: Citywalk 1 & Citywalk 2
Category: All (Also awarded Silver in "Private Development Projects" Category)
Award Recipients: Urban Renewal Authority and Sino Land Company Limited
Date of Completion: 2007

"The pioneer role of this project in stimulating a wider application and continuous improvement of the greening system in respect of sustainable design and cost-effectiveness is appreciated and should be encouraged."
—extracted from Jury's Citation

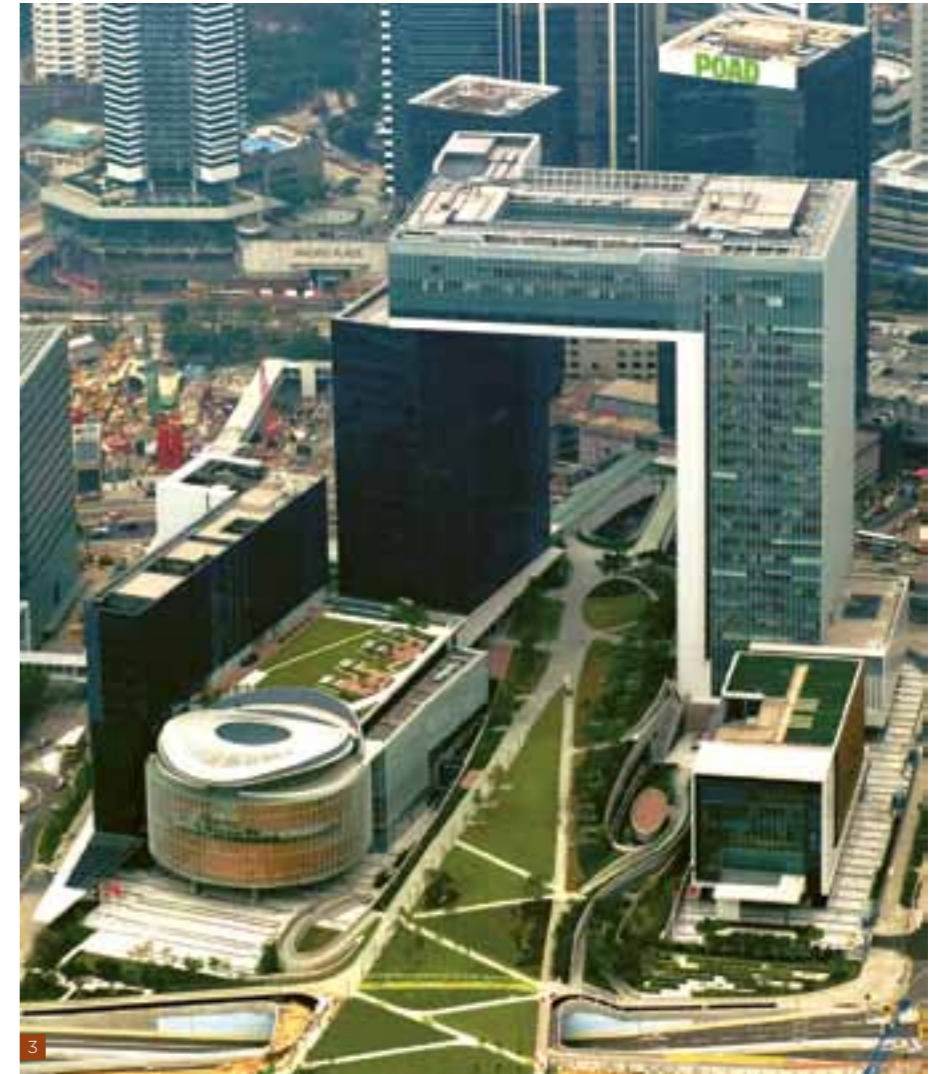
Built in 2007, the project scope of Citywalk 1 & 2 includes the development of residential towers in multiple levels, podium gardens, clubhouse facilities, shopping arcades, and a public open space. As the first and largest "Green Mall" in Hong Kong, the project has fully demonstrated the viability of vertical greening in a high-use area such as a shopping mall and successfully raised awareness about the feasibility of green building applications in both the private and public sectors of the construction industry. Raised 15 metres above the ground, the Vertical Garden at Citywalk 1 at 700 square metres was the first and largest of its kind in Hong Kong at the time it was built, with a tailor-made system that involved highly integrated knowledge and design in the fields of horticulture, irrigation, and structural engineering. Another bold attempt was to extend the application of vertical greening from outdoor to indoor in Citywalk 2. Unlike its counterpart at Citywalk 1, this green wall was designed to be an interior system with an improved green panel and irrigation system to suit its unique site conditions.

