

Skyline

Insights into planning
spaces around us



Draft Master Plan 2019 Special Edition

How do you want to live, work and play in future?

Future
living spaces

Rejuvenating
the central area

Global gateways,
local hubs

Skyline



Ho Hua Chew, Nature Society's vice-chairman (conservation committee), takes us on a stroll along the Mandai Mangroves, one of the many natural gems along the rustic coast. Discover other attractions on page 30.

Contents

THINKING ALOUD

03 The Master Plan

SPOTLIGHT

04 In short

05 What is the Master Plan?

How to read it and 5 ways it has shaped Singapore's landscape over the last 60 years

09 Charting the future: what matters

With increasing urban complexities, liveability, flexibility and resilience will become more critical

14 Living spaces for the future

More choices, staying connected and shaping your own spaces

NEIGHBOURHOODS

16 Global gateways, local hubs

Access, opportunities, flexibility + a look at an aerotropolis around Changi

24 On the move

New ways of getting around the city – transit corridors, car-lite precincts

26 Green on the rise

Lusher and more integrated green everywhere and in residential estates

30 Rustic charm

Re-explore natural gems along the coast with Nature Society expert Ho Hua Chew

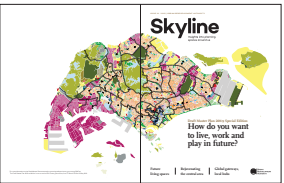
INSIGHT

36 Rejuvenating the central area

Sustaining the appeal of the city centre, from Orchard Road to the Central Business District

42 Seeing the old anew

How residents and stakeholders are keeping memories alive in Jalan Besar and Seletar airbase



Cover and back page | The Draft Master Plan 2019



More information about the Draft Master Plan 2019

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The Master Plan

Who would think that a simple looking plan with a matrix of colours would be so instrumental in not only shaping our environments but our everyday lives? It began in 1958 (when the Master Plan was developed) with a bold vision and a strong determination to make this island better for everyone. 60 years on, it continues to shape our present and future. In developing the Master Plan, many planners, architects, designers, citizens and others gave their ideas and dreamt of new possibilities.

In this special edition, we present the key highlights of the latest Draft Master Plan 2019. It continues to embrace growing aspirations in charting Singapore's future. In spite of increasing and competing needs, the focus remains on ensuring quality living environments for all. Beyond providing housing varieties, future plans will see an even closer integration of nature with the built environments in residential estates. More inclusive spaces are also being planned for all ages, building up active and thriving communities. In envisioning the next generation of work spaces, more integrated and flexible spaces are planned.

Gateways to global markets are enhanced while regional hubs are strengthened to continue to provide jobs closer to homes.

A major focus of the Master Plan is on rejuvenating key neighbourhoods and destinations across the island, from the Rail Corridor to Kallang River. With evolving lifestyle needs, a more diverse and lively range of uses and activities are imagined for Orchard Road and the Central Business District, to refresh their appeal and relevance for the future. In building up Singapore's resilience and sustainability in the long term, many innovative solutions continue to be explored in the use of land and resource management.

Behind the Master Plan are citizens themselves. The Draft Master Plan 2019 is a result of a culmination of a year-long engagement where many stakeholders and residents have been consulted widely on a range of plans impacting their neighbourhoods. We invite you to envision the future with us.



“I think in the future, city pride will come from the fact that Orchard Road is not just about shopping,” says Jack. “It’s about something bigger than that, something that exudes our active and vibrant way of life.”

Jack Backen, director of property consulting firm Cistri, on what the future of Orchard Road may hold for residents and visitors. Cistri led a study on Orchard Road as part of a multi-agency review in refreshing its positioning and envisioning new possibilities.

“A lot of people have told me to throw the furniture... (but) they are important because they provide an emotional tie to the place.”

Thomas Jacob, CEO of the Singapore Institute of Science (SIS), on the value of retaining some of the furniture in the Institute. He is one of the thousands of students who have used the classrooms since 1952. SIS occupies a landmark building at 593 Serangoon Road in the historic Jalan Besar neighbourhood.

5

The number of principles guiding the design of biophilic towns, taking greenery to a different level with a closer integration of nature with living environments. The biophilic town framework has been put in place to guide the development of more sustainable housing towns for the future.

21.5 km

The length of the North-South Corridor that will have continuous bus lanes and cycling paths from Woodlands to the city centre by 2026.



The number of minutes that most will take to reach the nearest neighbourhood centre via public, active or shared transport in future. Bold plans continue to change and shape the way people move around the city.

“The aerotropolis is more than corridors and clusters of aviation-oriented commercial, industrial, and logistics facilities. It consists of living urban places that must be planned and designed as appealing environmental and social realms.”

Dr John Kasarda, a leading airport business consultant, developed the aerotropolis concept to explain the growing focus on building integrated hubs around airports. Future plans envision a vibrant, mixed-use hub being created in the Changi Region to sustain Singapore’s status as a leading air hub.

What is the Master Plan?

More than just colourful splashes on paper, the Master Plan has been instrumental in guiding Singapore’s physical development over the last 60 years.

The Master Plan is one of the most important tools used to plan for and guide Singapore’s physical development over the last 60 years.

It is a statutory plan that shows the land use and development intensity allowed for every plot of land in Singapore. Beyond the colourful splashes on paper, the plan introduces the idea of charting urban growth and development in a concerted and orderly manner and suggests a rational use of land through land-use zoning.

The first Master Plan was published in 1958. It was the first comprehensive development plan for Singapore and saw a major shift from general improvement schemes to the preparation and regular review of a detailed plan regulating the use of land in Singapore. It provided a framework and blueprint of proposed land uses to guide future developments.

The Master Plan translates the vision of the Concept Plan (longer term plan that provides the vision and broad directions guiding Singapore’s development in the next 40 to 50 years) into detailed implementation plans that can be carried out in the next 10 to 15 years. Since then, it has undergone more than 10 revisions to keep pace with evolving needs and aspirations, with the last review carried out in 2013.



How to read the Master Plan

The Master Plan is available online at www.ura.gov.sg under URA SPACE. Zoom in on any area you are interested in or search for an address.

The Master Plan should be read together with the Written Statement which helps to explain zoning and other terms used. In addition to the Master Plan, the Special and Detailed Control Plans also provide additional information on how to guide developments across the island, for example, building height and parks & waterbodies.

