

Sensitive Design and Development: An Industry Guide of Good Practices to Minimise Wall-Like Developments



“URA’s on-going initiative to engage the key stakeholders, namely REDAS, SIP and SIA in reviewing and formulating planning parameters for minimising wall-like developments to address long term concerns for our city clearly demonstrates how the built environment in the future will benefit from such a visionary approach. The premise was to look at what might be the condition of the built environment tomorrow, based on today’s guidelines, some 50 years down the road when the density levels, based on projected population, demographics and economic growths, would be higher. This insightful approach led to pro-active discussions and in-depth deliberations, taking into account reactions and viewpoints from the different perspectives of a developer, a planner, an architect and a regulator with a meeting of minds to arrive at performance based solutions, rather than prescriptive based, that will better safeguard the future built environment for Singapore and her people”.

Mr Ashvinkumar

President, Singapore Institute of Architects (SIA)

“Good quality city skyline requires a clear long term vision, sustained attention and continual effort in implementation. This Good Practice Guide to regulate the massing of long and tall slab blocks is a timely initiative to ensure visual and spatial relieves in our densely developed city.

REDAS is pleased to contribute to this collective effort by both the public and private sectors. Through such ongoing partnerships, I am confident that Singapore will continue to offer a world-class urban living environment as the economy grows with new demands”.

Mr Simon Cheong

President, Real Estate Developers' Association of Singapore (REDAS)

“As Singapore’s population grows, we can expect our city state to become progressively more built-up with bigger and higher buildings. We will feel the impact of increasing densities and the demands placed on our built environment. SIP thinks that if we want to safeguard the existing pleasant environment for future generations, it is timely that this concern about the cumulative impact of the wall-effect be addressed now”.

Singapore Institute of Planners (SIP)



“Higher densities of cities need not be at the expense of a quality living environment if we act now. There is a tendency for buildings to go higher and longer as densities rise. On its own, a long and tall building may not have an adverse impact on the surrounding environment. However, the cumulative effect of many of such buildings in an area will certainly have an impact on our cityscape. I am heartened that SIA, REDAS and SIP share this concern and have worked together with URA to prepare a Good Practice Guide so that buildings of the future are designed sensitively to each other and the surrounding environment. Collectively, we can create pleasant streetscapes, make delightful spaces in-between buildings which will also create a cooling effect, and preserve as many views as possible. A well-designed development which is sensitive to its surroundings is an asset to the building owners, users, neighbours as well as the larger community. This would benefit the city as a whole. The preparation of this Good Practice Guide is a good example of how key industry players and URA collaborate to address common concerns. I wish to thank SIA, REDAS and SIP for undertaking this joint study with URA and together, we can help make Singapore a better home for all”.

Mrs Cheong Koon Hean

Chief Executive Officer, Urban Redevelopment Authority (URA)

Introduction

Singapore is a city state with a relatively high population density and limited land resources. As the economy and population grew and developed, the physical landscape of Singapore has also changed significantly, especially over the past two decades. While developments used to be mainly low-rise and more spaced out, buildings have become progressively larger in scale. Higher development intensities are inevitable as we have to set aside land for a wide variety of uses such as airports, parks, nature reserves, housing, industry, etc, as well as to sustain our economic growth. Our development intensities are expected to climb higher in the years to come with our built environment becoming more dense and compact. However, the quality of our environment need not necessarily be compromised.

In recent years, it is observed that some developments are becoming more massive, with narrower spacing provided between the blocks in the same development. This has created a wall-like effect. Whilst such wall-like developments on its own may not pose severe impact, the cumulative effects of many of such developments in an area may adversely affect our physical and social environment. For instance, an accumulation of many wall-like developments can create a congested skyline and block off views of the horizon. Such imposing developments can also be unpleasant for motorists and pedestrians travelling along the roads.

