CHAPTER 12

Shaping Singapore's Cityscape through Urban Design

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Introduction

Singapore's cityscape—a deliberate assemblage of modern skyscrapers, historic character buildings, green spaces, and active waterfront—has contributed to the nation's growing image and distinction as a world-class city. Many tourists, and younger Singaporeans for that matter, might find it difficult to believe that Singapore's signature skyline came into being mostly within the last 50 years. Over a span of five decades, Singapore's land mass has grown at an average rate of 7,540m^2 per day—a total of some 24% increase in land.[1] Much of the major reclamation works have been ongoing since the 1970s in an effort to extend the foreshore south of the city centre, thus creating prime real estate for high-value and high-density projects. Underpinning this physical manipulation and development of land is a strategic design-led framework which has influenced the urban form and functions of our city.

Urban design is a tool and process for shaping the qualitative texture of a city, producing attractive yet legible urban spaces which, in turn, help to establish a unique place identity for the city as well as create the stage for urban life. In urban design, attention is not only accorded to the overall structure of the city but also the form of buildings, the spaces between buildings, the quality of streets, the connectivity of pedestrian routes, as well as the natural and historical assets of the urban landscape. A comprehensive urban design approach can give a city an intelligible urban language, making the aesthetics and experience of the city memorable and pleasant for both locals and visitors alike. In the case of Singapore, the need for and benefits of an integrated approach to urban design were acknowledged in the 1970s following the initial years of independence.

[1] Singapore's land area in 1965 was 581.5 km^2 [see Chia *et al.* (1988) *The Coastal Environmental Profile of Singapore*, p. 34] and in 2015 it was 719.1 km^2 [see Statistics Singapore (2016) 'Latest Data'; accessed from http://www.singstat.gov.sg/statistics/latest-data#16].

Singapore's city centre in the 1970s would be unrecognisable by today's standards. Shanty slums, deteriorated shophouses, congested streets, and polluted waterways were the urban challenges which faced our young nation (see Chapter 1 by Alan Choe). The Urban Renewal Department (URD), which operated under the helm of the Housing & Development Board (HDB) between 1966 and 1974, worked in conjunction with the HDB's housing programme. By coordinating the stages of land acquisition, land clearance, and resettlement of affected residents and business owners, vast tracts of prime land in the city centre could be made available for comprehensive redevelopment. The main priority, in those early years of nation-building, was to provide proper homes for Singapore's burgeoning urban population by constructing mass housing in the most efficient and expeditious manner. Urban design, at that time, was limited in scope; nevertheless, the groundwork for the genesis of an integrated urban design framework that would later ensue was provided by earlier site-specific design interventions in the renewal of Singapore's Central Area.

As a result of its increasing role and significance in the transformation of the Central Area, the URD gained greater autonomy in 1974 when it disbanded from the HDB to form an independent statutory board, renamed the Urban Redevelopment Authority (URA), under the Ministry of National Development (MND). Under the newly-formed URA, the Government Land Sale (GLS) programme which existed since 1967 was continued. Through the GLS tender process, a deliberate emphasis on good architectural design emerged alongside greater convictions that design, in its own right, can leverage Singapore's image as a vibrant financial hub. Thus, the start of a comprehensive urban design strategy for the whole of Central Area was sparked.

In this chapter, we aim to uncover the underlying processes and guiding principles of urban design that have contributed to the physical and, in turn, visual transformation of Singapore's Central Area. Moreover, by addressing the significance of urban design from a place-making perspective, we also reveal the key role of urban design in generating a people-friendly city that can be enjoyed by all.

Central Area: Urban Design Vision and Mechanisms

The Central Area,[2] encompassing 2% of Singapore's total land area and characterised by its varied topography and diverse urban fabric, is a complex environment with a unique mix of challenges and opportunities that distinguishes it from other parts of Singapore. One of the key districts of the Central Area, and today the epicentre of Singapore's cultural activities, is the Civic District. Here, the beginnings of Singapore's

[2]The URA's planning map of Singapore is divided into five regions: Central, North, North East, East, and West. Each region is further divided into planning areas, totaling 55 planning areas island-wide. Central Region comprises 22 planning areas of which 11 form a boundary known as Central Area.

urban planning and administrative foundations can be traced to historic roads, parks, and buildings established from the era of Sir Stamford Raffles's 1822–3 Plan of the Town of Singapore. In essence, then, the Civic District is arguably the soul of Singapore's city centre as it is communicative of our nation's past and future in both colonial and modern terms. Situated near the Civic District is another significant district—the Central Business District (CBD). Evolving through nearly 200 years from a modest entrepôt to a world financial hub, the CBD of today (a contemporary rendition of its early colonial prototype) plays a significant role in Singapore's survival within the global economy. However, when the 1985 global economic recession arrived on the shores of our city-state, the CBD was first to take a sharp hit, thus prompting the government to reassess Singapore's economic strategies (see Chapter 3 by Philip Yeo). At the same time, the recession created an impetus to re-think the approach of urban design towards rejuvenating the city centre and enhancing Singapore's image as an attractive place to invest and conduct business.

The Structure Plan

In 1982, a comprehensive review was undertaken by the URA for the Central Area (URA, 2011a, p. 6). The aim of the exercise was to create a coherent urban design strategy that would influence the organisation of future growth and development emanating from the Civic and Central Business districts. Given the historical, economic, and cultural significance of these two districts, a thoughtful urban design strategy was needed to rationalise and plan for growth and development that was sensitive to the urban environmental quality of the city centre (see Figure 1). This urban design strategy took shape in the form of a Structure Plan, a tool which helped to guide and coordinate development proposals while identifying patterns and areas for future comprehensive redevelopment, conservation, and pedestrian circulation (URA, 1984, p. 6). The Structure Plan not only considered the intended land uses and development intensities set out by the Master Plan but also, at a more qualitative level, the overall physical form and skyline character of the city centre. In this way, the Structure Plan served as the common language between the various planning agencies by bringing the key urban elements together in a cohesive outline with strategic directions for the future growth and development of the Central Area.

The Structure Plan contained four strategic directions. Firstly, the Structure Plan identified three parallel 'corridors'—Ophir-Rochor Road Corridor, Orchard Road Corridor, and Upper Pickering-Cross Street Corridor—running in the northwest-southeast direction and providing logical links to future developments on the then newly-reclaimed land parcels which were collectively called Marina City (see Figure 2). The three corridors also enabled significant historical terrain to be retained as integral features of the overall cityscape. For example, the Upper Pickering-Cross Street

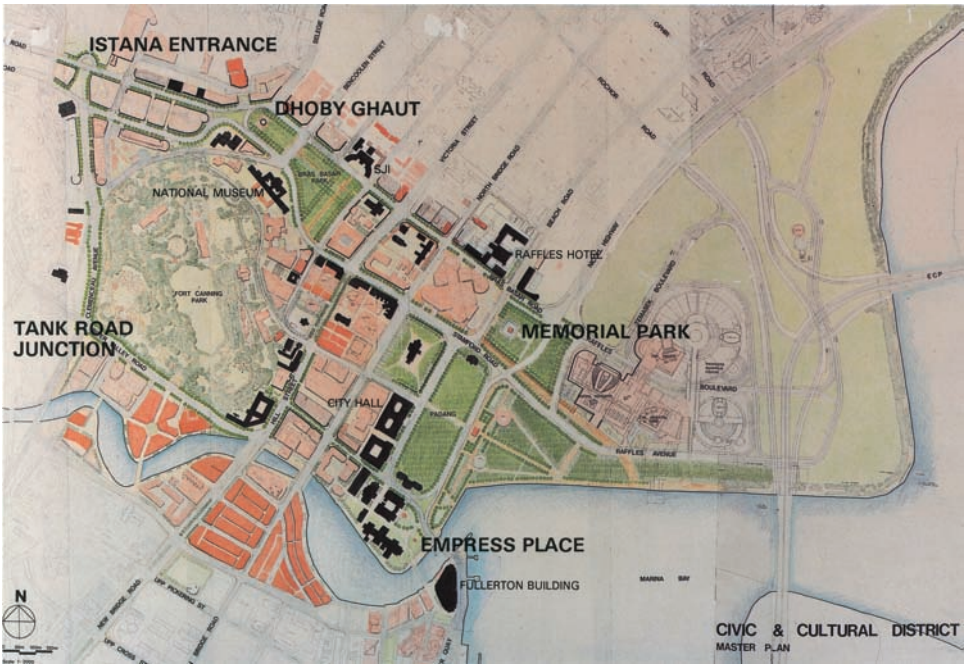

Figure 1. Civic & cultural district existing condition plan, 1988.
Source: Urban Redevelopment Authority.