This means the land use is being planned (residential in this case), but the gross plot ratio is not finalised.

LEGEND			
	RESIDENTIAL		COMMERCIAL / INSTITUTION
	RESIDENTIAL WITH COMMERCIAL AT 1ST STOREY		HEALTH & MEDICAL CARE
	COMMERCIAL & RESIDENTIAL		EDUCATIONAL INSTITUTION
	COMMERCIAL		PLACE OF WORSHIP
	HOTEL		CIVIC & COMMUNITY INSTITUTION
	WHITE		OPEN SPACE
	BUSINESS 1		PARK
	BUSINESS 1 - WHITE		BEACH AREA
	BUSINESS 2		SPORTS & RECREATION
	BUSINESS 2 - WHITE		WATERBODY
	BUSINESS PARK		ROAD
	BUSINESS PARK - WHITE		TRANSPORT FACILITIES
	RESIDENTIAL / INSTITUTION		RAILWAY
	MASS RAPID TRANSIT		PORT / AIRPORT
	LIGHT RAPID TRANSIT		RESERVE SITE
	UTILITY		SPECIAL USE
	CEMETERY		PLANNING AREA BOUNDARY
	AGRICULTURE		PLOT RATIO BOUNDARY

The number is the plot ratio for the site, indicating the maximum allowable intensity for developments. The higher the number, the more intensively the land can be used.

Each colour shows what every plot of land can be used for, not what is currently on site. This colour shows that the site is for residential development. Go to the legend to find out the specific land use each colour represents.

This is a reserve site. It means the specific land use has not been determined.

Making an impact: 5 ways

Over the years, the Master Plan remains relevant and responsive to changing times. Here are 5 ways the Master Plan has made an impact on Singapore's physical landscape.

- 1

Bold

Bold plans were made from the 1998 Master Plan where more comprehensive planning was carried out through detailed development guide plans (DGP)¹. The approach led to the transformation of areas, for example, the rejuvenation of the Singapore River and the development of Punggol 21 new town².
- 2

Distinctive

A deeper emphasis on greenery and identity from the 2003 Master Plan saw a range of strategies and initiatives implemented to further enhance, protect and celebrate the many natural and heritage gems in Singapore. An example is the Southern Ridges. The Master Plan 2003 first mooted the idea of linking various hill parks for a continuous experience through the building of 2 iconic bridges. The bridges were completed in 2008 and the Southern Ridges has continued to attract many as a unique recreational destination that brings people closer to nature.
- 3

Responsive

Updates and revisions to zoning in the Master Plan has enabled it to remain responsive to changing needs. For example, the 2003 Master Plan introduced the impact-based Business 1 (B1) and Business 2 (B2) zones to enable businesses to vary or change uses according to changing business conditions.
- 4

Inclusive

Over the years, many Singaporeans from all walks of life have contributed to the Master Plan through its variety of engagement and consultation efforts, making it a plan that reflects changing aspirations.
- 5

Transparent

The Master Plan has provided a transparent and open platform for developers, home owners and others in understanding the planning intentions and future plans for every area in Singapore, providing greater assurance and certainty for a more informed property market.

¹ DGPs were introduced in 1987 as a tool to comprehensively and systematically review the Master Plan 1985. They were developed and presented for 55 planning areas. Since then, detailed plans continue to be drawn up but the form of presentation has evolved. Localised plans are now presented under 5 regions.

² The vision for the Punggol New Town was unveiled in 1996 as a region to be developed for 21st century living. Since then, the plans for the area have evolved but it continues to serve as the first model eco-town.



Charting the future: what matters

The Master Plan 2019 continues to explore new paradigms in shaping the way we live, work and play for the future. We look at some of the key urban issues that matter.

Writers **Dawn Lim** and **Serene Tng**

With growing urban complexities, shifting demographics and evolving lifestyle needs, planners not only have to balance competing land uses and cater spaces for all ages, they have to build in greater responsiveness and resilience in anticipating and managing uncertainties.

Forward and careful planning remains the cornerstone in charting the future. And priorities are the same: to maintain a liveable environment, cater for economic growth, optimise resources and adapt to climate change.

Unveiled on 27 March 2019, the Draft Master Plan 2019 has 5 focus areas:

- Provide liveable and inclusive living environments with easy access to amenities and recreational choices
- Enhance gateways to regional and global markets, build up employment areas to bring jobs closer to homes and provide flexible spaces for businesses
- Rejuvenate and enhance key neighbourhoods, precincts and destinations such as the Central Business District and along recreational corridors such as the Rail Corridor and Kallang River
- Improve mobility across the island with more train lines and buses, additional cycling and walking pathways, transit corridors and urban logistics solutions
- Deepen innovations in land use and resource management for a more sustainable and resilient future

In tackling emerging challenges and changing needs, the issues of liveability, flexibility and sustainability will become more critical.



Liveability

Liveability encompasses many aspects from socio-economic and environmental factors to accessibility of public spaces, infrastructure, spread and scale of amenities and ease and availability of public transport. Professor Thomas Schroepfer from the Singapore University of Technology and Design sees neighbourhoods evolving to offer even more plurality of amenities that can cater for more live-work-play-learn-make uses³. People want the convenience of employment, recreation, transport and facilities within easy reach and this is possible with high-density compact developments.

Liveability is also about the social sustainability of the city. It is about spaces that thrive, where people want to be. It enables people of all ages and abilities to live independent and meaningful lives, thus further fostering inclusivity. Designing for the widest possible needs of people will become more important in creating age-friendly and diversity-friendly environments.

Part of liveability will also see a closer integration of nature with the built environment. This is essential not just for building up sustainable towns but also for residents where nature can have a positive impact on their physical and mental well-being.

Q&A

Siew Man Kok, founding director of MKPL Architects on the future of living environments.

1. How can we manage various housing densities?

Man Kok: To tackle various densities, more variations of design solutions are important. It is about creating distinctively different living environments, different sense of place, and different choices of living. These would contribute to richer and more varied environments, distinctive places, neighbourhoods, and over time, identities.

2. What is inclusive design?

Man Kok: When I started designing a nursing home, I realised that I did not understand the needs of the frail and elderly. Inclusive design means you must have the empathy to design to the widest possible needs of the people. In the recent Symposium for Future Habitation, social scientists and doctors provided further insights into other aspects of the needs of people and its impact on planning and design. It convinced me that in order to plan and design our living environment to be inclusive (not just physical but socially as well), we need to include them in the design discussions too.