While there is a place for strong building edges and slab blocks in selected areas, the concern is the



Figure 1: Wall-like developments in Hong Kong

cumulative effect of such wall-like developments if they are left to proliferate out of context with the surroundings, especially in residential estates. Hong Kong is an example of a very dense and built up city which is now taking action to minimise the impact of inappropriate building massing on the quality of the living environment (See Figure 1). Recently, the public in Hong Kong has voiced their unhappiness about the proliferation of massive wall-like developments. As a result, the Hong Kong Government has started to put in place measures to curb such buildings (See Figure 2). These measures include the introduction of height controls and planning guidelines requiring developers to carry out microclimate studies to ensure that the buildings do not result in stagnant air at the street level. To reduce building bulk, the Hong Kong authorities are also considering the removal of some Gross Floor Area (GFA) incentives which developers currently enjoy.

In the longer term, too many wall-like developments may also have a negative impact on the social well-being of people. Studies carried out in Hong Kong have shown that human behaviour is affected by spatial features of the physical environment. A congested and dense environment could potentially lead to higher levels of stress among residents who feel 'hemmed in' by the buildings around them¹. Given these concerns, there is a need to safeguard the current pleasant environment in Singapore and ensure that our quality of life will not be compromised even as building densities trend higher in the years ahead.

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HOUSING PROJECTS SCALED BACK TO CLEAR AIR

WIND OF CHANGE

Patsy Moy and Adele Wong

People living near two West Rail stations may soon be breathing a little easier.

In a move to avoid the so-called "wall effect," property developments above stations at Nan Cheong and Yuen Long should be scaled back, the Development Bureau says.

The proposal, to be discussed in the Legislative Council on Tuesday, calls for the developments – which are already underway – to be cut by about a sixth. It also lists measures to improve air ventilation and reduce building density in the areas.

These include building breezeways and visual corridors, reserving more open space and reducing building height. The bureau estimates the changes will improve wind movement by between 10 and 20 percent in both districts.

The wall effect occurs when air flow is blocked by densely packed high-rise buildings.

The proposal ties in with plans to improve the environment in the territory, a government source said. "The future direction is to make Hong Kong a cleaner and greener place to live," the source said.

For Nan Cheong station, the bureau proposes cutting one residential and one office tower from the scheme. It plans to reduce gross floor area of the project by 18 percent from 369,600 square metres to 303,107 sq m. The plot ratio will shrink from eight to about 6.6.

The number of flats will be slashed by about a fifth, from 4,247 to 3,321. High-rise residential blocks will be lowered by as much as 14.8 metres, reducing a 52-story building to 46 floors. The podium will also be reduced from five stories to three.

In Yuen Long, the bureau plans to cut the two residential blocks that are closest to the Sun Yuen Long Centre. The project's gross floor area will fall by 15 percent from 160,842 sq m to 136,362 sq m and the plot ratio will shrink from 4.64 to about 3.93.

Building height will be cut by three to 10.9 metres, meaning, for example, a 47-story building there will be lowered to 44 floors. The sources said the move is designed to "remedy" Hong Kong's wall effect problem, which has been blamed on a pledge by former chief executive Tung Chee-hwa to build 85,000 flats to meet housing demand.

"Foundation and piling work has already begun so what we can do is very limited. But we are trying our best to improve the living environment," one official said.

Hong Kong Institution of Engineers fellow Chan Hon-fai said the height of the buildings will not have a big impact on the wall effect, but the space between buildings will.

Chan said if buildings are far apart, wind will be able to blow through.

"The distance between buildings can cause temperature differences of one to two degrees Celsius."

As for a greener Hong Kong, don't hold your breath. One source said the government has no intention of using the building projects as a benchmark for future developments.

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Figure 2: Newspaper article about wall-like developments in Hong Kong

¹ Some Social Implications of High Density Housing, by Robert Edward Mitchell © 1971, American Sociology Association.