Corridor, with its northwest extremity along Havelock Road, passes through two key physical landscape features: the Singapore River on one side and Pearl's Hill on the other. Likewise, the Orchard Road Corridor is flanked by Fort Canning Park to the west and the Istana grounds to the east. The Ophir-Rochor Road Corridor runs laterally along the other side of the Istana grounds.

Bisecting the three corridors in a southwest-northeast direction is the fourth corridor, that is, the New Bridge-Victoria Street Corridor. This corridor is reinforced at several junctions by MRT stations, thus encouraging nodes of high-density developments where accessibility and foot traffic are greatest. At the same time, contiguous street blocks of traditional shophouses with distinct architectural qualities are interspersed between these four corridors, thereby creating an opportunity to bring about a clear pattern of high- and low-rise zones that would contribute to the overall urban form and visual diversity of the cityscape. In this way, the Structure Plan also proposed the selective conservation of heritage districts and buildings with historic and architectural merits.

In this second strategic direction of the Structure Plan, conservation was seen as a parallel effort to complement the nation's drive towards modern city development, where the physical reminders of our historical legacy would lend Singapore a unique personality distinct from other cities. Thus, the Structure Plan identified Chinatown,

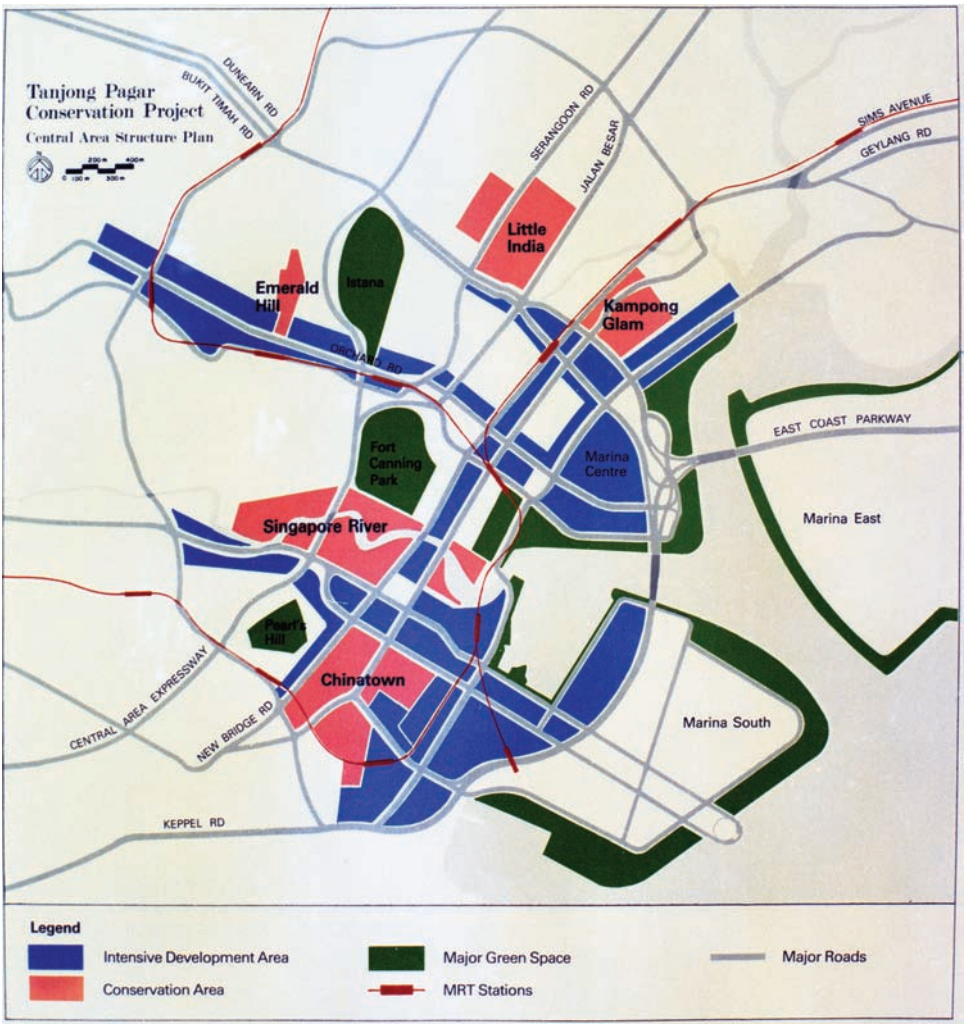

Figure 2. Central area structure plan, 1986.

Source: Urban Redevelopment Authority.

Kampong Glam, Little India, Singapore River, and Emerald Hill as districts worthy of conservation as they provide the city with character and convey a sense of time and place that is part and parcel of Singapore's social memory. Furthermore, the Structure Plan also suggested that these historic areas, when comprehensively planned and integrated with modern development, can serve as recreational and leisure centres for locals on weekends while benefiting the tourism industry as well.

Thirdly, in addition to identifying areas for conservation, the Structure Plan also specified three districts for concentrated, high-intensity developments that would help boost Singapore's economic growth. Under the Structure Plan, the Golden Shoe

District was to be built-up further so as to increase the supply of office blocks for new banking and financial enterprises; in this way, enabling the young city-state to mature into a global business hub. The Orchard Road District, which doubles as an arterial corridor in the Structure Plan, would be developed into a hotel and shopping belt for the growing tourist trade. Finally, the Golden Mile District—which contained Singapore's initial GLS sites: Golden Mile Complex, Golden Mile Tower, Merlin Hotel (now The Plaza), and Shaw Towers—would continue to grow into a mixed-use area comprising apartments, offices, hotels, and other commercial developments. Here, as well as for other districts and precincts in the Central Area that were planned for new growth, design guidelines were imposed to control not only land usage but also the shape, size, and height of the buildings that can be permitted (also known as 'building envelope'). In this way, the Structure Plan set out a comprehensive vision for how the city would look and feel in terms of form and functionality.

Lastly, the Structure Plan demarcated areas of major green spaces. Existing parks like Pearl's Hill, Fort Canning, and Istana were retained while the waterfront perimeter around Marina Bay and Kallang Basin were proposed as a continuous stretch of green space. The incorporation of green spaces in the Structure Plan and their purposeful relationships with other key elements of the plan had been lacking in earlier conceptual schemes for the Central Area. The burgeoning attention to urban design in the 1980s spurred continued efforts in subsequent decades towards achieving a cohesive cityscape for the Central Area that is not only functional but also aesthetically distinct and memorable.

Urban Precincts and Detailed Design Principles

Detailed urban planning and design at the level of individual districts and precincts were alluded to in the Structure Plan and later formally developed following the 1991 Concept Plan, which resulted in the systematic preparation of Development Guide Plans (DGPs) over a five-year period between 1993 and 1998. The DGPs served as local area plans for each of the 55 identified planning areas in Singapore, providing strategic directions for future urban development through a SWOT (Strengths, Weaknesses, Opportunities, Threats) method of analysis. Today, the Central Area comprises 11 of the 55 planning areas in Singapore: Newtown, Orchard, River Valley, Outram, Singapore River, Museum, Rochor, Downtown Core, Marina East, Marina South, and Straits View. The DGPs also helped to steer development programmes towards a clear set of design principles in order to achieve the outcomes desired for individual planning areas. At the district level, urban design can shape the overall organisation of land, influence the densities at which the land would be developed, determine the massing and heights of future buildings, and identify significant place characteristics, assets, and vistas to be enhanced. However, it is at the precinct level

where urban design can have a more direct role to play in choreographing the ambience, experience, and identity of place.