3. How does living in the tropics make us special and how can we leverage it?

Man Kok: In our quest to eradicate minor inconveniences, we tend to insulate ourselves from the very pleasures of living in the tropics. Designers can consider integrating tropical moments of delight into everyday encounters – never mind the fine spray of the rain. I believe anyone who has experienced the beauty of a tropical storm will see our living environment in a more sanguine way.

Flexibility

As we enter the Fourth Industrial Revolution, the World Economic Forum's Future of Jobs Report 2018⁴ called out to policy-makers and business leaders across industries “to formulate a comprehensive workforce strategy ready to meet the challenges...of accelerating change and innovation.” The report projected that technological breakthroughs will rapidly change job profiles, and “global labour markets are likely to undergo major transformations.” To improve workplace culture, a transformative global market will need transformative spaces that are well-designed.

In next-gen workplaces, working will be fundamentally integrated with learning, experimenting, communicating and living.

The 2018 Design Forecast report⁵ published by Gensler Research Institute, anticipates that people will become the centre and driving force of resilient workplaces and cities. It means that “workplaces will develop a synergistic relationship with their local communities...providing amenities or creating local partnerships that can benefit not just their workforce but the community too.”

Whether it is in building up economic gateways, regional hubs, or experimental zones, the key is flexibility – creating spaces that are adaptive and responsive to changing business needs.

Q&A

Siah Puay Lin, deputy director of architecture, Surbana Jurong, on the future of work environments.

1. What excites you about the creation of more integrated growth hubs?

Puay Lin: I am excited by how these new possibilities will shape developments and our urban environment. For example, there could be possibilities for more mixed-use land use that blends commercial, residential, institutional and recreational spaces into industrial developments or sites. This will change the character of industrial areas as we know them today.

Vertical mixed-use buildings within our already high-rise high-density industrial developments could be further explored. The key to this is ensuring compatibility in the mix, and designing environments that promote health, safety, accessibility, environmental and business sustainability, and inclusiveness.

2. Clustering and co-location are not new. What has changed in terms of the needs of business and innovation clusters?

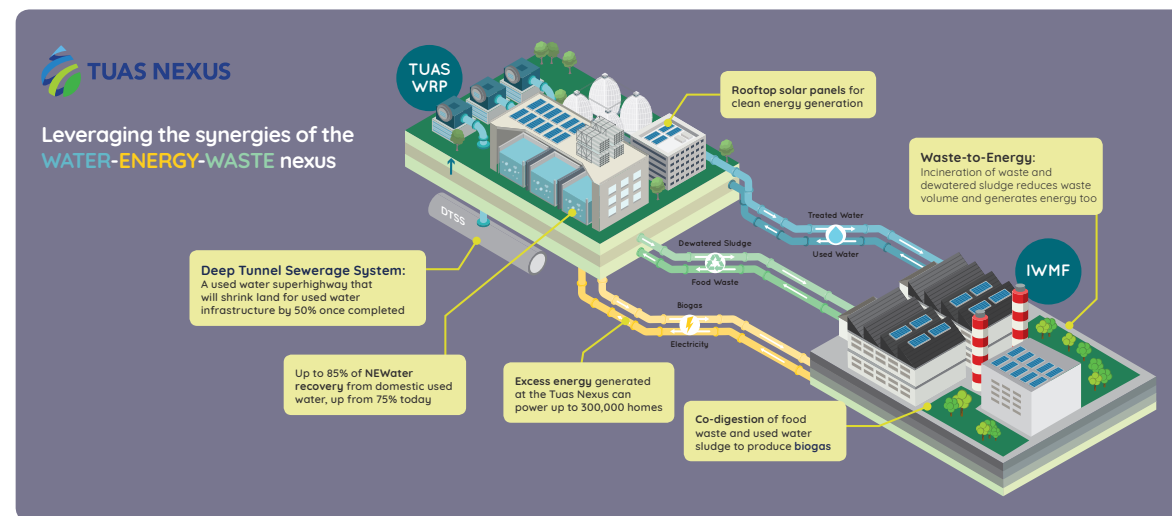
Puay Lin: The increasingly extensive use of mechanisation, Artificial Intelligence and digitisation of the work space has resulted in changes to the planning and design of buildings, and its supporting infrastructure and utilities.

³ Joseph Jones, Living Large, Skyline issue 3.

Above: | The Pilot Enterprise District at Punggol North showing the co-location of the Singapore Institute of Technology campus with JTC Corporation's mixed-use business park. Image credit: JTC.

⁴ World Economic Forum, Centre for the New Economy and Society, Insight Report. 2018. The Future of Jobs Report. Retrieved from http://www3.weforum.org/docs/WEF_Future_of_Jobs_2018.pdf

⁵ Gensler Research Institute, Gensler Design Forecast. 2018. Shaping the Future of Cities. Retrieved from <https://www.gensler.com/research-insight/publications/design-forecast/shaping-the-future-of-cities>



The workforce has evolved into predominantly professionals and skilled technicians, and it is necessary to continue to attract talent and hone skills. Collaboration across various sectors of business and supply chain management strategies will result in new forms of shared amenities and services. To address this, flexibility for conversion of use to respond to business needs will help optimise land use.

3. How can we design work spaces to be adaptable and future-proofed?

Puay Lin: Traditionally, we try to future proof by making building spaces flexible for future needs, albeit with additional cost, by providing structural loadings, large spans, built-in spare risers, knock out panels for future use, demountable walls and slabs.

With increased demands for speed and ease in converting spaces for new uses, we can explore treating certain components in buildings as “production units” or “pods”, where each unit comes complete with all the required services, equipment and fittings, akin to the PPVC (Prefabricated Prefinished Volumetric Construction) used for residential developments.

Integrated and prefabricated “pods” are already in existence for laboratories and they are especially useful for pandemic situations. Perhaps, similar examples could be used, for instance – “integrated modular packages” for small clean rooms, data

centres/computer server setups, transformer switch rooms, etc., treating these as components or units. The benefit to such an approach is that it will be more efficient in terms of time and cost, and allows flexibility in terms of building design.