A study team was formed in February 2009, comprising representatives from the Singapore Institute of Architects (SIA), the Real Estate Developers' Association of Singapore (REDAS), the Singapore Institute of Planners (SIP) and the Urban Redevelopment Authority (URA), to study ways to mitigate the impact of wall-like developments. The objective of the study was to come out with a framework which would overcome the potential environmental concerns of wall-like developments and yet give sufficient flexibility to allow for a variety of building massing and designs. Consequently, sensitive designs and developments that incorporate good design measures can be proposed upfront to minimise wall-like developments and its impact on the living environment.

Framework to Guide Developments

The study team examined the relationship between building length and height to establish a comfortable scale and massing for developments. In the process, the team identified building massing zones as shown in Chart 1:

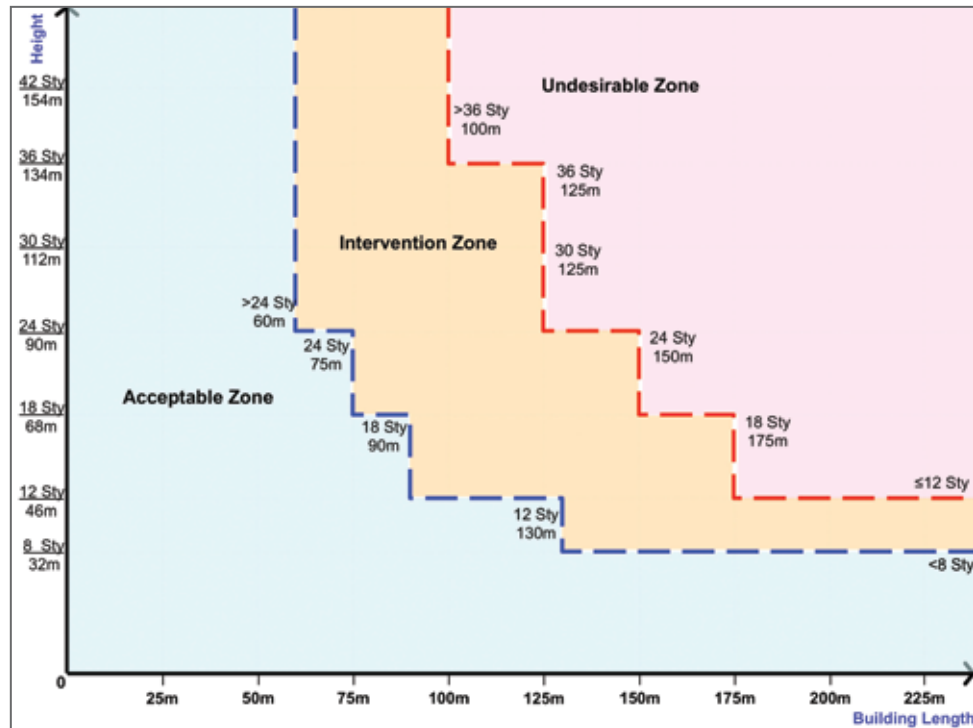


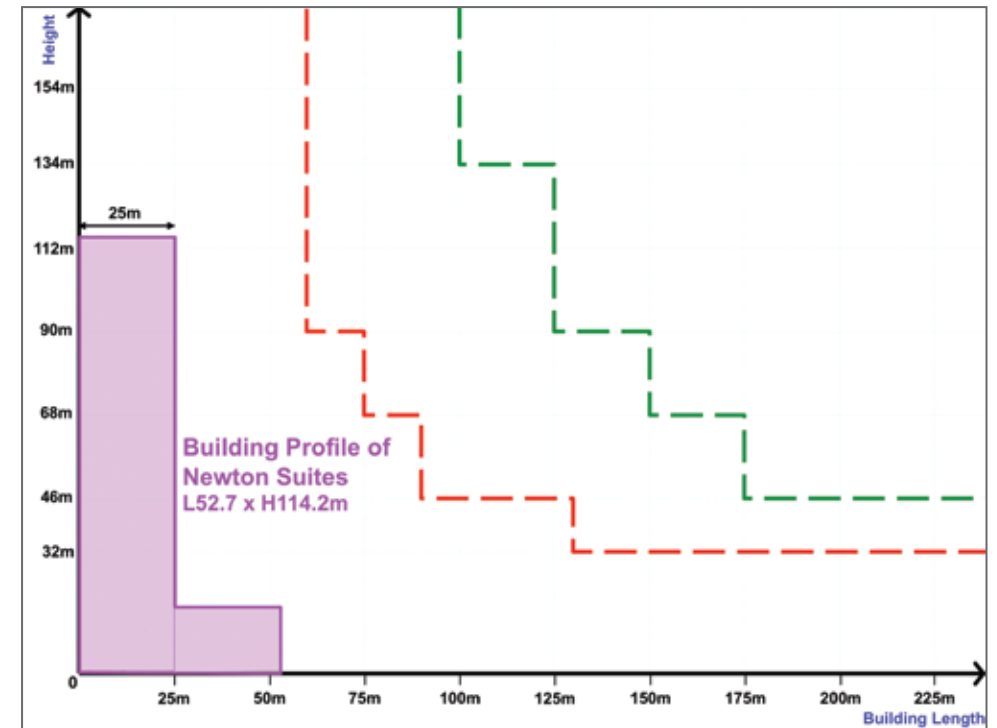
Chart 1