Two precincts in the Central Area have ongoing urban design reviews: Orchard Road and Singapore River. Orchard Road, once a rural road flanked by hillocks of fruit orchards, nutmeg plantations, and pepper farms, is today a five-lane arterial boulevard with commercial developments on both sides creating a continuous shopping and entertainment belt. Despite its length of more than 2 kilometres, Orchard Road has a well-defined streetscape unified by roadside tree plantings and wide pedestrian promenades. These features are part and parcel of the overall urban design vision for the precinct, which also includes guiding principles for building setback, public space provision, signage, and lighting. In terms of building setback, a distance of 7.6 to 11.6 metres from the road reserve is consistently applied to determine the building line for both sides of Orchard Road in order to create the effect of a grand boulevard. However, to encourage an interesting variety of building fronts, the urban design guidelines allow up to 40% of the building façade to be recessed from the building line and up to 50% of the podium façade to overhang within the building setback (URA, 2013a). Furthermore, to enhance the continuity of building edges along Orchard Road, all developments are required to build up to the common boundary lines, thus creating party-walls which open out possibilities for both indoor and outdoor pedestrian connectivity.

The urban design parameters for Orchard Road have an impact not only on building form and frontage but also on the experiential quality of the resultant pedestrian promenade and pocket public spaces. As the stage for urban life, accessible public areas can contribute to the vibrancy of the street by providing the space for pedestrian activities, fringe retail, and organised events. Along Orchard Road, selected sites are required to incorporate public spaces within the development's private boundary lines; in this way, creating activity nodes for street life. At the same time, design attention to signage and lighting has also contributed to the day, night, and seasonal ambience of Orchard Road. For example, the annual Christmas Light-Up, a joint initiative of the public and private sectors, transforms the everyday streetscape of Orchard Road into a festive display of lights, decorations, and street installations. Through this combination of urban design and place programming, Orchard Road has successfully built its own image and identity as one of the world's greatest shopping streets.

The Singapore River is a legacy of Singapore's beginnings as an entrepôt trading hub. However, with the containerisation of cargo, and as Singapore's economy matured and modernised over time, the Singapore River not only became obsolete as a medium for trade but also began deteriorating after decades of pollution from shipping-related activities and waste discharge from cottage industries further upstream. A large-scale cleaning-up of the urban waterways was initiated by the then

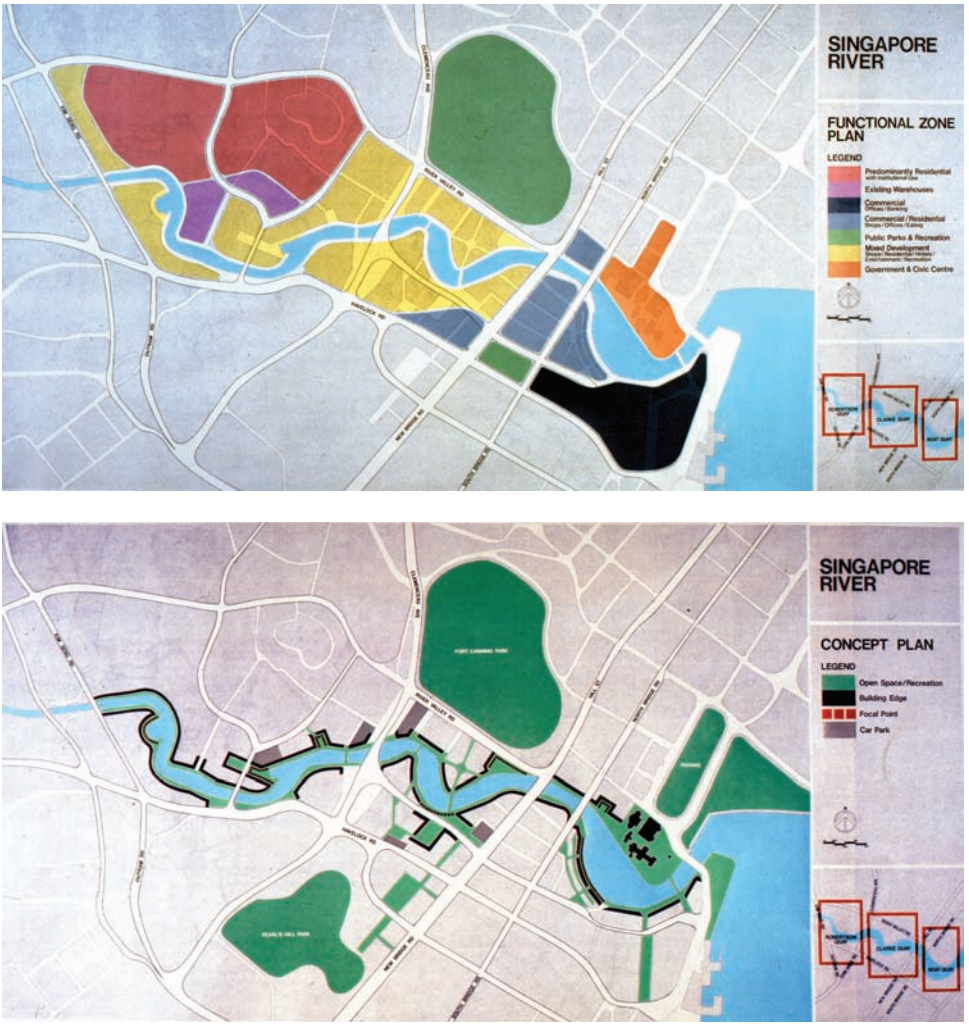

Figure 3. Singapore river concept plan, 1985.

Source: Urban Redevelopment Authority.

Prime Minister Lee Kuan Yew in 1977. The Clean Rivers Campaign was a 10-year-long effort, after which the URA could develop a concept plan for the revitalisation of the Singapore River. Dividing the Singapore River into three zones—Boat Quay, Clarke Quay, and Robertson Quay—the concept plan gave each zone a different character through its own unique set of design solutions (see Figure 3).

The shophouses and warehouses along the Singapore River were proposed by the concept plan to be retained for adaptive reuse. Adaptive reuse is a process of making an old building or site useable for functions other than its original planning and design intent. In Boat Quay, for example, shophouses have been converted primarily for use as

eateries; thereby serving as a popular locale for the office crowds during lunch and dinner, given its proximity to the CBD. Meanwhile, at Clarke Quay, the design goal was to rehabilitate clusters of existing low-rise warehouses of good architectural value. These warehouses, with their larger span, were viewed as ideal for a mix of uses including restaurants, studios, entertainment, and commercial showrooms. It was also proposed that the internal streets be pedestrianised to create an active public realm in the form of an outdoor mall. Finally, given the large land parcels at Robertson Quay, the concept plan recognised the opportunity for new and innovative developments which could integrate the façades of existing warehouses. These developments would accommodate a mix of residential, hotel, entertainment, and cultural uses, thus requiring greater need for comprehensive planning. In order to tie the three distinct zones together to form a common Singapore River identity, three key overarching urban design principles were conceived: (1) to set back buildings away from the river and provide a wide waterfront pedestrian promenade which will form a continuous loop around the river; (2) to control the building height limit along the river banks at four storeys to complement existing conserved buildings and preserve a sense of human scale; and (3) to enable alfresco dining and implement landscaping along the river edge to enhance the ambience and experience of the riverine.

Historic Districts and Design-Led Conservation

The legacies of Singapore's colonial past and cultural diversity can be traced in the physical fabric of our city—that is, in the style of architecture, form of buildings, and character of historic locations. However, prior to the 1980s, early initiatives to preserve select sites of heritage significance were commonly viewed to be counterintuitive to Singapore's economic progress, particularly as urban renewal efforts were simultaneously being carried out in the older districts of Central Area. In 1984, then Second Deputy Prime Minister for Foreign Affairs, Dr. S. Rajaratnam, emphasised the value of creating social cohesion through a shared sense of history and, hence, the importance of conservation in helping to strengthen these links: "A sense of history is what provides the links to hold together a people who came from the four corners of the earth. Because our history is short and because what is worth preserving from the past are not all that plentiful, we should try to save what is worthwhile from the past from the vandalism of the speculator and the developer, from a government and a bureaucracy which believes that anything that cannot be translated into cold cash is not worth investing in" (Rajaratnam, 1984).