Silver Award Winners

Project: Tamar Development Project
Category: Government Projects
Award Recipient: Architectural Services Department, Hong Kong Special Administrative Region Government
Date of Completion: 2011

"The entry demonstrates outstanding quality in master planning, in which the elements of skyrise greenery are skillfully incorporated into the building design for the enjoyment of the public."
—extracted from Jury's Citation

Built on four main themes, namely openness, enjoyment, sustainability, and togetherness, the Tamar development was completed in 2011 to house the new location of the Central Government Offices. A "Land Always Green" concept is reflected in the natural lush landscape of the 1.76-hectare Tamar Park, a landscaped roof providing a public open space and developed as an integral part of the Tamar Development Project. The open space forms a seamless connection of the green nodes of a series of parks and gardens in the district linked up with elevated walkways and landscaped deck over roads, making the place and the waterfront accessible to the public with ease and fluidity.



1. An overview of the podium gardens and vertical garden in Citywalk 1 (Photo: Urban Renewal Authority and Sino Land Company Limited).

2. Vertical Garden at Citywalk 1 (Photo: Urban Renewal Authority and Sino Land Company Limited).

3. A bird's-eye view of Tamar Park and roof gardens of adjacent buildings (Photo: Architectural Services Department of the Hong Kong Special Administrative Region Government).

4. Tamar Park is a landscaped roof and valued public resource (Photo: Architectural Services Department of the Hong Kong Special Administrative Region Government).

Project: Green Roofs at Sha Tin Sewage Treatment Works
Category: Government Projects
Award Recipient: Drainage Services Department, Hong Kong Special Administrative Region Government
Date of Completion: 2012

“The entry is an exemplary project of retrofitting skyrise greening in the form of green roofs on top of monotonous building structures . . . The multi-purpose use and benefits of skyrise greening as demonstrated by this entry should be promoted.”
—extracted from Jury’s Citation

The Sha Tin Sewage Treatment Works is the largest biological sewage treatment plant in Hong Kong. Occupying 28 hectares of land, the plant is located at the distinctive mouth of the Shing Mun River Channel, surrounded by many high-rise residential buildings. Large-scale landscape beautification works commenced at the plant in 2008. Completed in 2012, four buildings next to the highway and visually sensitive to nearby residents were selected to be retrofitted with about 3,000 square metres of extensive green roofs, planted with 120,000 ground covers in 11 different species and colours. The completed green roof is the largest retrofitted green roof in Hong Kong. It ties in with the landscape beautification works inside the plant and visually extends greenery to the river channel.



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Project: Re provisioning of Diamond Hill Crematorium
Category: Government Projects
Award Recipient: Architectural Services Department, Hong Kong Special Administrative Region Government
Date of Completion: 2009

“The design has successfully handled a difficult subject in a skillful manner by introducing various forms of skyrise greening . . . By adopting natural sunlight and appropriate plant species, the skyrise greenery integrates with the built environment.”
—extracted from Jury’s Citation

Since its completion in 2009, the newly re-provisioned Diamond Hill Crematorium has provided a calm, dignified, and comfortable environment for the ritual of paying final respects to the mortals. The podium garden, characterised by four iconic lily ponds, various planting areas, and naturally vegetated slopes, helps to blend the buildings into the surrounding landscape. Apart from skillfully using the landscaped podium as an effective insulation layer for the functional areas beneath, the water features and plants that cover 80 percent of the podium act as a heat sink that modifies the micro-climate of the site. The careful juxtaposition of plants provides a lively yet tranquil green setting in different seasons.