Acceptable Zone

The Acceptable Zone is where developments are of a comfortable scale. Building blocks that fall within this zone are unlikely to have an adverse impact on the surrounding environment. One example is Newton Suites, a 35-storey residential development which measures 25m in length (excluding the 5-storey car park podium) by 114m in height along Newton Road. For this case, although the building is already within the Acceptable Zone, the designer has gone further to incorporate vertical green walls, sun shading screens, sky terraces and balconies to break down the building massing.

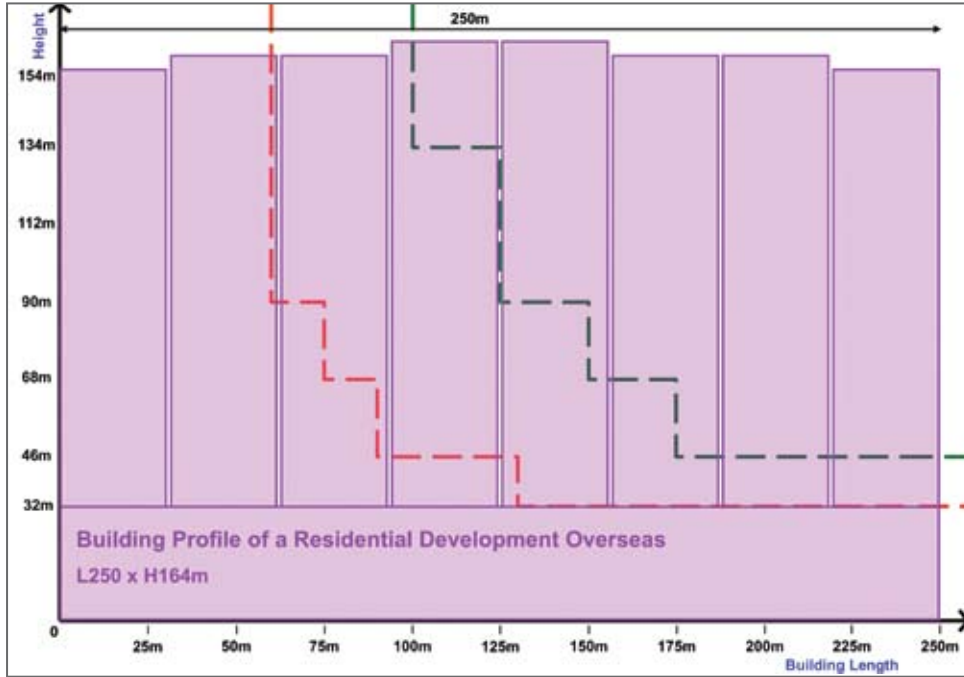


Newton Suites
© Patrick Bingham-Hall



Undesirable Zone

Developments falling within the Undesirable Zone are considered too massive in scale as the cumulative effect of these buildings would have a severe impact on the surrounding area. Buildings that fall within this zone should generally be discouraged as they block off the views of the surrounding developments and result in a congested skyline. Many examples of such massive buildings can be found overseas.