Today, there is heightened awareness on conservation issues, yet efforts towards this end are no less challenging amidst the drive for urban growth and development to support an increasing population. Therefore, redevelopment projects with elements of conservation, as exemplified by the China Square Central and Bugis Village schemes,

help to elevate the role that conservation plays in not only improving the physical conditions of aged buildings and districts but also strengthening the heritage of place and the diversity of Singapore's social identities. In doing so, strategic conservation actions have the potential to revive the vibrancy in old yet significant areas while celebrating the social and cultural building blocks of the nation. It is important to note as well two key policies that have been instrumental in facilitating conservation efforts in the Central Area.

Firstly, the Control of Rent Act, introduced in 1947 and enacted in 1953, sought to protect tenants from excessive rent increases by unscrupulous landlords during the post-war era when the supply of housing was scarce. The control of rent, however, inadvertently deterred landlords from investing in upgrades to their ageing properties. These properties, predominantly pre-war buildings, began to deteriorate over time. The lifting of rent control in 1988, followed by the gazetting of 10 conservation areas in 1989, motivated more and more private property owners to upgrade and improve the maintenance of their buildings (Dale, 2008, p. 45). Today, there are over 7,000 buildings that have been gazetted for conservation island-wide in Singapore (URA, 2011b, p. 4).

Secondly, the fragmentation of land created by single-lot ownership made amalgamation of land parcels for comprehensive development a challenge. Hence, the Land Acquisition Act (LAA) was introduced in 1967 to enable the government to acquire land from private owners for redevelopment that served a public purpose. The Government Land Sales (GLS) programme is a mechanism for the sale of State-owned land to the private sector at a specified tenure. First launched in 1967 to facilitate urban renewal in the Central Area, the GLS programme has helped to drive economic growth in real estate and property development while also facilitating the implementation of key development plans (URA, 2002). Together, the LAA and GLS programme have created unique opportunities for both conservation and new development, where structures of heritage value are retained on site and incorporated in the tender documents as part and parcel of the design guidelines.

In Singapore, urban conservation not only serves a public purpose in terms of safeguarding significant and meaningful aspects of our built heritage for future generations but also plays a strategic role in shaping the image and character of the city centre. The Structure Plan, which earmarked five areas for conservation, spurred the beginnings of concerted conservation studies by the URA. In 1986, the URA identified six historic areas for preservation through comprehensive planning: Chinatown, Kampong Glam, Little India, 'Heritage Link' (Fort Canning Park to Empress Place), Singapore River, and Emerald Hill Road (Aleshire, 1986). Detailed concept plans were developed for the historic districts and published in 1988; these plans illustrate not only the conserved buildings and monuments but also sites with proposed developments and envelope controls as well as a system of public spaces that include open spaces, plazas, pedestrian

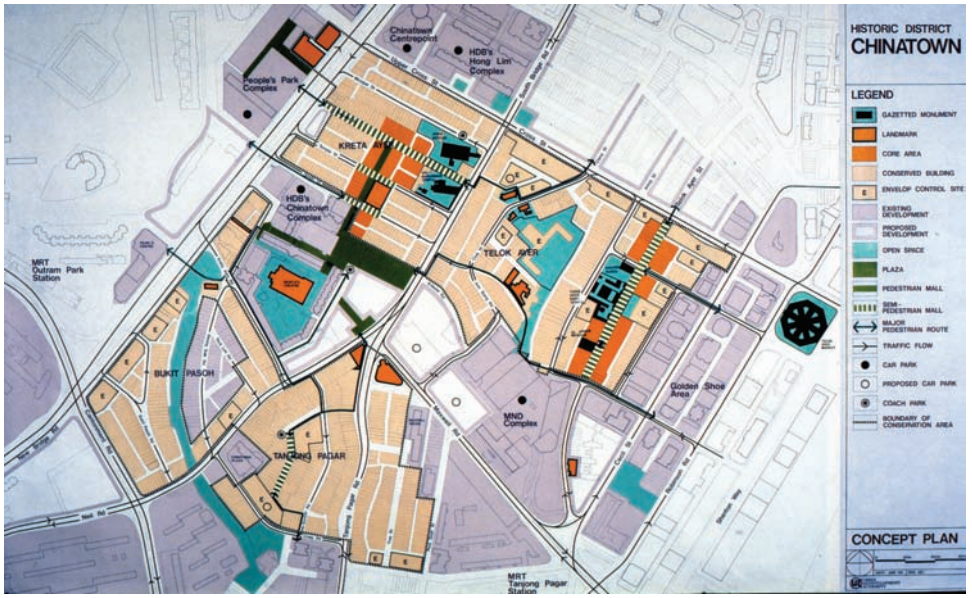

Figure 4. Chinatown historict district concept plan, 1988.
Source: Urban Redevelopment Authority.

malls, and semi-pedestrian malls (see Figure 4). A significant step in Singapore's conservation history was achieved in 1989 when the initial list of six historic areas expanded to 10—Chinatown (Telok Ayer, Kreta Ayer, Tanjong Pagar and Bukit Pasoh), Little India, Kampong Glam, Singapore River (Boat Quay and Clarke Quay), Cairnhill and Emerald Hill—all of which were gazetted for conservation in the same year. As a lasting result of conservation and urban design efforts over the past 25 years, there are today approximately 5,000 buildings in the Central Area which have been conserved (Boey, 1998, p. 138). Two key approaches to urban design vis-à-vis urban conservation are often well-employed in such areas; they include envelope controls for in-fill developments and adaptive re-use of heritage buildings. These two approaches will be briefly discussed in turn through the the precinct examples of Bras Basah-Bugis and Cuppage Road.

As an extension of the Civic District and Museum Planning Area, the Bras Basah-Bugis precinct has a rich variety of uses, building types, and architectural styles ranging from shophouses to former school buildings and places of worship. In the 1980s, Bugis Street, infamous for its nighttime subculture, was sanitised by the authorities and recreated in the same likeness albeit opposite the original site (Kuah, 1994, p. 178–179). The Bugis area revitalisation efforts received adverse responses from the public, prompting a call for more flexible planning and design treatment towards this unique precinct that would enable arts and cultural activities to emerge and thrive. Given the eclecticism of Bras Basah-Bugis in terms of urban character and

grain, the predominant urban design strategy today for this precinct calls for in-fill developments that are compatible with the surrounding context though subject to stringent design controls (URA, 2013b). Small standalone buildings, for example, are generally located on smaller streets with a four-storey building height limit imposed on selected developments along Albert Mall, Waterloo, Queen and Prinsep Streets. Conversely, larger-scale developments are generally located along major arterial roads where, at the Road Reserve line, they are required to build up to two or four storeys. These design strategies help to create a well-defined streetscape, thus complementing the scale of existing developments. At the same time, the diverse yet complementary patchwork of land uses has produced a variety of activities and amenities that relate to or support the growing arts and cultural scene in Bras Basah-Bugis.

Adaptive re-use, as described earlier in the Singapore River example, can also be used as a conservation strategy to revitalise the development potential of an area that is facing decline. Up until the 1970s, the Cuppage Road precinct was an area of deteriorating buildings and incompatible land uses. Apart from existing shophouses, there

Figure 5. Cuppage road redevelopment area and GLS sites.

Source: Huo and Heng, 2007, p. 139.

were also furniture workshops, motor garages, and a market with backlane hawker stalls. With a prime location along Orchard Road, the Cuppage Road area provided possibilities for a synergistic relationship with the shopping belt and thus was earmarked in the 1970s for comprehensive redevelopment under the GLS programme (Huo and Heng, 2007, p. 139) (see Figure 5). The redevelopment plan called for a mix of complementary uses such as hotels, offices, shops and entertainment. Moreover, the plan also resulted in the rehabilitation and adaptive re-use of two rows of Malaccan-style terrace houses with well-preserved architecture and heritage significance. The side street was transformed into a pedestrian mall and integrated into the planned pedestrian network for the larger area. Elsewhere along Orchard Road, adaptive re-use was adopted on Emerald Hill Road in which Peranakan-style shophouses near Orchard Road were converted for commercial use; and, on Tanglin Road, a row of Tudor-style houses were renovated for re-use as offices.