Sustainability

Rapid urbanisation comes at a cost. When cities expand, they face the squeeze of generating enough land and resources, while simultaneously keeping resource-use low to keep the city sustainable. The World Economic Forum (WEF), in its 2018 report, *Harnessing the Fourth Industrial Revolution for Water*⁴, called out to cities to solve the world’s biggest environmental challenges by harnessing technology. “[W]e are now seeing a convergence of the digital, physical and biological realms,” it rallied, “If we get it right, it could create a sustainability revolution.”

An ever-expanding need for resources to fuel urbanisation is ultimately unsustainable. Cities that want to develop sustainably are becoming more aware of their resource consumption (what they consume and how much they consume) and innovating to reduce their consumption and recycle more of their waste. Taking this one level up, a new circular economy ideology is starting to gain acceptance. Breaking away from the ‘make-use-dispose’ linear economy model, the new model seeks to minimise new resource inputs into the city by sustaining and preserving existing resources and maximising their reuse.



Q&A

Dr Winston Chow, assistant professor (Department of Geography), National University of Singapore on water and climate change.

1. Has Singapore been successful in responding to climate change⁷?

Winston: Singapore’s present climate change adaptation has been successful in staving off the worst impacts we have seen elsewhere. Yet, it is increasingly clear that adaptation by itself has a limit in reducing Singapore’s vulnerability to climate change, especially with sea level rise. Mitigation of Green House Gas emissions is needed, in keeping with the Paris pledges, in Singapore and elsewhere.

2. How do we ensure that Singapore never runs out of water?

Winston: While the Republic can adapt to drought by ramping up Newater and desalination production, these technological approaches are economically and environmentally costly. A more prudent and immediate drought adaptation approach is to reduce water use through changing consumption behaviour.

3. How can we make climate adaptation measures relevant to people?

Winston: It depends on the people we are trying to reach out to. The key to effectively communicating the relevance of climate adaptation is to understand the values of your audience or stakeholders and find out how the impacts of climate change affect those said values on an everyday basis.

PLANNING FOR A MORE SUSTAINABLE AND RESILIENT FUTURE: 3 WAYS

1 Use land creatively

Over the years, creative use of land and spaces from going underground to co-locating uses has helped to ensure there is sufficient land to meet Singapore’s growing needs. An example is the East Coast Integrated Depot, located on the site of the former Bedok Water Reclamation Plant. It is a bus and train depot in Changi that will be built by 2024. It is the first in the world to integrate 3 MRT depots in 1 single site. With a bus depot located adjacent to the depot complex, 44 ha of land or about 66 football fields, can be freed up and used for other purposes.

2 Manage resources effectively

Efforts continue to focus on ensuring a diversified and sustainable water supply, moving towards cleaner and less energy use and minimising waste. Innovative solutions are also pursued to reuse “waste” by leveraging on synergies between treatment processes. The Tuas Nexus, where the Integrated Waste Management Facility is cleverly co-located with the Tuas Water Reclamation Plant, so that by-products from one process can be reused by another. Such process synergies allow the Tuas Nexus to achieve energy self-sufficiency and land optimisation.

3 Adapt to the impact of climate change

By the year 2100, Singapore’s temperature is projected to rise by 1.4°C to 4.6°C and sea levels could rise by up to 1 metre⁸. Efforts are focused on enhancing thermal comfort by strengthening wind corridors, adopting cooling measures, protecting Singapore’s coastline through sea walls, reclaiming land at least 4 metres above sea level and mitigating flood risks. A long-term measure put in place to better protect Orchard Road against floods is the creation of the Stamford Diversion Canal (SDC) and the Stamford Detention Tank (SDT). Completed in 2018, the SDC diverts stormwater from Holland Road and Napier Road areas into the Singapore River while the SDT (located under the Singapore Botanic Gardens) temporarily stores stormwater from the drains in Holland Road during a heavy rainfall. A secondary impact on climate change to Singapore is the effects it could have on food supply. By 2030, the aim is to strengthen Singapore’s food security by producing 30 percent of the food supply locally through high-tech farms that use technology to increase yield and optimise land and other resources.

Draft Master Plan 2019: For more information on the Draft Master Plan 2019 and for upcoming talks and tours, go to ura.sg/DMP19. The Draft Master Plan 2019 exhibition is now on at the URA Centre ground floor, from 27 March 2019 to 24 May 2019.

⁴ World Economic Forum, Fourth Industrial Revolution for the Earth Series. 2018. *Harnessing the Fourth Industrial Revolution for Water*. Retrieved from http://www3.weforum.org/docs/WEF_WR129_Harnessing_4IR_Water_Online.pdf

Above | The Tuas Nexus and the East Coast Integrated Depot (image credit: LTA)

⁷ Responses to questions 1. and 2. are from The Straits Times, ‘How vulnerable is Singapore to climate change?’, 6 September 2018.

⁸ From baseline period of 1980 to 2009.



Image credit: Patrick Bingham-Hall



Image credit: HDB



Image credit: DP Architects



Image credit: Jonathan Chiang



Image credit: Gwenn Chen



Image credit: Participate in Design



Living spaces for the future

More choices, staying connected and shaping your own spaces – we look at how the Master Plan continues to create quality living environments.

Beyond a diverse range of housing choices in areas from Tengah, to Punggol, Queenstown and Kampong Bugis, more integrated and convenient facilities and amenities are being planned for neighbourhoods.

Future towns will be designed to integrate natural elements such as greenery and water with the built environment. Technology and data will also be used to better manage and optimise resources and improve living environments.

Residents can walk, cycle and move around easily within and across neighbourhoods with enhanced connectivity, providing easy access to green, blue and play options.

More importantly, communities are encouraged to actively shape their neighbourhood streets and spaces to create more vibrant streetscapes and public spaces that bring people together. In designing spaces for the future, closer attention is paid to adapting and planning for facilities (for example, childcare and senior care facilities) to meet the changing needs of all ages.

What kind of living environments do you want?

- ☐ Choose from more housing varieties
- ☐ Cycle, walk or scoot within and across neighbourhoods
- ☐ Connect to convenient spaces and facilities for all ages
- ☐ Contribute to shaping neighbourhoods and spaces including for the elderly
- ☒ All of the above

Global gateways, local hubs

What can businesses look forward to in future? The Master Plan seeks to strengthen gateways to markets, bring jobs closer to homes and enable more flexible use of land in pilot areas.

Writers **Jennifer Eveland** and **Serene Tng**

From Woodlands in the north to Tuas and Changi in the west and east of Singapore, these economic gateways will be further enhanced to serve regional and global markets. Each of these areas will also be developed to support new sectors and provide job opportunities. Development of Bishan, a sub-regional centre, and Punggol Digital District will continue to provide jobs closer to home.