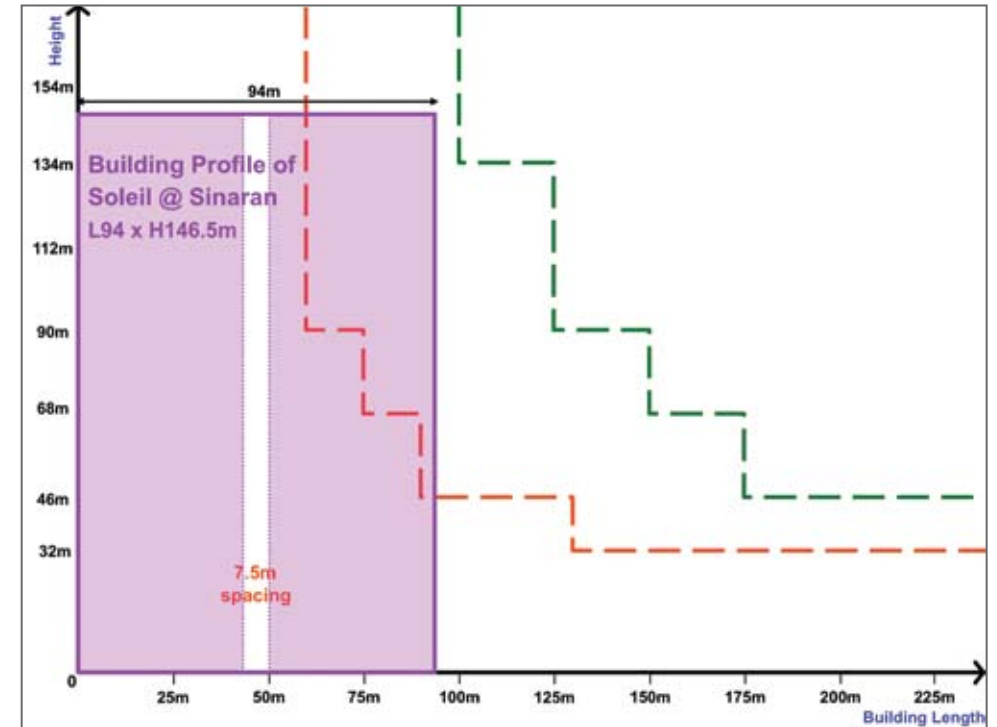
Example of a wall-like residential development overseas

Intervention Zone

In between the Acceptable and Undesirable Zone is the Intervention Zone. Buildings that fall within this zone may or may not pose severe impact on the environment, depending on the site context and the design measures adopted by the designers. An example of a development that falls within this zone is Soleil @ Sinaran, which measures 94m in length by 146.5m in height.



Soleil @ Sinaran © architects61



Building Spacing

As the framework is intended to be applied to a single block, an important consideration is the appropriate spacing between blocks so that they appear visually as two or more separate buildings. Hence, the study team has worked out a set of minimum building spacing guidelines for assessing building massing. These minimum spacing standards vary according to the proposed storey heights of developments, and are intended to visually break the massing of a building into separate blocks.

Architects and developers can choose to propose gaps narrower than the suggested minimum spacing between the buildings. However, buildings with gaps narrower than the minimum spacing guide will be treated as a single block for purposes of evaluation against Chart 1. For instance, using the example of Soleil @ Sinaran, as the 7.5m spacing between the two blocks is below the minimum building spacing standard of 15m for a 36-storey development, the two blocks are evaluated as a single block against the chart.