As illustrated by the two approaches described above, urban design seeks to provide solutions that can help achieve a balance between the often conflicting needs of development and environmental quality. Through careful design strategies and guidelines, places and buildings with vernacular characteristics significant to our architectural and cultural history can remain intact while coexisting harmoniously with new modern developments. At the same time, the design controls allow room for flexibility such that private sector developers and architects can explore and express, within the prescribed envelope, their creativity. Often, however, this channel of urban design is typically addressed within the technical tender documents and architectural drawings for the site; hence, the visibility of urban design is usually hidden until the development is completed and experienced first-hand by its users. To this end, urban design is ultimately concerned with the creation of an orderly yet varied and memorable cityscape for public enjoyment.

Urban Design and Early Public Housing Developments in Chinatown

The Central Area is generally guided along three scales of urban design. At the macro level, the Structure Plan has been instrumental in establishing an overall urban design strategy for the city centre and surroundings. At the precinct level, more detailed urban design principles shape the texture and form of the urban fabric. And, for conservation districts and buildings, special urban design guidelines help to ensure harmonious co-existence between old and new developments. In this section, we will discuss the design thinking and logic behind the creation of public spaces and pedestrian linkages at the street block level. Urban design, after all, is as concerned about defining urban spaces for people and their activities as it is in developing the physical aesthetics of the cityscape. Given Singapore's tropical climate, compact urban fabric, and propensity for high-rise, high-density development, it is pertinent that the city

be designed for walkability, connectivity, and socio-economic vibrancy. One of the finest examples by which we can observe these intentions at play is the pedestrian and public space networks induced through the early public housing developments in Chinatown. Here, we will examine two early public housing projects: Tanjong Pagar Plaza and Hong Lim Complex.

Completed in the late 1970s, Tanjong Pagar Plaza and Hong Lim Complex provided proper housing in Chinatown after the clearance of slum and squatter settlements; in this way, injecting a live-in residential population to help drive economic activities, particularly at night and weekends when the city became void of the office crowd. Both projects demonstrate how thoughtful urban design solutions, which incorporate quality spaces for pedestrian circulation and street life in areas redeveloped for public housing, can help to enhance the Chinatown historic district within which they are sited. Tanjong Pagar Plaza and Hong Lim Complex are illustrative of the early sentiments towards Chinatown's historic fabric and traditional street activities. In fact, this initial urban design emphasis on the pedestrian and public space networks of the two public housing projects in Chinatown predates the URA's 1986 announcement of six historic areas for preservation, which included Chinatown. Subsequently, the Chinatown Historic District Concept Plan was published in 1988, providing a clear urban design programme towards achieving a cohesive pedestrian network and streetscape in Chinatown (see Figure 4). One year later, in 1989, Chinatown was officially awarded its conservation status; by then, of course, Tanjong Pagar Plaza and Hong Lim Complex were inhabited and operating as integral components of the urban fabric.

Tanjong Pagar Plaza: Internal Courtyards and Gathering Spaces

Tanjong Pagar Plaza, situated along Tanjong Pagar Road between Craig Road and Kee Seng Street, was completed in 1977 by the HDB. The mixed-use development is an example of the HDB's second-generation high-rise, high-density public housing complex typology constructed between 1974 and 1977. The complex comprises five residential slab blocks ranging from 18 to 22 storeys and two point block towers placed above the commercial podiums, which house retail services and public amenities such as a kindergarten, post-office, and banks. A two-storey market and hawker centre are also housed in a separate podium block, though linked to the rest of the complex by overhead walkways.

Set within a historic district of low-rise buildings and shophouses, the lower podium blocks of this public housing project were designed to echo the scale of its urban context. Various functional zones were incorporated into the commercial podium, thus paying attention to the human dimension as experienced from the ground level (see Figure 6). One main feature is the internal landscaped courtyard, which runs the entire length of the commercial podium. Formerly embellished with an ornamental pool and rock gardens, it now has an open plaza with a pavilion in the

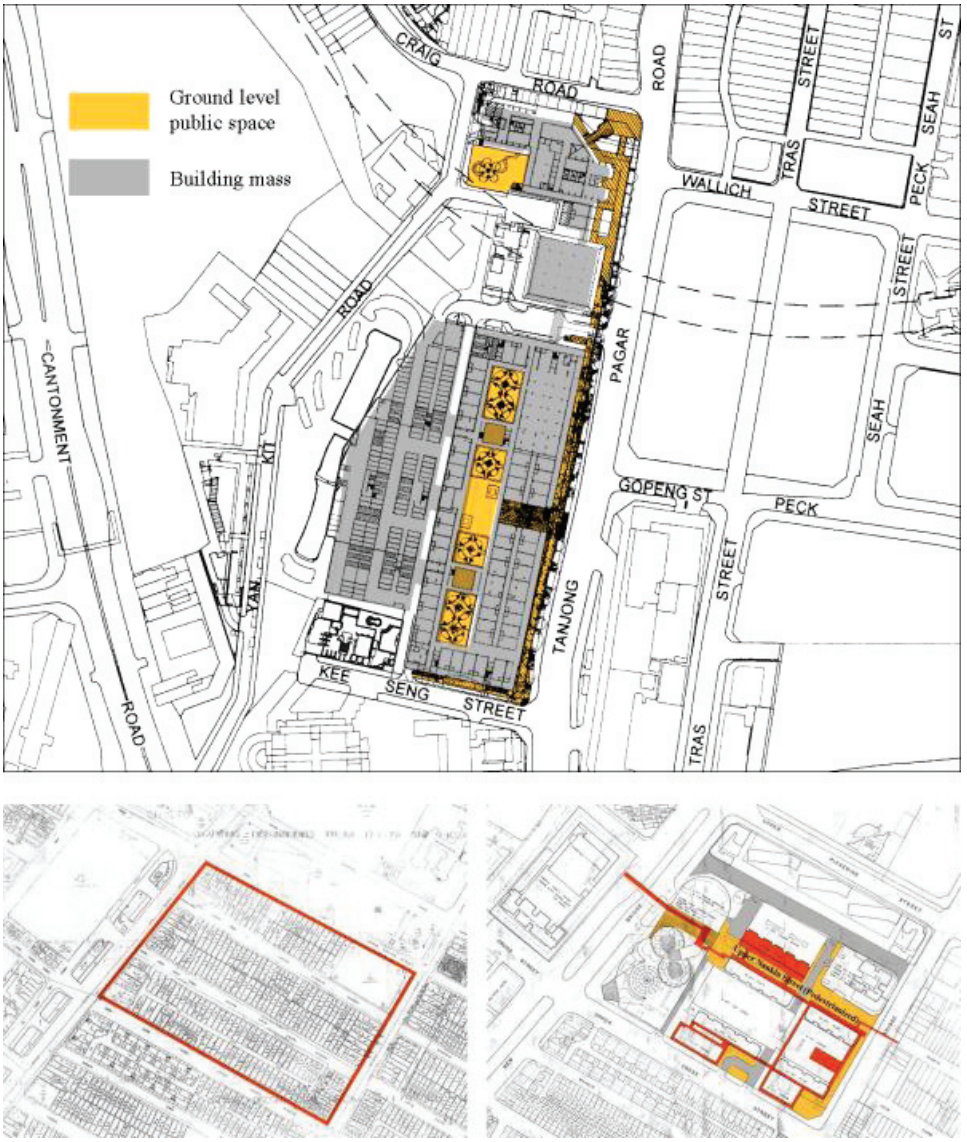

Figure 6. Tanjong Pagar Plaza, ground floor plan (top). Hong Lim Complex, boundary of site on bottom left and network of first (yellow) and second (red) storey pedestrian network on bottom-right.

Source: Adapted by Heng Chye Kiang and Chong Keng Hua.

central courtyard as well as gardens with seats at both ends. Public spaces, as such, were not only incorporated in the design of the complex as a means of providing light and ventilation but also to create an informal setting for social gathering among residents and users of the development. By appropriating the scale of the two-storey commercial

podiums, adding pedestrian walkways with turfing along the sides, incorporating an internal landscaped courtyard, and arranging the slab blocks perpendicular to the main road in a north-south orientation which reduces the impact of such a high-rise development on the site, Tanjong Pagar Plaza and its internal network of public gathering spaces thus became more approachable and welcoming to the pedestrian on the street.

Hong Lim Complex: Re-engaging the Street

Hong Lim Complex, which is flanked on three sides by Upper Hokien Street, Upper Cross Street, and South Bridge Road, was conceived during earlier phases of the Central Area urban renewal programme. Hong Lim Complex was envisioned to be a mixed-use public housing project arising from redevelopment plans for a precinct of dilapidated shophouses which had been identified for urban renewal (see Figure 6). Over 200 shopkeepers, many of whom had been established in the area for generations, were affected by the redevelopment plans (see also Heng, 2009). Although compensation and alternative commercial space elsewhere were options offered by the State to the shopkeepers, the majority chose to stay on-site through the formation of Fook Hai Development Pte Ltd. In 1970, the URA allocated the group a 2,600m^2 site which was then developed into a 22,300m^2 commercial building that is still known today as Fook Hai Building. Completed in 1976, Fook Hai Building comprises a 12-storey tower of office and apartment units on top of a seven-storey podium for retail and office use.

Hong Lim Complex was fully constructed in 1979, three years after the completion of Fook Hai Building. Exemplifying a turn in approach to urban renewal and design response to the urban context, Hong Lim Complex sought to re-engage traditional elements of street life albeit in a contemporary context. In the first instance, the large site was divided into three smaller parcels rather than configured for a single mega-structure. The parcelling of the site not only responded sensitively to the compact urban grain of the surrounding area but also facilitated pedestrian flow between South Bridge Road and New Bridge Road through the pedestrianisation of the former Upper Nankin Street as an internal mall within the complex. The land use and nature of activities along this pedestrianised thoroughfare have persisted despite a major transformation of the built environment. The shops and colonnade at ground level also echo the old five-foot-ways of the surrounding shophouses. Today, the pedestrian street within Hong Lim Complex still flourishes with vibrant street life, thus playing an important role in the Central Area's greater network of public spaces.

Hong Lim Complex consists of five housing slab blocks, ranging from 18 to 20 storeys, situated on four-storey interlinked podiums that house a market, food centre, restaurants, banks, and other amenities. The individual podium buildings were carefully sited in relation to one another, leaving comfortably-scaled street spaces between

the blocks which were landscaped for public use. At the same time, vehicular access into Hong Lim Complex was restricted to certain entrances from Upper Hokien Street and Upper Cross Street, and ushered directly into an inconspicuous eight-storey carpark to minimise its impact on pedestrian circulation.

The two public housing projects of Tanjong Pagar Plaza and Hong Lim Complex were initiated during a time of amplified urban renewal efforts in the Central Area. Although the priority then was to resettle urban inhabitants into proper housing as expeditiously as possible, there was also some scope for design experimentation at the site and building level. Such attention to the visual and physical spaces between building blocks and along the street edges, as illustrated by the two urban public housing developments, point to growing efforts by the government then to employ design and spatial strategies in creating quality environments within public housing. These early design interventions and the initial network of public spaces induced through public housing add to an expanding and richly-layered system of urban public spaces, which today includes other networks such as parks, transportation, and conservation areas.

Planning and Designing the Southern Urban Coastline

As a small island-nation, it is a well-known fact that Singapore has limited natural reserves. Land and water, the two essential resources required to sustain urban growth and economic development, have long been recognised for their value as both commodity and asset. Through decades of extensive land reclamation and water impoundment, new terrain and water catchment areas have been created which not only transform the physical profile of the island but also generate opportunities for economic, recreational, and leisure activities.

Historically, land reclamation in the Central Area was undertaken as early as the 1850s when, under the British colonial administration, a seawall was constructed between Fullerton Road and the former Telok Ayer Market (now the site of Lau Pa Sat). This was subsequently followed in the 1880s by more extensive land reclamation that resulted in land created between Telok Ayer Street and today's Shenton Way. Later, the reclamation of Beach Road and the Tanjong Pagar area ensued (URA, 1987a, p. 4). There was a lull period of several decades until the 1970s when two major projects—the Clean Rivers Campaign and Marina City reclamation—were carried out concurrently with the aim of ramping up growth and development along the southern urban coastline. Today, these efforts have resulted in the production of two urban activity areas: Marina Bay and Kallang Basin. In this section, we explore the role of urban design in guiding urban growth and economic development around Marina Bay. More specifically, we will discuss the design vision and land use strategies for optimising Marina Bay's prime location south of the existing CBD.

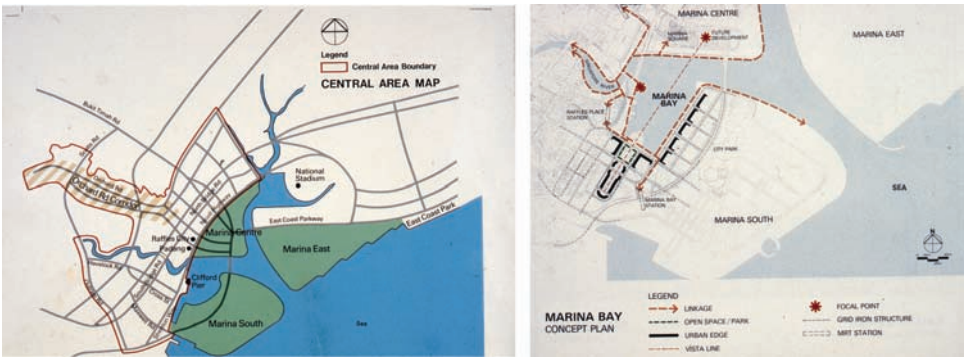

Figure 7. Marina City Central Area Map, 1987 (left). Marina Bay concept plan, 1989 (right).
Source: Urban Redevelopment Authority.

Marina Bay: Waterfront Growth and Development

In the 1960s and 1970s, Singapore and Kallang Rivers were areas where few visitors would tread. Polluted with untreated sewage and littered with debris, the two rivers not only posed health and safety risks but had also become eyesores. Left unaddressed, the deteriorating state and condition of these waterways would have stood in the way of economic progress by hindering investment in the city. The call for a massive cleaning-up and redevelopment of Singapore and Kallang Rivers was announced in 1977 by then Prime Minister Lee Kuan Yew. Carried out over 10 years, the ambitious programme involved the installation of proper sewage infrastructure, implementation of a management system to improve water quality, resettlement of squatters, and relocation of cottage industries including duck and pig farms upstream. At the same time, large-scale reclamation had long been underway since 1971 for the creation of Marina City—an area of more than 650 hectares divided into three land parcels that would extend Singapore's urban coastline further south (see Figure 7). Both programmes were concluded nearly simultaneously, with reclamation works ending in 1985 followed by the completion of the Clean Rivers Campaign in 1987. These two programmes then enabled major plans to be rolled out for the newly created land and shoreline around Marina Bay.

Under the Structure Plan, the dual strategic roles of Marina City were, firstly, to accommodate the future expansion of Central Area functions and, secondly, to provide new opportunities for large-scale urban design that would directly and positively shape Singapore's image on the world stage. The first of three land parcels to be reclaimed was Marina Centre in 1977. Planned as an extension of the Orchard Road Corridor, Marina Centre would function as a terminating node of this hotel and shopping belt. Over the decades, Marina Centre has developed into a commercial centre with hotel, shopping, entertainment, and cultural amenities supporting as well as complementing the CBD nearby. Reclamation of the second land parcel, Marina East, was completed in 1985. Although situated furthest from the CBD, Marina East

presents the greatest potential for active recreation along its water edge given the continuous seafront that it forms with East Coast Park. It was also envisioned that Marina East would fulfil Singapore's long term needs for housing; thus, current interim uses include recreational facilities such as the Marina Bay Golf Course and Bay East Garden shoreline park.

Lastly, we shall now discuss in greater detail the Marina South land parcel which is sited adjacent to the city core and reclaimed in 1985. Viewed as a significant national asset because of its proximity to the financial, commercial, and tourism activities of the CBD, extraordinary preparation was involved in the planning and design of Marina South (URA, 1987b, p. 5) (see Figure 7). Three key urban design strategies were incorporated in the plans for Marina South. Firstly, a gridiron network extending seawards from the existing street pattern of the CBD creates an efficient circulation system with regular-shaped lots. These prime lots determine more-or-less the extent of future building masses and, hence, the eventual texture of the urban landscape. Secondly, to take advantage of the water frontage around the perimeter of Marina South, visual corridors to the sea were planned and the orientation of the grid maximised so as to create the feeling that developments are surrounded by water. Thirdly, several broad sites were initially held in reserve for large-scale developments which today have been realised: a prominent urban park (Gardens by the Bay), a mixed-use hotel and entertainment development (Marina Bay Sands), and a ferry terminal (Marina Bay Cruise Centre).

Bay for Celebration, Spectacle, and Engagement

Marina Bay has contributed not only to the production of Singapore's urban image but also to the making of a vibrant and memorable landscape. Dubbed as the 'Bay for Events and National Celebrations', Marina Bay is deliberately programmed through planning and design to enable activities that incite festivity and delight (URA, 1987c, p. 6–7). With the city skyline as a backdrop, Marina Bay is perpetually poised as a hosting platform for major celebratory occasions. In recent years, Marina Bay has lived up to its moniker as the Bay for Celebration by serving as the central site and focal point of signature events which include the National Day Parade, New Year's Eve Countdown, and Formula One Night Race.

Marina Bay, together with Kallang Basin, is a vital component of Singapore's central catchment system—as both basins are physically and fundamentally linked in their formation of the Marina Reservoir. On one level, the Marina Reservoir is critical to achieving Singapore's future self-sufficiency in its domestic water supply. On another level, Marina Reservoir contributes to the city's public space network by creating an integrated 'blue' and 'green' landscape that can help to enhance the quality of public urban life. Urban design, in this sense, is an important process which can open out new and exciting possibilities for outdoor activities, both day and night.

More specifically, Singapore's tropical climate calls for special attention towards shading and landscaping for outdoor spaces which, in the context of Marina Reservoir, needs to be achieved without comprising open views across the two water basins and, where possible, outwards in the direction of the sea. Related to climatic and environmental issues is the concern for the pedestrian in terms of safety and comfort. Lighting, seating, and landscaping materials are elements that, when integrated thoughtfully into the overall design strategy, enhance the human experience of public space. The Promontory@Marina Bay, for example, is a green-turfed open space with a hard edge providing ample walkways and seating that juts out into the water. On ordinary days, The Promontory serves as an extension of the waterfront promenade which circuits around Marina Bay and, during special events, it can be transformed into an outdoor stage and activity space.

Similarly, the waterfront promenade forming the inner ring around Marina Bay serves as a seamless and accessible interface between the water on one side and private developments on the other. Additionally, this promenade links several public amenities and attractions in a continuous loop (for example, Esplanade Theatres, Merlion Park, historic buildings at Fullerton Bay and Clifford Pier, Marina Bay Sands Integrated Resort, ArtScience Museum, and so on), thus forming a 'string of pearls'. Furthermore, with ongoing plans to phase out the Tanjong Pagar Port in order to consolidate port activities in the western part of Singapore, there is an opportunity to redevelop the port land for high value-add uses and extend Marina South to this new growth area, thereby forming a 'Greater Southern Waterfront' zone in the future (URA, 2016).

Planning and urban design have transformed the reclaimed land parcels and manmade waterbody at Marina Bay into a congruent landscape that is, at one level, geophysically linked by its water harvesting functions and, at another level, spatially connected by view corridors, circulation paths, and complementary land use patterns. As a new geographical area whose existing coastline was completed as recently as 30 years ago, Marina Bay reminds us of the rigour of research and comprehensiveness of planning required to execute a complex urban project of such scale, coupled with the political courage and will to mobilise the plans.

Designing the City for People: A Comprehensive Public Space Network

Through urban design, the unique and memorable moments of a city can be significantly shaped, created, and enhanced. If carried out thoughtfully, urban design efforts can open out exciting opportunities for diverse modes of street life and place-based experiences; thus, contributing to the vibrancy of the public realm. The different types of urban design interventions covered in this chapter—from the macro

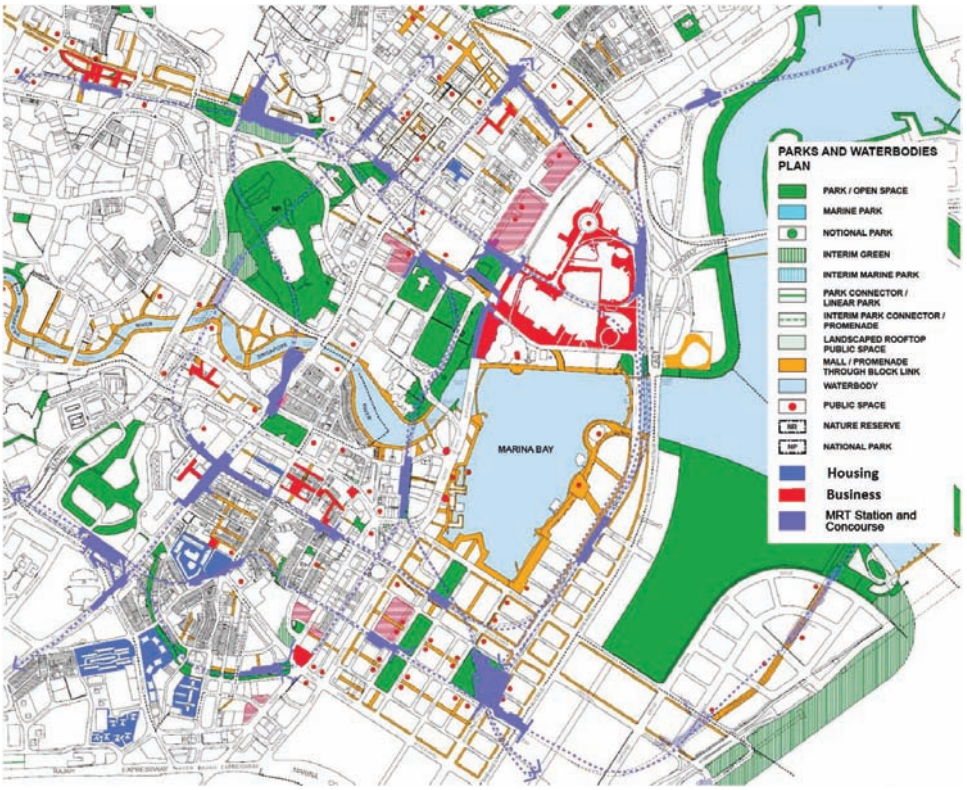

Figure 8. Illustration of the comprehensive public space network in Central Area.
Source: Adapted by Heng Chye Kiang.

Structure Plan to the micro site-specific guidelines and tender documents—have, over time, produced a comprehensive public space network. This comprehensive public space network is illustrated and updated as seen in Figure 8. From such an illustration, we can better visualise the cumulative layers of urban design interventions while also better understanding the fundamental elements contributing to the visual and experiential congruence of the public space network in the Central Area.

Firstly, pedestrian connectivity is a fundamental element of the comprehensive public space network, as it facilitates access and, hence, use of public space. Moreover, designing for different modes of connectivity affords users with options in terms of mobility, and providing for different levels of connectivity enhances the integrated nature of the public space network. A well-defined circulation strategy incorporating pedestrian paths, roads, and rail lines was initially conceived by the Structure Plan. Over the decades, the circulation strategy has expanded to include new mobility corridors which take advantage of the Marina Bay and Singapore River waterbodies, pedestrian overhead bridges (Jubilee Bridge, The Helix Bridge), and underground linkages (Esplanade Xchange, Marina Bay Link Mall). Today,

moving around the Central Area can be achieved by foot, public transportation, or private vehicle—at grade level, above grade, underground, or any combination of these possibilities.

Secondly, well-defined place-based nodes provide points of interest and socio-economic activities along principal pedestrian circuits. These nodes can manifest in various forms, from urban designed precincts and conservation districts to public housing projects which, in and of themselves, contain smaller networks of pedestrian and public space amenities. Tanjong Pagar Plaza and Hong Lim Complex (in addition to Bras Basah Complex, soon-to-be-demolished Rochor Centre, and other similar development typologies), for example, contain an intricate system of pedestrian links and gathering spaces equipped with street furniture—this system feeds into the larger pedestrian network of the surrounding area which includes Chinatown. And Chinatown, as a district which exhibits its own set of conservation and urban design principles, then represents a higher-order node within the grand scheme of the comprehensive public space network. Urban scale, therefore, is another element that affects our cognitive and physical relationship to place and, hence, our experience of the city.

Lastly, environmental assets in the Central Area—such as urban parks and squares, monumental landmarks, and waterbodies—are strung together as part and parcel of a comprehensively-planned, island-wide system of green corridors and connectors. Planning and urban design, for example, have transformed the reclaimed land parcels surrounding Marina Bay into a congruent landscape that is spatially connected by a network of parks, greenways, and view corridors. The Singapore River also illustrates the comprehensive role of urban design in connecting three historic quays along a continuous promenade on both banks of the river. This promenade adds to the public space network with segments that include trees and benches, art installations and sculptures, al fresco dining, and wayfinding boards—all of which play a part in enhancing the environmental quality of the public realm.

The city is a dynamic palimpsest chronicling the evolution of planning and urban design iterations that have, through time, transformed (and continue to transform) the urban landscape. Singapore's urban palimpsest, in spite of its relatively short history, is a dense accumulation of multiple superimpositions and erasures—the result of rapid urbanisation over the past 50 years. Through a close reading of the comprehensive public space network in the Central Area, we glean a better understanding of the hidden and overlapping layers while also recognising the different agendas underpinning and giving rise to the various types and forms of public spaces.

Conclusion

Being small, Singapore needs to be planned well ahead, carefully and creatively. There is long-term benefit in the rigorous process of ensuring that new buildings and future redevelopment schemes relate to the overall cityscape. In other words, beautiful buildings

and distinct districts are desirable but only if they fit our city in a meaningful way. Our cityscape should bespeak our multi-ethnic culture and aesthetic values while reflecting our climate and local conditions. Urban design can help to assemble the various elements of a city into a cohesive visual story that relates to the history and aspirations of the people; in this way, enhancing and illuminating the human dimensions of the city.

Today, the signature skyline which many locals and visitors alike identify with Singapore was created not by accident or serendipity but, rather, through decades of thoughtful and meticulous planning and design guided by the strategic directions of a coherent urban design vision. This urban design vision was laid out in the 1986 Central Area Structure Plan. The Structure Plan not only identified the development corridors, conservation areas, and green spaces for their environmental characteristics and economic potential, but also how these assets would relate to one another. Over the decades, Singapore's cityscape has become more richly varied with: the introduction of new modern precincts emerging next to older established areas; revival and rebranding of heritage districts; configuration of a new southern coastline; and integration of a comprehensive pedestrian and public space network. Singapore's cityscape, as familiar as it is to us today, will likely transform over time to accommodate a growing population and promote economic development.

In spite (or perhaps because) of these challenges, there are special features of our city that will remain unique to Singapore for they reflect our heritage, multi-ethnic culture, and tropical setting. It is crucial, therefore, that the urban design strategies for future land uses and intensities help to generate greater diversity (and tolerance) of urban forms, public spaces, and street activities. In this way, a more inclusive cityscape and resilient economy and society can be created—one that enables land parcellation for smaller developments, affordable areas for rich urban life, and flexible land use zones for greater diversity and resilience. With ensuing demographic and rapid technological developments in the next few decades, the practice of urban design will need to be an exercise of sensibility and flexibility in order for the next bold vision to transpire and guide our city confidently into the future.

References

Aleshire, I. (1986) '6 areas to be preserved', *The Straits Times*, 27 December 1986, p. 1.

Boey, Y. M. (1998) 'Urban Conservation in Singapore,' in: B. Yuen (Ed) *Planning Singapore: From Plan to Implementation*, p. 133–168. Singapore: Singapore Institute of Planners.

Chia, L. S., Khan, H. and Chou, L. M. (1988) *The Coastal Environmental Profile of Singapore*. Manila: Association of Southeast Asian Nations/United States Coastal Resources Management Project.

Dale, O. J. (2008) 'Sustainable City Centre Development' in: T. C. Wong, B. Yuen, and C. Goldblum (Eds) *Spatial Planning for a Sustainable Singapore*, p. 31–57. New York: Springer.

Heng, C. K. (2009) 'Continuity and departure: A case study of Singapore's Nankin Street', in: D. Radovic (Ed) *Eco-Urbanity: Towards Well-Mannered Built Environments*, p. 103–111. London; New York: Routledge.

Huo, N. and Heng, C. K. (2007) 'The Making of State-Business Driven Public Spaces in Singapore', *Journal of Asian Architecture and Building Engineering*, 6(1), p. 135–142.

Joshi, Y. K., Tortajada, C. and Biswas, A. K. (2012) 'Cleaning of the Singapore River and Kallang Basin in Singapore: Economic, Social, and Environmental Dimensions', *International Journal of Water Resources Development*, 28(4), p. 647–658.

Kuah, K. E. (1994) 'Bugis Street in Singapore: Development, Conservation and the Reinvention of Cultural Landscape', in: M. Askew and W. S. Logan (Eds) *Cultural Identity and Urban Change in Southeast Asia: Interpretative Essays*, p. 167–185. Geelong, Victoria: Deakin University Press.

Rajaratnam, S. (1984) 'The uses and abuses of the past', Seminar on *Adaptive Re-use: Integrating Traditional Areas into the Modern Urban Fabric*, (Singapore, April 1984).

Statistics Singapore (2016) 'Latest Data'; accessed from http://www.singstat.gov.sg/statistics/latest-data#16

URA (Urban Redevelopment Authority) (2016) 'Greater Southern Waterfront'; accessed from https://www.ura.gov.sg/uol/master-plan/View-Master-Plan/master-plan-2014/master-plan/Regional-highlights/central-area/central-area/Greater-southern-waterfront.aspx

URA (Urban Redevelopment Authority) (2013a) 'Annex A: Urban Design Guidelines for Developments within Orchard Planning Area'; accessed from http://www.ura.gov.sg/uol/circulars/2013/nov/~/media/User%20Defined/URA%20Online/circulars/2013/nov/dc13-15/dc13–15_Annex%20Av2.ashx.

URA (Urban Redevelopment Authority) (2013b) 'Urban Design Guidelines for Developments within Bras Basah Bugis Planning Area'; accessed from https://www.ura.gov.sg/uol/circulars/2013/nov/~/media/User%20Defined/URA%20Online/circulars/2013/nov/dc13–16/dc13–16_Annex%20A.ashx.

URA (Urban Redevelopment Authority) (2011a) 'Conserving The Past', *Skyline Special*; accessed from http://www.ura.gov.sg/skyline/skyline11/skyline11-02/special/skyline%20marapr%20conservation% 20supplement%20FA.pdf.

URA (Urban Redevelopment Authority) (2011b) *Conservation Guidelines*; accessed from http://www.ura.gov.sg/uol/~/media/User%20Defined/URA%20Online/Guidelines/Conservation/Cons-Guidelines.ashx.

URA (Urban Redevelopment Authority) (2008) 'Celebrate Life by the Waterfront at Kallang Riverside', *Skyline*; accessed from https://www.ura.gov.sg/skyline/skyline08/skyline08-03/text/07.htm.

URA (Urban Redevelopment Authority) (2002) 'Government Land Sales Through the Years: Remaking Singapore's Landscape'; accessed from http://www.ura.gov.sg/skyline/skyline02/skyline02-04/text/landsales2.html.

URA (Urban Redevelopment Authority) (1987a) 'Marina City: Reshaping the Coastline', *Skyline*, 30, p. 3–4.

URA (Urban Redevelopment Authority) (1987b) 'Marina City: A Peek at What Lies Ahead', *Skyline*, 30, p. 5–7.

URA (Urban Redevelopment Authority) (1987c) 'Panning for Urban Waterfronts at Marina Bay and Kallang Basin', *Skyline*, 38, p. 5–8.

URA (Urban Redevelopment Authority) (1986) 'The Year That Was: Developing the City', *Skyline*, 25, p. 4–7.

URA (Urban Redevelopment Authority) (1984) 'Planning for a Better City: A Challenge for URA', *Skyline*, 11, p. 6–7.