

Landscape Excellence Assessment Framework Certified Developments 2015 More Pervasive Greenery in Local Landscapes

Text by respective developers and collated by LEAF secretariat
Images as credited

The Landscape Excellence Assessment Framework (LEAF) embarked on its third year of assessment in 2015. Five new (or upcoming) developments and six existing developments have been certified, bringing the total number of certified developments to date to 32. Besides residential projects, it is encouraging to share that the 11 developments certified this year also include two hotels, a commercial-industrial business park, and a district master plan.

Each year, the judging panel will select developments with distinguished greenery provision and recognise them as "Outstanding Projects" of the year. These developments have demonstrated high-quality landscape and biodiversity enhancements above and beyond the norm. In 2015, four projects have been named "Outstanding Projects": PARKROYAL on Pickering, Genting Hotel Jurong, Kampung Admiralty, and Punggol Northshore District Landscape Master Plan.

Managed by National Parks Board of Singapore (NParks), LEAF is the first certification scheme in Singapore to recognise developers, architects, landscape architects, and maintenance agents for their excellence in the provision and management of greenery. By focusing the scheme solely on the provision and management of greenery, NParks aims to encourage developers to incorporate greenery in their developments and contribute towards achieving the vision for Singapore as a City in a Garden.

Developers and maintenance agents of existing and new developments are welcome to apply for LEAF certification. Developments are assessed in two key areas: greenery provision (70 percent) and landscape management (30 percent). Bonus points are also given for efforts to promote public appreciation of greenery. The LEAF certificate is valid for three years, and projects can be reassessed for certificate renewal. The fulfilment of the Parks and Trees Regulations is a prerequisite for submission.

For more informaton: www.nparks.gov.sg/partner-us/landscape-industry/leaf

LEAF Assessment Criteria Breakdown

PART	CRITERIA	COMPONENT
1. Greenery Provision	<p>Greenery provision</p> <ul style="list-style-type: none"> Green plot ratio Percentage of ground-level greenery Skyrise greenery <p>Plant materials</p> <ul style="list-style-type: none"> Percentage of native plant species (as defined in NParks' Flora & Fauna Web) Diversity of plant species <p>Landscape design</p> <ul style="list-style-type: none"> Integration of greenery with architecture <p>Habitat creation</p> <ul style="list-style-type: none"> Biodiversity-sensitive planting and landscape design 	70%
2. Landscape Management	<p>Plant sourcing</p> <ul style="list-style-type: none"> Sourcing of plants from accredited nurseries <p>Site verification</p> <ul style="list-style-type: none"> Overall impression of maintenance For existing developments, visual assessment of health of greenery <p>Sustainable greenery practices</p> <ul style="list-style-type: none"> Maintenance productivity measures Irrigation system 	30%
3. Bonus	<p>Additional efforts to</p> <ul style="list-style-type: none"> Educate people through information signs, brochures, websites, and so on Promote, encourage or facilitate community gardening Retain suitable on-site trees Any other greenery- or nature-related efforts 	

OUTSTANDING LEAF CERTIFIED DEVELOPMENTS 2015

Existing Developments



PARKROYAL on Pickering

award recipient UOL Group Limited **completion date** 2013 **collaborators** WOHA Architects Pte Ltd, TEP Consultants Pte Ltd, BECA Carter Hollings & Ferner (S.E. Asia) Pte Ltd, Rider Levett Bucknall LLP, Lighting Planners Associates (S) Pte Ltd, Tierra Design (S) Pte Ltd, Meinhardt Façade Technology (S) Pte Ltd, LJ Energy Pte Ltd, CCW Associates Pte Ltd, and Tiong Seng Contractors (Pte) Ltd

Designed as a hotel and office in a garden, PARKROYAL on Pickering is a study of how we can conserve our greenery in a built-up high-rise city centre and multiply it in a manner that is architecturally striking, integrated, and sustainable. The project is an extension of WOHA Architects' research into vertical greening and sustainable urban high-rise developments.

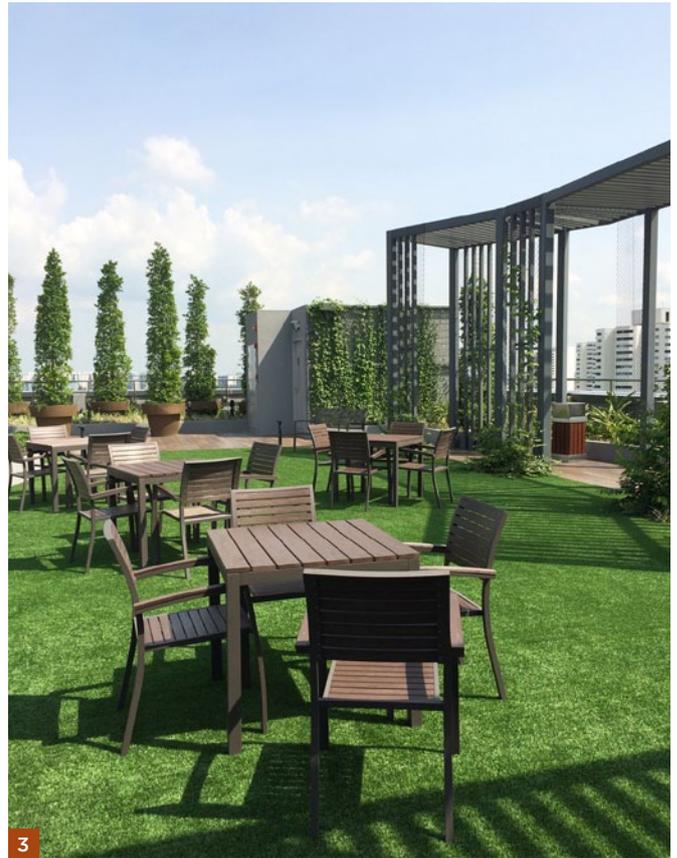
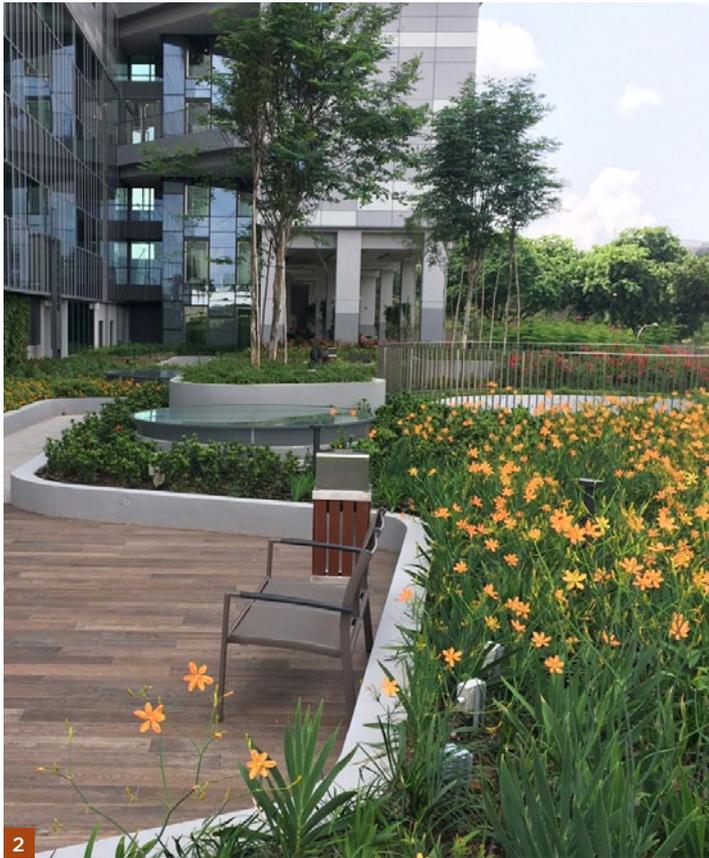
Moreover, the hotel's skyscraper greenery reinforces Singapore's image as a City in a Garden. Besides being environmentally positive, integrating greenery also adds softness to the hard edges, glass, and concrete of building as well as provides delight and relief for hotel users, passers-by, and other city dwellers. The installation of skyscraper greenery is also a site-specific response to the facing Hong Lim Park. The park's greenery is visually swept up

the building in the various sky gardens and terraces, creating a contextual and striking architectural form.

A total of 15,000 square metres of sky gardens, reflecting pools, waterfalls, planter terraces, and green walls were designed. They make up 215 percent of the site area, equivalent to the footprint of Hong Lim Park. Diverse species ranging from shade trees, flowering plants, and overhanging create a lush tropical setting. This attracts fauna and encourages biodiversity within the city. Lofty sky gardens at every four storeys bring greenery to the rooms and break down the scale of the building. Corridors, lobbies, and common washrooms are designed to create a resort ambience with natural light and fresh air. Tall overhangs work together with leafy foliage to screen these spaces from the weather.

The self-sustaining landscapes rely minimally on precious resources. Rainwater collected from upper floors irrigates the planters on the lower floors by gravity. All water features are also supplemented by non-potable recycled NEWater. Photovoltaic cell arrays on the roof power growth lamps and softscape lighting, making these the first zero-energy sky gardens in Singapore and perhaps the world.

1. Sculpted sky terraces of PARKROYAL on Pickering from aerial viewpoint (Photo: WOHA Architects Pte Ltd).



Genting Hotel Jurong

award recipient Tamerton Pte Ltd **completion date** March 2015 **collaborators** Tinderbox Pte Ltd, TEAM DESIGN Architects Pte Ltd, and Tropical Environment Pte Ltd

Keeping the lush and tranquil environment of Jurong Lake District, Genting Hotel Jurong is designed as “a hotel in a garden”. A total of 9,000 square metres of gardens, sky terraces, green walls, and outdoor lounges have been introduced to replace 100 percent of the greenery lost from the site area taken by building.

Native plant species are widely used, many of which support wildlife like butterflies and birds. As an integral part of the hotel’s conservation strategies, the landscape is fully auto-irrigated with slow release fertilisers to minimise water wastage and maintenance. The irrigation water is collected from surface runoff and air-conditioner condensates and supplemented by NEWater.

The architectural strategy has provided for green areas connected to the central

core lift lobby of the building as well as large terraces away from the core. At almost all levels of the hotel, guests are greeted with a green experience at the lobby. Sky terraces are double-storeyed or open to sky, capturing views towards Jurong Lake District and the surrounding golf course.

The first-storey landscape has no boundary fence along the edges. Planting forms a buffer, though it is designed to both relate inwards to hotel gardens and outwards to public paths. On the second storey are bright, flowering, colour-themed garden lounges connected with a meandering garden walk.

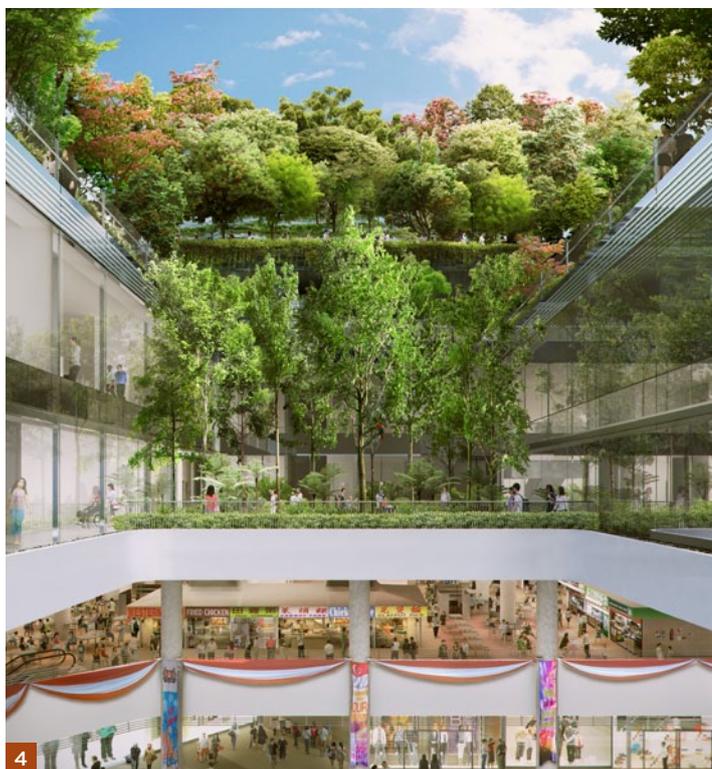
Five large green walls with a variety of textures, colours, and plant species are installed on the garden terraces. They form backdrops for the outdoor lounges and can be prominently seen. For easy

maintenance, each green wall is designed with a removable ladder and automatic irrigation.

The roof garden is another significant landscape space designed with a function lawn spilling from the dining area. A flower arbour guides one to a garden deck. Spaces are designed to overlook magnificent vantage views to the surroundings.

2. At Genting Hotel Jurong, a large orange-flowering garden sits above the car drop-off canopy which has large circular holes to allow skylight to filter down to the drop-off area below (Photo: Tinderbox Pte Ltd).

3. The roof garden of Genting Hotel Jurong with flowering pergolas is an ideal space for events and functions and provides a magnificent vantage view of the surrounding Jurong Lake District (Photo: Tinderbox Pte Ltd).



Kampung Admiralty

award recipient Housing and Development Board (HDB) **completion date** 2017 **collaborators** WOHA Architects Pte Ltd and Atelier Dreiseitl (Asia) Pte Ltd

Kampung Admiralty is the first one-stop integrated development comprising studio apartments, dining and retail outlets, social and health care facilities, and community spaces. The multi-agency project is developed by HDB in partnership with Ministry of Health, Alexandra Health System, National Environment Agency, National Parks Board, Land Transport Authority, Ministry of Social and Family Development, and Early Childhood and Development Agency.

Elements of kampung life are proposed to create a vibrant community and to reflect the attractiveness of simple kampung living. Dedicated farming plots and local fruit trees will be planted for communities to evoke old familiar memories of kampung life. In addition, different planting compositions and species will also be utilised to encourage biodiversity and attract wildlife. Plants

with colour-changing foliage will also be planted to provide an illusion of changing seasons in the lush landscapes.

Efficient stormwater harvesting and irrigation systems will also be developed for the extensive landscaped areas. The multi-tiered architecture will provide large surface areas for collecting stormwater runoff and draining it to the rainwater detention tanks. Both stormwater runoff and overflow from the rainwater detention tank will be discharged into the cleansing biotope located upstream for the treatment of water against pollutants. Clean water will then be conveyed into the vegetated swales.

The building design allows water to be treated through multiple layers of natural filters before it flows back to the rainwater detention tank. A rain garden will be placed at the third storey

to capture water flowing down from the upper decks.

The approach towards creating a water sensitive urban design comes to play before the public eye, demonstrating how HDB reconciles the various challenges of resource management, environmental protection, and human quality of life.

4. View of the courtyard garden at Kampung Admiralty with its trees visually connecting to the terraced roof garden beyond (Image: Housing and Development Board).

5. Aerial perspective shows how the development is strategically planned to allow terraced roof gardens to shield the residential towers from the noise from the adjacent MRT station (Image: Housing and Development Board).



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Punggol Northshore District Landscape Master Plan

award recipient Housing and Development Board (HDB) **completion date** 2020 **collaborators** Building Research Institute (Landscape Design Team) and Building Research Institute (Architectural Design Team) from HDB

The landscape master plan for Punggol Northshore District was drawn up based on the “Biophilic Landscape Design Approach” developed by HDB’s Building Research Institute (BRI). The focus areas of this master plan include a Neighbourhood Centre, two Common Greens, and four Build-To-Order Precincts. Outside of the development parcels, an integrated design for the streetscape forms part of the connected landscape.

Three broad strategies are outlined within the Biophilic Landscape Design Approach: enhancing existing natural habitats, reconnecting with nature, and sustaining ecosystem services. To meet these objectives, BRI commissioned a biodiversity study to obtain a detailed analysis of the site. With information on the existing species of birds, butterflies, and dragonflies, habitats such as