Number of Storeys	Building Height	Minimum Building Spacing ²
1-18	≤68m	10m
19-24	> 68m – 90m	12m
> 24	> 90m	15m

Performance Criteria for Developments Within Intervention Zone

For developments falling within the Intervention Zone, the impact is assessed based on a set of performance criteria. Such criteria focus on the extent to which the design can minimise and mitigate the 'wall' effect of a development. Another consideration is how well the development relates to the scale and context of the surrounding environment which in turn would affect one's experience of the city. For instance, in an area where developments are largely low-rise and comprise heritage buildings, constructing a tall, massive and modern development may look out of place.

Based on the above, the performance criteria for evaluation of developments within the Intervention Zone are as follows:

a. Whether the development enhances the streetscape

The impact of a wall-like development is most felt if the block is lined close up along a public road. This creates a wall-like effect and reduces the sense of greenery at the street level, since views of the development's greenery would not be visible from the street. Therefore, designers are encouraged to "space out" and juxtapose their development blocks so that pockets of spaces and greenery are created along the street. This visually enhances our "garden in a city" image (see Figure 3).



Blocks lined up closely along the road create a wall-like impact and reduce the sense of greenery at the street level



Careful positioning and spacing out of blocks to create pockets of greenery along the street

Figure 3

² Minimum building spacing will be evaluated on a case by case basis for very tall buildings. For developments where two or more blocks fall within different storey height bands, the height of the taller block will be used to determine the minimum building spacing.

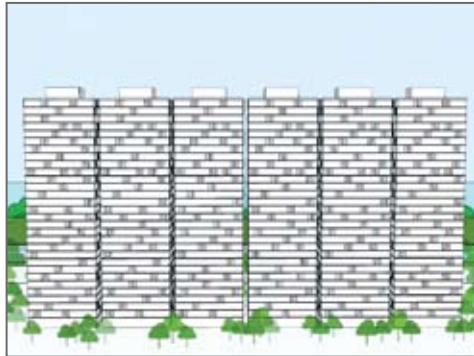
b. Whether the surrounding developments can also view major green and blue public spaces

Views to major public spaces such as large parks (town parks or larger parks) and key waterbodies should also benefit more developments where possible. The placement and design of development blocks should be sensitive to minimise blockage of views towards these public assets from surrounding areas as far as possible (See Figure 4). This criterion encourages developments not to “hog” the skyline. Instead, designers and developers are encouraged to take a broader view and carefully consider the placement of blocks, right down to the design of the landscaping and boundary interface so as to contribute positively to the public realm.

Various urban design measures can be used to achieve this. For instance, view vistas and urban windows permit visual penetrations into public

spaces both at the street level and high levels. They can be strategically placed to frame an object of visual interest or scenery. This enhances the spatial awareness and enjoyment of these public spaces. The creation of view vistas and urban windows also helps to punctuate a solid building block and reduce the wall-like effect of a large urban massing.

Designers can also consider measures to increase the permeability of a development. Permeability is important in a dense urban environment, as it provides visual relief and contributes to human comfort by permitting wind movement. Permeability can be achieved in many forms, such as having sky terraces at various floors of a building and designing slender blocks with wider spacing in between.



Several blocks are placed closely together, blocking off views to public assets beyond



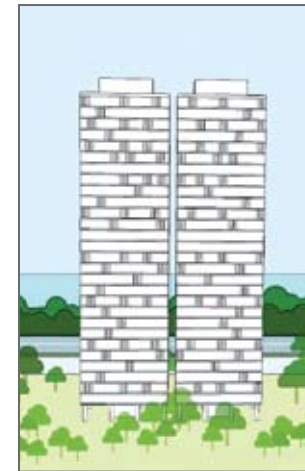
Sensitive placement of blocks to minimise blockage of views towards public assets

Figure 4

c. Whether effective mitigating measures have been adopted to break down building massing

For proposals with large blocks (within the Intervention Zone), some mitigation measures could be taken to visually “scale down” the building massing (See Figure 5). For instance, the height of the buildings within the same development can be varied to create more interesting building massing, which would also enhance the skyline. Instead of flat roofs, more interesting building ‘crowns’ would break down the massing of large developments. Alternatively, landmark blocks or components can also be strategically located within a development to provide a visual focal point. By juxtaposing the landmark block or component with the rest of the development, the overall building massing can be broken down.