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Project: 18 Kowloon East
Category: Private Development Projects
Award Recipients: Sino Land Company Limited and Aedas Limited
Date of Completion: 2010

“This entry highlights the creativity in the design and remarkable improvement of cityscape by skyrise greening.”
—extracted from Jury’s Citation

Completed in 2010, 18 Kowloon East is one of the most innovative office spaces, with greenery as an important consideration. Trees, shrubs, and ground covers in various forms and textures are planted in linear planters along the outer edge of the floor slab to make a strong green statement. Visual relief is provided by layers of planters to benefit both car park users and the public. The sky communal garden provides natural ventilation, delightful greenery, and passive recreational garden space for tenants’ use. Integrated with the aluminium and stone cladding, the vertical greening forms a seamless combination of prefabricated units. Plant materials are carefully chosen to suit the climatic and site conditions. A series of green walls is installed on the ground floor to enrich the lush setting of the building at pedestrian level.



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5. The Green rooftops of the Sha Tin Sewage Treatment Works’ air blower house (Photo: Drainage Services Department of the Hong Kong Special Administrative Region Government).

6. The Green rooftop of the Sha Tin Sewage Treatment Works’ sludge dewatering house (Photo: Drainage Services Department of the Hong Kong Special Administrative Region Government).

7. A distinctive feature of the re-provisioned Diamond Hill Crematorium, a lily pond is designed to comfort the mourners (Photo: Architectural Services Department of the Hong Kong Special Administrative Region Government).

8. The landscape design of the re-provisioned Diamond Hill Crematorium integrates skyrise greenery with the built environment (Photo: Architectural Services Department of the Hong Kong Special Administrative Region Government).

9. Vertical green walls at 18 Kowloon East’s car park entrance (Photo: Sino Land Company Limited and Aedas Limited).

10. Northwest building elevation of 18 Kowloon East (Photo: Sino Land Company Limited and Aedas Limited).



11. Close-ups of the landscape design at the Hong Kong Jockey Club Headquarters' roof garden "Our Green Place" (Photo: Hong Kong Jockey Club and Hong Kong Greenlink Kusters Company Limited).

12. An overview of the Hong Kong Jockey Club Headquarters' roof garden "Our Green Place" (Photo: Hong Kong Jockey Club and Hong Kong Greenlink Kusters Company Limited).

13. "Our Green Place" reuses tyres for planting (Photo: Hong Kong Jockey Club and Hong Kong Greenlink Kusters Company Limited).

14. The green wall at the Hong Kong Polytechnic University's Teaching Hotel Complex (Photo: Campus Development Office of the Hong Kong Polytechnic University).

15. The external green wall at the staff quarters of the Hong Kong Polytechnic University's Teaching Hotel Complex (Photo: Campus Development Office of the Hong Kong Polytechnic University).

16. The interior green wall above the hotel café of the Hong Kong Polytechnic University's Teaching Hotel Complex (Photo: Campus Development Office of the Hong Kong Polytechnic University).



Project: Our Green Place (Hong Kong Jockey Club Headquarters)

Category: School and Non-Government Organisation Projects

Award Recipients: Hong Kong Jockey Club and Hong Kong Greenlink Kusters Company Limited.

Date of Completion: 2011

"This entry showcases a design solution in which skyrise greenery is designed together with the use of recycled materials, renewable energy, and water conservation."
—extracted from Jury's Citation

Completed in 2011, the Hong Kong Jockey Club Headquarters' 485-square-metre roof garden "Our Green Place" features many environmentally friendly technologies. Other than the solar-powered irrigation system, many eco-friendly building materials are used, such as the timber decks, the used tyres on the wall, the eco-glass blocks along

the corridor, and the recycled horseshoes used in the artistic metalwork forged by farriers. The green roof acts like a cooling blanket for the building, helping to lower the temperature of the floors underneath. The Hong Kong Jockey Club has recorded the temperatures above and below the soil layer of its green roof, noting a temperature difference of two to four degrees Celsius throughout the day.

Project: Teaching Hotel Complex, Hong Kong Polytechnic University
Category: School and Non-Government Organisation Projects

Award Recipient: Campus Development Office of the Hong Kong Polytechnic University

Date of Completion: 2010

"The incorporation of large-scale skyrise greenery, both indoor and outdoor, as an iconic feature of the building is impressive.

Moreover, contrasting foliage colour and texture in the plant palette and creativity in the design pattern created a unique feature and identity for the project."
—extracted from Jury's Citation

Composed of a hotel, a school (the School of Hotel and Tourism Management), and staff quarters, the Hong Kong Polytechnic University's Teaching Hotel Complex completed in 2010 maximises the green landscaped zones at ground level by voluntarily reducing the 100-percent site coverage, creating greenery spaces, and extending the greenery upwards in the forms of green walls, green roofs, and landscaped roof terraces. Inside the hotel lobby is one of the largest interior green walls in Asia, a three-storey-high interior vertical green wall. Inspired by the hilly topography of Hong Kong, the connecting bridges within the atrium are embellished by greenery.

Project: Munsang College Primary School Roof Garden

Category: School and Non-Government Organisation Projects

Award Recipient: Munsang College Primary School

Date of Completion: 2010

“This entry is an exemplary example demonstrating the multiple benefits of skyrise greening for school application, including the environmental benefit of reducing the room temperature underneath the roof and the educational benefit of creating an outdoor classroom for the active participation of students and the community in the maintenance and operation of the roof garden, as well as providing a suitable venue for extracurricular activities, such as organic farming.”

—extracted from Jury’s Citation

Built in September 2010 and partially funded by the Environment and Conservation Fund, the 500-square-metre roof garden of Munsang College Primary School is a place for students’ enjoyment. Many different kinds of plants have been used in the garden. They include herbs that beautify the garden and double-up as spices. The six pieces of farmland in the “Organic Garden” are provided for students to engage in organic farming which encourages them to develop positive attitudes towards protecting the environment. The garden helps to reduce the heat absorption of the building, thereby saving energy.

Project: Ng Yuk Secondary School Roof Garden

Category: School and Non-Government Organisation Projects

Award Recipient: Ng Yuk Secondary School

Date of Completion: 2006

“The entry demonstrates a combination of interesting and creative design concepts and features a green roof, which manifests a joint effort of the students and teaching staff in creating a simple, unique, and sustainable roof garden for the school.”

—extracted from Jury’s Citation

This roof greening project started in 2006 with five major areas completed so far, namely, the Green Wall, Eco Garden, Organic Farm on the fifth floor, roof garden on the sixth floor, and the Xerophyte Garden on the seventh floor. Inspired by the reuse of waste in the school, the project made use of recycled materials to construct a simple green roof and wall system. Banners are put on the roof floor as a waterproofing root barrier. The planters and fish pond were made of bricks and banners. With these methods, the students and teachers have greened nearly 470 square metres of roof surface. ¹

¹ Development Bureau. 2013. Greening, March 28. www.greening.gov.hk (accessed April 9, 2013).

² For the full list of winning entries, please visit www.greening.gov.hk.



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17. Munsang College Primary School’s roof garden design shows a seed that gradually grows to fruition, giving a vision of thriving growth (Photo: Munsang College Primary School).

18. Students enjoy organic farming at Munsang College Primary School’s roof garden (Photo: Munsang College Primary School).

19. Ng Yuk Secondary School’s roof garden (Photo: Ng Yuk Secondary School).

20. The students and teachers jointly built the green roof of Ng Yuk Secondary School (Photo: Ng Yuk Secondary School).