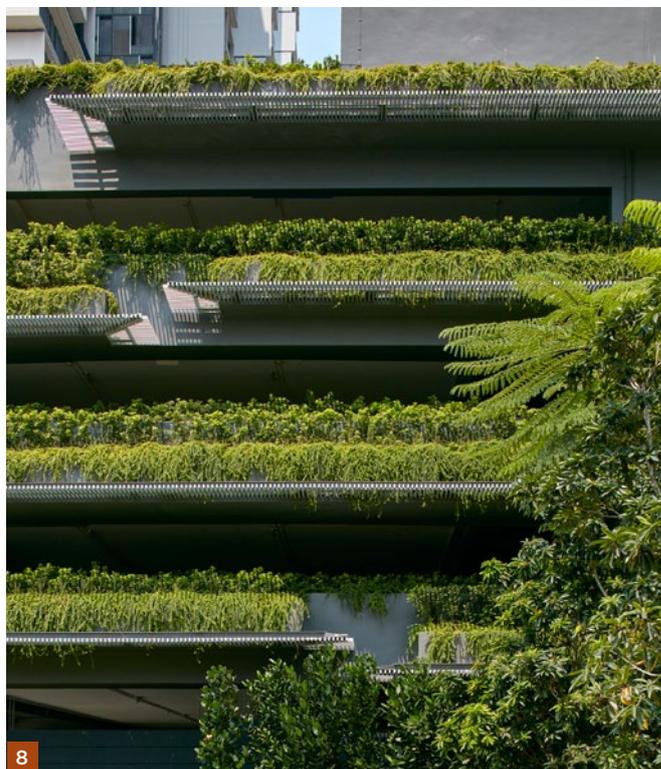
dragonfly ponds, bird sanctuaries, and butterfly gardens are zoned within green spaces throughout the district. BRI worked with the National Biodiversity Centre of NParks to determine the suitable plant species that can be incorporated to allow the existing biodiversity to continue thriving after the developments are completed.

This master plan outlines a district-wide network of bioswales and rain gardens for stormwater regulation, groundwater infiltration, and water purification. Trees lining the main roads of this district serve ecological functions beyond their regular role of providing aesthetics and wayfinding. Wind-flow analyses of the district were conducted, and trees effective in air purification are planted along stretches of roads with higher wind speeds. In stretches of roads with limited wind speed, trees effective in

carbon sequestration are planted to mitigate the urban heat island effect. Sky gardens and basement car parks of the residential development contribute significantly towards the enhanced greenery provision.

Collectively, the green and blue elements provide an array of public interaction spaces with ample opportunities for education on ecological awareness. They offer residents a greater sense of place and better quality of life and well-being.

6. Aerial perspective of Punggol Northshore District (Image: Housing and Development Board).



SkyTerrace @ Dawson

award recipient Housing and Development Board (HDB) **completion date** 2015 **collaborators** SCDA Architects Pte Ltd, Ronnie & Koh Consultants Pte Ltd, Besoon Consulting Engineers Pte Ltd, Sunhuan Construction Pte Ltd, and Kok Keong Landscape Pte Ltd

The landscaping concept aims to provide the residents with a natural and green living environment. It complements the idea of community living by creating a varied collection of communal spaces within the development.

The main entrance into the development is at a shaded arrival court anchored by two large rain trees and a formal canopied drop-off area. This space is linked to the residents' lift lobbies and other communal facilities through a central circulation spine, or "Heritage Gallery", bordered by various pocket gardens and courts. Trees that provide vertical rhythmic elements and shade to the journey are introduced along with ground cover to provide colour and texture to the garden spaces.

The southern periphery of the Heritage Gallery extends out to a generous open

lawn that stretches out and seamlessly merges with the Alexandra Canal Linear Park. On the eastern edge of this lawn sits an outdoor amphitheatre. Located adjacent are the active recreation facilities like the children's playground, fitness corner, and outdoor badminton courts.

The northern periphery of the site is currently lined with existing mature rain trees. In response, similar rain trees that complement the scale and rhythm of the existing foliage are added and low-level shrubbery are planted to create lushness at the pedestrian scale. The shrubbery and ground cover are selected to subtly announce the three pedestrian entrances to the development. This area will blend seamlessly with the ecological corridor in the future, especially with the introduction of a linear bioswale along the northern periphery.

Cascading green terraces and edge planters screen the bulk of the multistorey car park, culminating in a green landscaped roof atop it. The landscaped terraces on the southern side provide a continuous ascending route with intermediate communal spaces from the adjacent open lawn. These terraces and the green roof serve as convenient communal gathering spaces for the residents.

7. View of SkyTerrace @ Dawson from Alexandra Canal Linear Park (Photo: SCDA Architects Pte Ltd).

8. Vertical landscaping and terracing at SkyTerrace @ Dawson (Photo: SCDA Architects Pte Ltd).



The Foresta @ Mount Faber

award recipient Hoi Hup Realty Pte Ltd completion date 2014 collaborators JGP Architecture (S) Pte Ltd, Straits Construction Singapore Pte Ltd, and SALD Pte Ltd

The Foresta @ Mount Faber condominium brings the atmosphere of a sheltered forest into the bustle of residential areas of Singapore. Many of the tree species in the gardens are native to Singapore and Southeast Asia, such as the *Alstonia*, *Cratoxylum*, *Terminalia*, and *Talipariti*.

A relatively large palette of plants was used in this scheme. The characteristics of the trunks, leaves, and flowers can often be surprising as one walks through this garden. Plants of different sizes and leaf colours are used to create rich textures within the lush landscape. The flowering plants are carefully selected to adorn the lush green landscape like sparkling jewellery.

There is the peeling red bark of *Syzygium gratum*, the fissured and flaking pale brown of *Cratoxylum cochinchinense*, and the smooth and papery cream to light

grey colour of *Lagerstroemia speciosa*. The *Talipariti tiliaceum* var. *purpurascens* has heart-shaped dark purple leaves, *Phoenix sylvestris* blue-green pinnate leaves, *Calathea lutea* silvery leaves, *Costus speciosus* "Marginatus" green-and-white variegated leaves, *Phyllanthus* tiny fine leaves, and *Thaumatococcus daniellii* big fan leaves. There are the flowering plants like the *Cratoxylum cochinchinense* that blooms in deep crimson and *Lagerstroemia speciosa* that blooms in pink.

A forest of palms has been created at the central main horizontal axis. Some 10 species of tall and short palms are planted as they would appear in a forest, providing an intimate atmosphere. People congregate around the ground floor pools, with flowing water animating the landscape.

Biodiversity is at the heart of this project located near Mount Faber. Varieties of plants that attract fauna have been introduced. There is potential in creating wildlife habitats through these plants species. Fauna like bees, butterflies, moths, bats, squirrels, and caterpillars can be attracted to this residential area.

9. The 50-metre lap pool at the Foresta is partially enveloped by glass panels on one side to simulate walking through an aquarium (Photo: Hoi Hup Realty Pte Ltd).

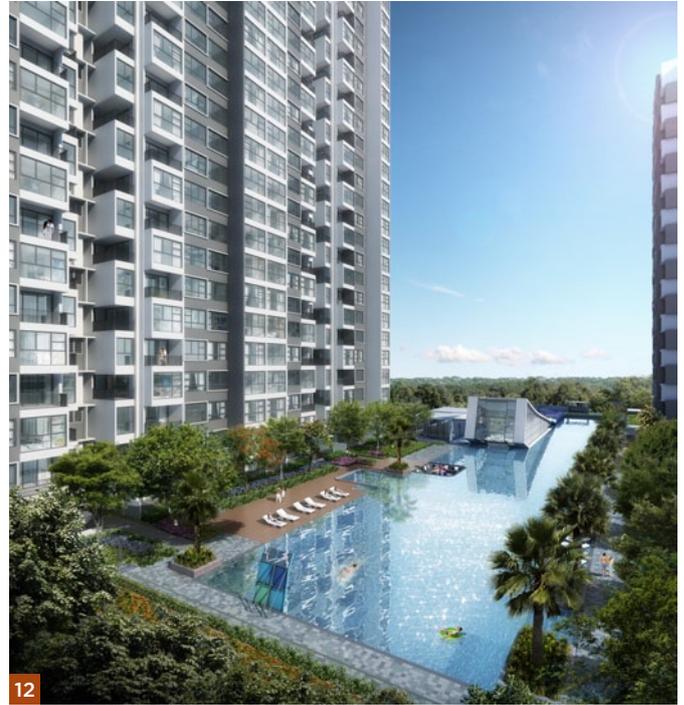
10. The Foresta's Island Pavilion showcases a small collection of tall forest palms, celebrating the lush greenery of the tropics (Photo: Hoi Hup Realty Pte Ltd).

SELECTED LEAF CERTIFIED DEVELOPMENTS 2015

New Developments



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Lush Acres

award recipient City Developments Limited **completion date** March 2016 **collaborators** ADDP Architects LLP, Site Concepts International Pte Ltd, and Nakano Singapore (Pte) Ltd

The 380-unit Lush Acres executive condominium features four generously spaced out towers with panoramic views of its surroundings. It is the first development in Singapore and in the region to introduce the innovative and space-efficient Agri-Cube hydroponic farm unit from Japan. By encouraging residents to grow temperate vegetables, herbs, and spices within the comfort of a temperature-controlled environment, City Developments Limited hopes to allow residents to supplement their food supplies conveniently through a more sustainable lifestyle and facilitate community relationship building.

A teeming and abundantly verdant landscape is another key feature of Lush Acres. More than 32 percent of the plants are native, and at least 48 percent are flowering species that attract wildlife, such as *Cratoxylum Cochinchinense* and *Sterculia parviflora*. The landscape has been creatively designed to promote

biodiversity and make the estate an extension of its natural surroundings. The low housing density of Lush Acres was thoughtfully planned to complement this objective.

In addition, Lush Acres has a well-spaced landscape deck hugging a 100-metre lap pool. Residents can enjoy a range of other facilities including the Aqua climber and Aqua bike, fitness corner, children's playground, sunken lounges, and barbecue area. The Sculptural Clubhouse overlooks the magnificent pool, complementing the verdant landscaping, with a water pavilion overlooking the main entrance. The estate will also have open lawns, a jogging track, and other eco-features to promote a healthy lifestyle.

Four percent of the total construction cost of Lush Acres was invested in its numerous eco-friendly, resource-efficient, and sustainable features.

Annual energy savings of approximately 2.8 million kilowatt hours and water savings of approximately 62,000 cubic metres are expected. Lush Acres was awarded the Green Mark Platinum award by Building and Construction Authority in 2014.

11, 12. At Lush Acres, a well-spaced landscape deck and the Sculptural Clubhouse overlook the 100-metre lap pool (Image: City Developments Limited).



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Skyline I & II @ Bukit Batok

award recipient Housing and Development Board (HDB) **completion date** 2017
collaborators Surbana International Consultants Pte Ltd

Standing tall above its surroundings, Skyline I & II @ Bukit Batok are designed as a gateway into Bukit Batok. They comprise five residential blocks, ranging from 23 to 38 storeys in height, with 1,232 flats. The concept of a gateway is enhanced with design features such as the staggered heights of the residential blocks and terraced multistorey car parks topped with roof gardens. Roof terraces with seatings in a garden setting are also provided at the two main gateway blocks.

The idea of “housing within a garden” is realised by shaping the development as an extension of the park connectors. A central green spine runs through the development, connecting the surrounding park connectors to form a green network, sheltering residents from the hustle and bustle of urban life. This green network is composed of a mix of trees and palms of various species, at varying densities and heights, so that a rich and textured canopy is created.

Residents can stroll along the central green spine or relax in the resting shelters along the way.

Within the development, this green spine optimises the “valley” space created between the multistorey car park and residential blocks and runs beneath Jurong East Flyover to connect the two developments. Site level differences are also optimised to visually sink the car park to create a seamless connection from the residential blocks and adjacent estates to the roof garden on the car parks.

Two mature rain trees are also conserved to create a welcoming entrance to one of the car parks, which was designed around these trees.

OTHER LEAF CERTIFIED DEVELOPMENTS IN 2015

Existing Developments

- Sentosa Cove by Sentosa Development Corporation
- Skyville @ Dawson by Housing and Development Board

New Developments

- Mapletree Business City II by Mapletree Investments Pte Ltd 

13. View of the roof gardens of the multistorey car parks of Skyline I & II @ Bukit Batok. The lushly landscaped cascading multistorey car parks are noise buffers between the residential blocks and adjacent expressway (Image: Housing and Development Board).