Another design measure to consider is the façade articulation of buildings. In an urban environment, a well-designed façade not only considers the local context, but also the environmental conditions and the interior of the building. In designing a façade, considerations should be given to its articulation – the expression of the parts and how the parts fit into the whole. A well articulated façade emphasizes the architectural elements (e.g. windows, balconies, sunshades, surface texture, etc) to create visually interesting patterns or rhythm, which in turn help to visually break down the overall building massing (See Figure 6).



Blocks are placed with a narrow gap, and the building massing is not effectively treated. This creates a wall-like impact along the street



The use of mitigating measures, such as sky terraces and interesting roof forms helps to break down building massing

Figure 5



Figure 6: The effective use of colourful projections and articulated fenestration adds interest to the building facade

The provision of generous and luxurious landscaping and greenery can also soften the hard edges of a massive building and add variation to the texture of the façade (See Figure 7). In doing so, the greenery also beautifies the neighbourhood with soft, natural elements. Greenery and landscaping can be introduced in many forms such as sky terraces, landscape decks, green walls and green roofs.



Figure 7: Green walls and luxurious landscaping soften hard edges of developments

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Application of Performance Criteria

Developments that fall within the Intervention Zone but have satisfied the three performance criteria above are deemed to have addressed and minimised the impact of the development on the surrounding. One example is Soleil @ Sinaran. Although the development falls within the Intervention Zone, it fulfills the three performance criteria as illustrated in the table below.

Performance Criteria	Evaluation	
Whether the development enhances the streetscape	Views are provided into the development from Sinaran Drive. The communal landscaped areas provided are visible from road	✓
Whether surrounding developments can also view major green and blue public spaces	The development does not block views to any major public spaces or key assets such as large parks, water-bodies or the sea	✓
Whether effective mitigating measures have been adopted to break down building massing	Generous greenery is provided at communal areas and the sky terrace at 20 th storey. The façade treatment also helps to break down the massing of the development	✓

Preserving Real Estate Value

Minimising wall-like developments not only safeguards an attractive living environment but also preserves and enhances real estate values. Real estate does not exist as individual developments. Rather, real estate derives its value by being part of a larger context within the built environment. Hence, the real estate value of any single development does not just depend on the qualities of the development itself, but also on the attractiveness and amenities in the larger neighbourhood.

Seeing things from this perspective, it is clear that when a city is filled with many wall-like developments, both the living quality and real estate values will be adversely affected. Hence, taking steps to address the potential concerns of wall-like developments will safeguard and enhance existing real estate values on a precinct level. If a development is sensitively planned and designed, this can result in a win-win situation for all and enhance real estate values for the precinct.

Conclusion

Safeguarding a pleasant and attractive living environment requires the collaboration of developers, designers, planners and the authorities. Developers commission projects and work closely with designers, planners and the authorities in shaping the physical built environment of Singapore. Given the concerns of wall-like developments, this industry guide of good practices is a timely initiative to alert building professionals to be sensitive to the surrounding context of any development project. It serves as a pre-emptive measure and helps sensitize the building industry to adopt a more holistic view at the early stages of the design and development process. Within this framework, designers still have the freedom to explore a wide range of building massing and design treatments. While the ideas suggested in this good practice guide to minimise wall-like developments are by no means exhaustive, it is hoped that the framework worked out by the joint study team will encourage designers and building professionals to think more creatively and come up with innovative and sensitive designs which will enhance property values and contribute towards making Singapore a highly liveable city in a garden.

The growth and development of our city does not have to come at the expense of our quality of built environment. Through ongoing collaboration between the public and private sectors within the real estate and building industries, our small city state can continue to prosper as a vibrant economic hub and global city of distinction in Asia, providing a built environment that is green and pleasant for all its inhabitants.

Jointly prepared by:

