Evolving Roof Gardens of Public Housing Estates in Singapore
Building Heartware via Skyrise Greenery

For over five decades, the Housing & Development Board Singapore (HDB) has been providing green spaces for residents to enjoy—from landscaped areas within the housing precinct (Fig. 2), to neighbourhood parks, and Common Greens (Fig. 1). In fact, till the 1980s, HDB also designed and developed town parks and regional parks, which now are undertaken by the National Parks Board (NParks).

In the last decade, HDB has introduced roof gardens in public housing estates to provide more greenery, improve the environment, and create communal spaces for residents to enjoy. With that, they evolved into integral community and recreational spaces for residents, and even gardening plots. This article considers the design principles behind them and their role in shaping the community.

Public Housing Estates for Better Living
Recognising that greenery is vital in creating a quality living environment, HDB has been exploring ways of introducing more greenery in public housing estates, given the increasingly limited ground space. Back in the 1970s and 1980s, HDB estates were mostly made up of slab blocks with surface car parks interspersed with simple landscaping on the ground. However, with changing socio-economic and demographic environments, HDB estates evolved, and new housing block typologies and Multi-Storey Car Parks (MSCPs) developed.

With this, greenery provisions in public housing estates also expanded to embrace a wider variety of greenery types, including rooftop gardens. Since the 1990s, besides ground-level landscaping, HDB has also been providing greenery on the roof decks of car park structures, as roof gardens on MSCPs. The greenery helps to soften hard, concrete surfaces of car park roof decks and provide visual relief from the otherwise bare concrete surfaces.

Greenery on roof decks also helps to lower ambient temperatures, making the living environment more pleasant, particularly in Singapore’s hot climate. In addition, roof gardens provide recreational spaces for residents to enjoy. They play a vital role in supplementing and replacing the ground-level greenery in HDB estates, where ground space is limited. In some precincts, roof gardens serve as the main recreational and landscape space.

Today, all new MSCPs are provided with a landscaped roof deck that is accessible to residents. They are also designed to allow for community gardening, a leisure activity that is gaining popularity among residents. Supporting amenities, such as water points, spaces for tool sheds, and seating, are provided. Such community gardening could be a form of exercise for residents that also helps to foster community ties.

To date, HDB has built more than a hundred roof gardens, with more currently under construction and some existing MSCPs being upgraded to include landscaped decks.

Types of Roof Gardens
Generally, roof gardens in public housing estates are located on the roof decks of car park structures. They can be categorised into two broad categories, depending on the amount of facilities provided and the intensity of planting.

Roof gardens that have more facilities and planting are well integrated with the residential blocks by way of link bridges and usually serve as the main recreational spaces within precincts. Generally, these decks sit on lower but more extensive car park structures. On these roof gardens, “3-Generation” (3G) facilities, encompassing children’s playgrounds and elderly and adult fitness corners, are located. There may be jogging tracks, hard courts, and plenty of spaces to sit and relax.

Another type of roof garden is one with fewer facilities and less intense planting. They are simpler, with modest facilities, such as benches and trellises. Usually these roof gardens are located on taller MSCPs, with access via the car park lift, and sometimes supplemented by one or two link bridges connecting it to nearby residential blocks. These gardens play an important role in softening the harsh building environment with landscaping and provide additional space for community gardens.

The greenery helps to soften hard, concrete surfaces of car park roof decks and provide visual relief from the otherwise bare concrete surfaces.
Guiding Design Principles

Several principles that guide the design of ground-level landscaping are also applied to roof gardens. The differences are technical in nature, as the greenery of landscaped decks is not planted on true ground. A key driver of HDB’s roof gardens is the user experience and friendliness.

Spaces
Spaces on the roof garden are designed to cater to various activities. For instance, community gardens require planting beds, while tai chi corners require open spaces. These activity spaces are located to complement one another and take into account infrastructure such as ventilation voids and staircase accesses from car parks.

Following the layout of spaces, the detailing and use of materials help to define these spaces. An open plaza on the roof garden may be defined by using a different paving material from the footpaths. Plants may also be used to frame or anchor a plaza space and provide shade. Planter beds are designed to define the space and provide seating.

Spaces are also enhanced to evoke unique spatial experiences and qualities. Plants are carefully selected to provide shade over seating areas and give a sense of tranquillity or vibrancy.

Access
Consideration is given to access to and within the roof garden. To encourage residents to use the roof gardens, they are made easily accessible via link bridges from residential blocks or by way of staircases and lifts in car parks.

On the roof garden, connections between spaces are designed such that one space flows seamlessly to the next. A looped circulation is preferred for spatial continuity and dead-ends are generally avoided for security reasons.

A Stroll Through Punggol Breeze

Punggol Breeze, a recently completed Built-To-Order project by HDB, illustrates how these design principles may be realised in a project. Located in Punggol, one of HDB’s newest towns, Punggol Breeze, sits at the intersection of Punggol Drive and Edgefield Plains. The roof garden is located on the top deck of the two-storey MSCP and flanked by two rows of residential blocks. Access to the roof garden is provided via link bridges, which connect all blocks to the roof garden (Fig. 4).

The design of the roof garden is conceived to be garden-like, with...
Benefits of community gardening include being able to grow and harvest fresh food supplies collectively, which is a step towards greater food resilience.

In recent times, there has been a growing interest in community gardening in Singapore, as people are at the heart of what we do. Engaging them is instrumental, and would remain one of the many challenges of HDB. After all, people are at the heart of what we do.

Benefits of community gardening include being able to grow and harvest fresh food supplies collectively, which is a step towards greater food resilience. Examples of food crops include sweet potato and tapioca. Residents also see community gardening as an activity they can participate in to keep fit together with their neighbours. In public housing estates especially, the building of “community” is just as, or even more, important than the “farming” aspect. As community gardens are set up and run by residents, they encourage a greater stake and sense of ownership of greenery in respective estates, which ties back to HDB’s larger goal of creating a sense of place and belonging in public housing estates.

With ground-up initiatives such as opportunities for community gardening, it is the people who will ultimately decide how to use and enjoy the space that is provided for them. Engaging them is instrumental, and would remain one of the many challenges of HDB. After all, people are at the heart of what we do.