

South Beach BUILDING AND PLANTING A GREEN CITY BLOCK

Text by Narelle Yabuka

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PROJECT CREDITS

Location: Urban block framed by Bras Basah Road, Beach Road, Middle Road, and Nicoll Highway **Completion Date (Expected):** 2015 **Client:** South Beach Consortium Pte Ltd (A joint venture between City Developments Limited and IOI Properties Bhd) **Design Architect:** Foster + Partners Ltd **Local Collaborating Architect:** Aedas Pte Ltd **Structural and Sustainability Engineer:** Arup Singapore Pte Ltd **Landscape Designer:** ICN Design International Pte Ltd **Quantity Surveyor:** Langdon & Seah Singapore Pte Ltd **Lighting:** Light Cibles Pte Ltd **MEP Engineer:** Parsons Brinckerhoff Pte Ltd **Hotel Interior Designer:** Philippe Starck **Contractor:** Hyundai Engineering & Construction Co. Ltd **GFA:** Around 150,000 m² **Site Area:** Around 35,000 m²



Though it is now a considerable distance from the open water of the Singapore Strait, Beach Road was named (not surprisingly) for its pre-reclamation position beside the sea. On today's maps, it appears as a divisive axis rather than an edge for the urban mass. It marks the transition from the fine-grained pedestrian-centric urbanism of the 1800s (to its north) to the big city blocks, spaghetti streets, and behemoth buildings (to its south) that have grown from the latter twentieth century's preference for large-scale developments, dependence on air conditioning, and favouring of vehicular travel through the city.

At present, a block of some 35,000 square metres on the reclaimed side of Beach Road is thronging with the construction of a new urban quarter. When it is completed in 2015, South Beach will offer office spaces, a hotel, residences, retail and F&B spaces, and sky terraces in two towers, four conserved heritage buildings, and a number of new low-lying podium structures. A grand undulating canopy will bring shelter and sustainable environmental conditioning to a permanently accessible ground plane of public plazas that incorporate access to the Esplanade MRT station via steps to a sunken plaza. The design, conceived by UK-based Foster + Partners and developed with local collaborating architect Aedas and landscape studio ICN Design International, has already won two Green Mark Platinum awards for its commercial and residential components.

Mediating Edges

The South Beach site is framed by many lanes of traffic in Beach Road, Middle Road, Nicoll Highway, and Bras Basah Road. This city block is particularly prominent given its adjacency to the War Memorial Park and, beyond that, the Padang. The cultural significance of these civic spaces suggests that a sensitive neighbourly relationship would be appropriate. At the same time, their openness brings the potential

impact of the South Beach development upon the area into stark perspective. Wide views of the development will be had across the lawns, assuring its visual prominence in the area. A gestural connection to the War Memorial Park will be made via a substantial crest in the waving canopy beside it and a diagonal pedestrian axis that infiltrates the block from that point. Eight pedestrian links (on grade or via bridges) will allow access to the site from the surroundings, although the dominance of vehicular traffic in the area is likely to prevent additional links with the historic urban grain to the north or the War Memorial Park. An opportunity to enhance the walkability and connectivity of the neighbourhood will thus be lost.

Despite the severing effect of the wide and busy streets, South Beach counters the tendency of many of its southern neighbours to raise hard edges to the traffic. The design of the towers, canopy, and ground plane suggest "active" façades, penetrable edges, and permeability, with landscaping at multiple levels. Pedestrian infiltration from the footpath and the Mass Rapid Transport station is favoured. Mindful of impressions and ideas of Singapore as a City in a Garden, the design team considered the site at the macro scale and saw the opportunity to connect it to the adjacent parks, as well as those beyond, and contribute to a network of public green spaces in the middle of the city. The diagonal axis—the chief organising principle of the development—thus manifests in the design as a green spine that connects the edges of the site with a protected but open landscaped interior. It will be a public zone that is pulled back from the traffic and sheltered from the extremes of the tropical climate by the undulating canopy above it. Ground-level planting will be joined by green roofs and the vertical greenery on the podium buildings, while planter boxes and landscaped sky terraces in the towers will continue the green narrative above.

The master planning strategy for the site was also influenced by the locations of four existing conservation buildings, which are being restored. Three of these—blocks from the former Beach Road military camp—were built during the 1930s in the Art Deco style; the remaining building—formerly the Non-commissioned Officers (NCO) Club premises—was built in the 1950s in the modern style to a design by Palmer and Turner. The presence of these blocks, which will be used for hotel reception, dining, and function spaces, predetermined the positions of the two new South Beach towers. They also encouraged “through block links”, for circulation across the site, that hark back visually—across eight lanes of traffic—to the historic urban grain north of Beach Road. The canopy will dip where it interfaces with them.

A Breathing Base

Beyond the civic- and conservation-based logic of site organisation described above, a particularly rational science-based approach has also informed the design. Form is largely the outcome of processes of environmental analysis and the subsequent logic of providing shading, rain protection, and a wind funnel effect at the most appropriate locations. The canopy has been a chief focus of the architects, who have targeted acceptable thermal comfort via sustainable means for the new public spaces at ground level. Roland Schnizer, a partner at Foster + Partners, thinks of “thermal comfort” as more than an “impression”—but rather an engineering concept that considers how human comfort can be measured and, in the case of South Beach, be considerably enhanced by a tailored design that aims to create a tempered all-year-round outdoor space. Climatic factors, such as heat conduction, convection, radiation, and evaporative heat loss, have been analysed by the architects to determine the shape of the roof and which type of roof panel to use at which area.

The canopy is not a hermetic roof; rather, it is a complex design that serves a number of functions. Glass panels will allow daylighting. Louvered panels will catch breezes and push them into the sunken plaza. Solid roof panels will keep the rain out from key areas (assuring a dry route through the site at all times) and will also accommodate around 1,800 square metres of photovoltaic (PV) panels. The latter will generate enough energy to power the architectural lighting of the podium level and the towers. PV panels will be placed at areas receiving the most daylight over the course of the year, according to

studies by the design team. Rain-harvesting panels will serve a drip irrigation system that will focus on the most prominent and hard-to-access landscaped areas. Solar-thermal tubes will also be incorporated to heat the hotel swimming pools. Overall, a sense of transparency will be encouraged by the staggering of the canopy “ribbons”.

While the canopy should create a comfortable environment for human habitation, it has created challenges for the landscape design team due to the decreased light levels that will result beneath it. Richard Jones, Associate at ICN Design International, explains that light studies were required, resulting in the amendment of planting locations and more careful species selection. The implementation of green walls beneath the canopy is equally challenging, and the unobtrusive integration of grow lights into the building facades will be essential in the deepest basement spaces.

Towers That Grow

The north (office) and south (hotel and residential) towers present distinct façade designs. On the east and west elevations, which are most exposed to the sun, heat gain will be combated by louvered screens that rise upwards all the way from the base. These will perform a shading function as well as act as wind scoops to circulate breezes toward the tower interiors. Behind them, triple-volume sky terraces and planter boxes on balconies will further combat heat gain. In the residential portion of the south tower, planting will be in the purview of residents, so the success of the vertical greenery and the production of full “furry” green edges for the south tower will depend on the commitment of homeowners. Natural ventilation of the apartments (a Building and Construction Authority Green Mark Platinum requirement) dictated a planning approach that would allow cross breezes as opposed to sealed floor plates, which appear elsewhere in the towers.

The landscaped sky terraces will be functional spaces (rather than simply “gardens”) that need to respond to different usage requirements (in the residential, hotel, and office contexts) while reading as parts of the same development. Green Mark Platinum requirements necessitated the maximisation of the amount of planting in the sky terraces, explains Jones, without blocking views. Achieving the required Green Plot Ratio and finding species suited to the shady



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1. View from the expansive lawn of the War Memorial Park. The canopy rises above the key diagonal axis.
2. Aerial view from above the corner of Beach Road and Bras Basah Road. Four conserved buildings, as well as conserved trees, line Beach Road.
3. An early model indicating the variety of spaces beneath the canopy.
4. Detail of an early model showing a sunken plaza area.
5. Diagram of the wind funnel effect of the towers' louvered screens and the shading provided by planting in the façade planters.

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and windy conditions, as well as the limited soil depth, have been challenges for the landscape team. ICN has been working with the softscape contractor to install netting at the pre-growing nursery to allow the plants to acclimatise to the semi-shaded conditions of the sky terraces.

The plant species for the hotel and office façade planters were selected for their hardiness and low-maintenance requirements. The conditions at these heights will be quite harsh, elaborates Jones, with high winds, exposure to solar radiation, and a lack of moisture. The species selection was thus fairly limited. Some of the low-maintenance shrubs that have been chosen for the sky terraces include *Ficus nitida*, *Osmoxylon lineare*, *Schefflera actinophylla*, *Hymenocallis littoralis*, *Piper sarmentosum*, and *Pedilanthus tithymaloid*.

On the north and south elevations of the towers, which will experience less heat gain, faceted glazing will perform a self-shading function. Panes of glass in a diagonal arrangement will be angled either slightly toward the sky or slightly toward the ground. The upward-facing panes will be high-performance, reflective glass in a neutral grey

colour, while the downward-facing panes will have maximum clarity. Penetration of the vertical midday sun will be mitigated by the reflective panes and blocked from the clear panes. The result will be striking façades of diagonal bands that partially reflect the sky.

Spatial Generosity

It can be difficult to inhabit some of Singapore's green spaces, particularly during the heat of the day, due to a lack of protection from the elements. The War Memorial Park is an example. South Beach offers the potential for an urbanised green space that will offer all-day comfort, encouraging people to linger. The design is a commercial scheme that takes its civic responsibility very seriously, emphasises Schnizer, who points out the generosity of covering the entire site to create a sheltered (non-rentable) plaza. He sees the scheme as an extension of the existing urban grain rather than a self-contained island, and suspects this may be one of the factors that led to Foster + Partners' success in Urban Redevelopment Authority's 2007 competition for development of the site. If implemented successfully, South Beach could become a new type of green outdoor square for Singapore. 



6, 7. The site's close proximity to traffic in Beach Road, Middle Road, Nicoll Highway (pictured), and Bras Basah Road gives rise to alternative solutions for maintaining openness, permeability, and connectivity.

8. View from the corner of Nicoll Highway and Bras Basah Road. The south (hotel and residential) tower can be seen.