For more flexible use of land, the pilot Enterprise District approach at Punggol Digital District and Jurong Innovation District will allow the master developer to respond quickly to market demands and curate the right tenant mix through flexible changes in the use of space within the District's approved quantum.

In addition, piloting the flexible use of industrial space at Woodlands will enable SMEs (small and medium enterprises) to co-locate their manufacturing operations together with knowledge-intensive and service-oriented functions (for example, R&D and after-sales support) for better efficiencies and productivity.

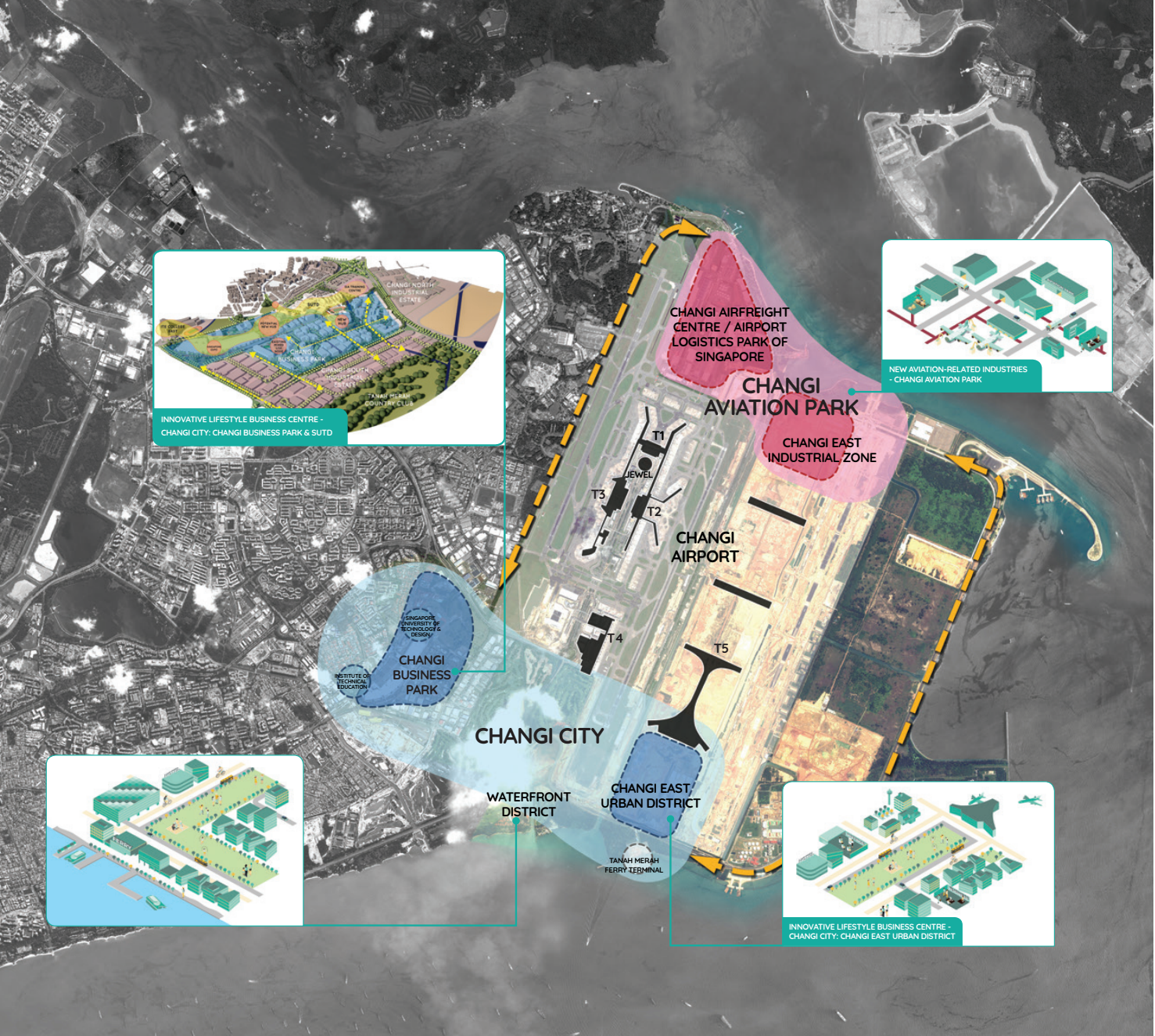


Economic gateways create
new opportunities

Regional and sub-regional centres provide
jobs within reach

Enterprise district and experimental zone offer more
flexible land use

Above | From the top, the future Tuas (image credit: PSA) to be opened in phases from 2021, the upcoming Paya Lebar Central (image credit: Lendlease) that will add greater buzz to the commercial hub and the experimental zone piloting more flexible uses at Woodlands.



Changi Region

In the Changi Region, with Changi Airport expanding progressively, there are opportunities to create a vibrant, mixed-use area around the airport to continue to sustain Singapore's status as a leading air hub. Connections to the Changi Region will be enhanced by train (Cross Island Line and possible extension of Thomson-East Coast Line) and road (road widening and improvements), and there is potential to explore "fly-ferry" connections between Tanah Merah Ferry Terminal and Changi Airport's Terminal 5.

Aviation and cargo related sectors and businesses can be encouraged to foster a synergistic and innovative ecosystem around the airport, leveraging on the nearby Singapore University of Technology and Design and Changi Business Park.

Beyond creating new job opportunities, the Changi Region is also planned as a mixed-use cluster and destination with a range of recreational offerings and tourist attractions for residents, workers and tourists.

Above | Future plans for the Changi Region and an overview of a possible future ecosystem that can be created leveraging on the Singapore University of Technology and Design (SUTD) and Changi Business Park (map at the bottom right).

Many cities around the world are also exploring new typologies and ecosystems for their airport areas. Dr John Kasarda, a leading airport-area researcher and business consultant developed the aerotropolis concept, which benefits the wider city, not just airports alone. He is the director of the Centre for Air Commerce at the University of North Carolina's Kenan-Flagler Business School, CEO of Aerotropolis Business Concepts LLC, and president of the Aerotropolis Institute China. John elaborates on what the aerotropolis means and how Singapore can leverage on it.

What is an aerotropolis?

John: It is a metropolitan sub region whose infrastructure, land use, and economy are centred on an international airport. It consists of 2 components – the airport's aeronautical, logistics, and commercial facilities that make up a multimodal, multifunctional 'airport city' at its core and outlying corridors and clusters of aviation-oriented businesses and industries that benefit from proximity to each other, the airport, and other key transport infrastructure. The aerotropolis' primary

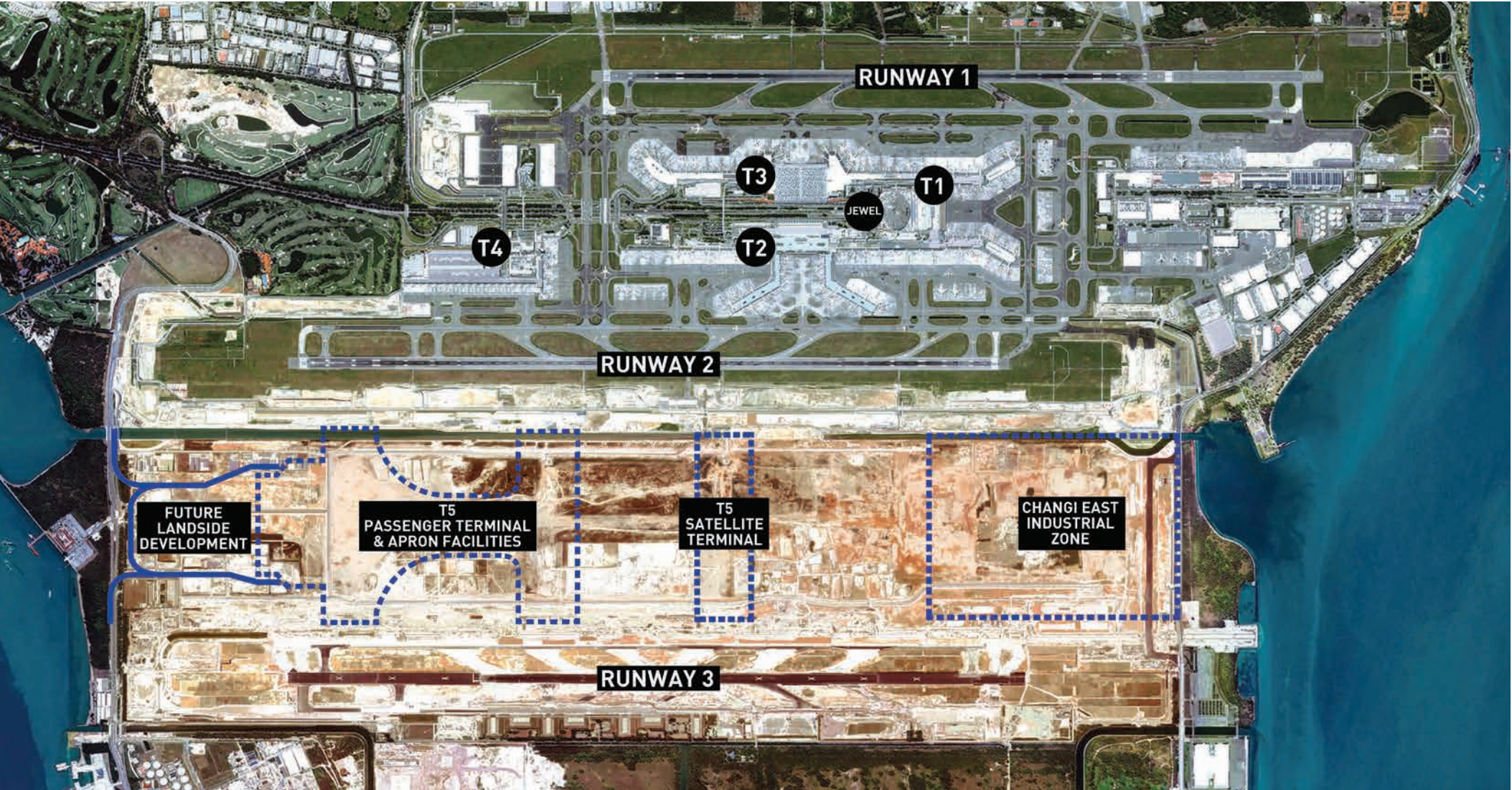
value proposition is that it offers businesses located near or with good transport access to the airport speedy connectivity to their distant suppliers, customers, and enterprise partners.

The aerotropolis is also a strategy. A successful aerotropolis represents a coordinated set of infrastructure, commercial real estate, and government policy interventions which upgrade airport-area urban and employment assets, reduce ground-based transport times and costs, and expand air route connectivity to capture global business and boost aviation-generated trade in high-value, time-sensitive goods and services.

How does an aerotropolis add value to a city?

John: The fastest, best-connected cities are winning in the 21st century, and the aerotropolis rapidly links its firms and people to markets near and far. Improved surface transportation connects them to key aerotropolis clusters and other local markets, including the downtown, while extensive air routes provide quick, efficient connectivity to global markets.





What issues does an aerotropolis seek to address?

John: The aerotropolis optimises economies of speed, which is an important advantage for firms and cities. Today, it is no longer the big eating the small, but the fast eating the slow. Business is increasingly global and for many businesses and business people, time is not only cost; it is also currency.

A well-designed aerotropolis functions as an ‘urban pipe’, reducing the time-cost frictions of space and distance, improving both firm and urban operational efficiency. In addition, the aerotropolis seeks to counter urban sprawl through appropriate commercial and industrial re-clustering around airports and create sustainable communities where residents can live, work, learn, shop, and be entertained in proximity to the airport.

How can Singapore leverage the aerotropolis concept to grow the Changi region?

John: Singapore possesses two special ingredients for aerotropolis success: Changi Airport and Singapore Airlines, both recognised as best in class in respective industry surveys. Stakeholder alignment is also a key ingredient for future growth, which is evolving with the support of the Civil Aviation Authority of Singapore, the Changi Airport Group, and Singapore’s urban planning and development organisations.

To a large extent, Changi Airport and the Changi Region have already leveraged the aerotropolis concept to bring competitive advantages to Singapore while attracting investment to the airport area. This includes an exemplary airport city on Changi Airport property anchored by unique retail and leisure services in its 4 terminals, Jewel Changi Airport, and its airfreight centre and logistics park. Extending up to 5 km outward from the airport, the Changi Region has generated clusters of aerospace, office, financial, high-tech, educational, conference and exhibition, and retail activities. It also hosts 3 significant residential communities in Bedok, Pasir Ris, and Tampines that house nearly 1 million people combined, providing qualified labour.



Above | The location of Changi Airport Terminal 5 (image at the top) and the Jewel Changi Airport. Image credit: Changi Airport Group.

The aerotropolis is more than corridors and clusters of aviation-oriented commercial, industrial, and logistics facilities. It consists of living urban places that must be planned and designed as appealing environmental and social realms.

What are the key considerations when designing spaces and activities around airports?

John: The aerotropolis is more than corridors and clusters of aviation-oriented commercial, industrial, and logistics facilities. It consists of living urban places that must be planned and designed as appealing environmental and social realms if the model is to achieve its full potential. Spatial design and activities must appeal to residents, workers, and visitors.

Assessing market demand is essential also, since aerotropolis success ultimately rests on financial sustainability. Economic spaces and activities must be planned to meet the wants and needs of investors, commercial real estate developers, and their business facility end users.

What does planning for a 24/7 vibrant area around the airport look like?

John: Airport city and aerotropolis planning is urban planning, using the same principles that make cities liveable and socially vibrant. These include making them walkable, safe, and welcoming with the mix of urban amenities and nightlife establishments that attract people to them 24/7. Aerotropolis planners should design entertainment subareas that have the same ‘bright lights’ effect that draws people and street life to major urban centres, including trendy restaurants, quality shopping, nightclubs, and other entertainment venues.

How can hub airports plan for greater flexibility to respond to external changes?

John: Development should be guided by a flexible strategic framework rather than a fixed-in-concrete master plan. With today’s turbulent conditions, both planning and operating an airport hub calls for agility. Flexible designs can expand or adapt airport infrastructure and facilities as aviation demands dictate and new technologies emerge.

Agile airport leadership and managers should be both vigilant towards and able to adapt to external changes such as fluctuations in aviation industry cycles, the entrance of new types of airlines, environmental regulations, or political disruptions in trade. They also need to continuously earn social license from surrounding communities to expand the airport’s aeronautical infrastructure, commercial property, and air networks.

Responses have been edited for length.

AIRPORT HUBS

John highlights 4 global airport hubs with surrounding aerotropolises.

1 DUBAI INTERNATIONAL AIRPORT AND DUBAI WORLD CENTRAL AIRPORT UNITED ARAB EMIRATES

“Dubai, like Singapore, is a global aviation hub with a city-state attached. About 25 percent of Dubai’s GDP (Gross Domestic Product) is linked to aviation in some form. This is forecasted to rise to 40 percent of Dubai’s GDP by 2035.

A significant airport city already exists at Dubai International Airport and the Emirate is constructing the Middle East’s first purposely planned aerotropolis around its new Dubai World Central Airport.”

2 AMSTERDAM SCHIPHOL AIRPORT THE NETHERLANDS

“Amsterdam is the granddaddy of airport city and aerotropolis development. The Amsterdam Schiphol Airport area has drawn numerous global and European regional corporate headquarters as well as fast-cycle logistics businesses, including the largest flower distribution market in the world, the Aalsmeer Flower Auction.”

3 INCHEON AIRPORT SOUTH KOREA

“Incheon, South Korea has taken the airport city and aerotropolis model to new levels of planned urban mega-development, featuring the world’s largest airport duty-free shopping with US\$2.4 billion in sales in 2018; major logistics, office, commercial, entertainment, and integrated resort complexes on airport property; and a new airport edge city known as Songdo International Business District connected to Incheon Airport by an 8-km bridge and designed from the get-go on ‘smart city’ principles.”

4 PARIS CHARLES DE GAULLE AIRPORT FRANCE

“The Roissy area around Paris Charles de Gaulle Airport has become the region’s most powerful business magnet and economic accelerator. Developments include Roissypole, situated on Charles de Gaulle Airport, which contains 246,000 square metres of corporate office space and 8 hotels offering nearly 3,000 rooms.

In the surrounding area, one finds the 320,000-square-metre International Trade Centre, the largest integrated business and congress complex in Europe that also houses 6 hotels offering 1,700 rooms. Numerous other significant airport-linked commercial developments are also taking place in the Roissy region.

On the move

Whether by bus, train, bikes or other transport modes, the Master Plan shows new possibilities for people and goods to move quickly and easily throughout the island.

Rail networks and bus connectivity will be further enhanced in the coming years. Even more areas will be easily accessible with new rail lines coming on board. New bus services will be added along with new rail lines and stations to improve connectivity within new and existing towns.

Residents can also enjoy dedicated paths for walking and cycling with more added within and across neighbourhoods. With easier access to transport options, work and amenities in future, it is envisioned that most can reach the nearest neighbourhood centre via public, active or shared transport within 20 minutes or less; 9 in 10 of all peak-period journeys can be completed within 45 minutes.

To encourage Singaporeans to adopt healthier mobility choices and make towns more liveable, more spaces will be prioritised for public transport, active mobility and community uses. Transit priority corridors will be implemented where road spaces are repurposed to enhance pedestrian and public transport travel experiences.

The first of such corridors was implemented at Bencoolen Street and additional corridors are being explored along Robinson Road, Jurong Canal Drive Extension and the Woodlands North Transit Mall. In addition, the upcoming North-South Corridor will have 21.5 km of continuous bus lanes and cycling paths from Woodlands to the city centre by 2026.

The planning of new car-lite precincts will take the above initiatives one step further by adopting lower provision standards for vehicular parking and consolidate them into common hubs. With traffic directed away from the streets, conflict with pedestrians and cyclist will reduce and the urban environment on the streets can be enhanced and made more vibrant for residents and visitors.

Technological advancement such as Autonomous Vehicles that are currently being tested will also open up new transport options in the near future for commuters. Transport service providers (bus, rail, taxis, shared mobility services) can work with app designers to integrate their offerings for commuters who can access and even customise their travel preferences from these multiple transport options and services in a single platform. Innovations in urban logistics are also enabling goods to be transported more efficiently, reducing not only business costs, but road traffic as well.



NEW RAIL LINES IN FUTURE

- Cross Regional Line (CRL)
- Jurong Regional Line (JRL)
- Thomson-East Coast Line (TEL)
- Circle Line 6 (CCL6)
- Downtown Line 3 extension (DTL3ext)
- North East Line extension (NELext)

Green on the rise

The city is like a wildlife refuge – in addition to greening efforts, the closer integration of nature and buildings contributes to creating and sustaining larger ecosystems and serve to lift people's spirits and enhance the quality of life.

Green and blue efforts continue to deepen with the Master Plan. There are plans for another 1,000 ha of parks and park connectors. Parks will be connected by key recreational corridors such as the Round-Island Route, Rail Corridor, Coast-to-Coast Trail, as well as a diverse network of park connectors. In addition, waterways will also be enhanced with 3 more ABC (Active, Beautiful, Clean) Waters projects completed in 2019 and another 13 projects upcoming across the island in the next 5 years under the Public Utilities Board's ABC Waters Programme. Since 2006, the programme has been integrating drains, canals and reservoirs with surrounding environments in a holistic manner, enhancing 102 km of waterways through 41 projects.

To strengthen and guide the conservation of Singapore's natural assets, a nature conservation master plan has been put in place by the National Parks Board (NParks) to chart out the conservation approach for key habitats, guide enhancement and restoration efforts, develop research in conservation biology and foster community stewardship in championing nature areas. Creative solutions are also applied to further integrate greenery and biodiversity into the built environment through accessible parks, street-side planting, water networks and vertical greenery.

Green does not just remain on the ground. URA's Landscaping for Urban Spaces and High-Rises (LUSH) programme has been encouraging and supporting vertical greenery since 2009. More than 550 LUSH projects with more than 150 ha of development greenery have been implemented to date.

Integrating nature in neighbourhoods

Bringing greening efforts one step further, the Biophilic Town Framework put in place advocates that a closer integration of nature with living environments is essential in creating more vibrant and sustainable housing towns. Biophilia refers to an innate affinity for and connection with the natural world.

In the book *Nature, Place & People*, elaborating on the framework, professor Chi Yung Jim, a leading expert on nature in cities, notes in this foreword that at the neighbourhood scale, "nature is most earnestly wanted by people". Green spaces serve as "everyday landscapes" to most urban residents in compact urban areas and thus have a critical impact on their perception of urban landscapes, with restorative benefits to their mental and physical health.



The Biophilic Town Framework “provides a strong foundation for holistic planning and design of neighbourhood landscapes so that residents can enjoy a strong sense of place and well-being.”

The Biophilic Town Framework promotes a seamless union between nature, place and people, proposing site-specific designs with nature, taking into account the expectations and aspirations of residents who live nearby. On the significance of the framework, the Housing Development Board (HDB) chief executive Dr Cheong Koon Hean explains that it “provides a strong foundation for holistic planning and design of neighbourhood landscapes so that residents can enjoy a strong sense of place and well-being.” The Biophilic Town Framework was first piloted in Punggol Northshore District in 2015 and subsequently adopted in the planning and design of Bidadari’s Woodleigh Neighbourhood in 2016. Over the same period, HDB has refined and validated the framework through a three-and-a-half year research collaboration with the National University of Singapore, NParks and URA⁹. The research study successfully concluded in 2018 and the framework is now being applied for all new HDB projects.

5 principles guiding design

The framework suggests 5 principles to guide the design of neighbourhood landscapes¹⁰:

1. The design should seek to understand ecological connectivity across neighbourhoods

Neighbourhood landscapes are understood, not as isolated patches but systems nested within larger ecosystems and interconnected with complex

networks of energy flows and social networks. They are typically too small to sustain viable populations of larger organisms but can act as a temporary refuge, providing food sources and acting as stepping stones to aid the dispersal of organisms across larger landscapes. In promoting habitats for biodiversity, the design of neighbourhood landscapes should seek to enhance the ecological connectivity of neighbourhoods across green and other spaces.

2. The design should address social and ecological components

This is important as the unique quality of neighbourhood landscapes (designed forms, ecosystem functions, uses and maintenance) is formed not just by the composition of natural elements (for example, vegetation, soil, rocks and water), but by human values, social norms, and institutional policies. Both components must be addressed in neighbourhood landscape design so that neighbourhood landscapes are valuable and enduring.

3. The design should accommodate changes

As functioning ecosystems, neighbourhood landscapes are in constant flux. Some changes are visible, such as the maturation of trees, flowering, and fruiting, while others are hidden, such as the accumulation of organic matter in soils. Social factors add another level of dynamism; for instance, policy changes or ageing communities may affect the way



landscapes are used and maintained. The design of neighbourhood should accommodate change, not resist it. Where space permits, landscapes should be allowed to develop spontaneously and undergo natural succession.

4. The design should enhance ecological flows and ecosystem functions

As neighbourhood landscapes are functioning ecosystems, visible and invisible processes continue to operate in them. Examples include the flux of energy through absorption and re-radiation of solar radiation, the flux of water through transpiration and infiltration, and primary productivity supporting the trophic needs of biodiversity, etc.

This means neighbourhood landscapes are capable of functioning as habitats, especially if habitats are conceived as part of ecological networks connecting remnant habitats and protected areas at larger spatial scales. Neighbourhood landscape design should aim to enhance ecological flows and enable multiple natural processes to improve ecosystem functions.

5. The design should enhance species diversities

Neighbourhood landscape design can enhance heterogeneity by incorporating both managed (such as lawns) and unmanaged or spontaneous (such as woodlands, grasslands, etc.) vegetated areas, as well as other forms of ecosystems, such as constructed wetlands. Heterogeneity encourages species presence, abundance, composition, and interactions between species and the abiotic environment.

The more diverse the landscape types, such as grasslands, wetlands, forests, swamps, etc., the higher the presence of species found in different habitats. Heterogeneity of neighbourhood landscapes helps to enhance species diversity.



⁹ Research project on “Biophilic Town: A Framework for Enhancing the Environmental and Social Capital of High-Density Towns” supported by the Singapore Ministry of National Development and National Research Foundation under the Land & Liveability National Innovation Challenge (L2NIC).
¹⁰ Puay Yok, Tan, Kuei-Hsien, Liao. Yun Hye, Hwang and Chua, Vincent. (2018). Nature, place & people: forging connections through neighbourhood landscape design, World Scientific Publishing Co. Pte Ltd, p. 73-75.

Rustic charm

From Lim Chu Kang to Changi, the charming rustic coast in the north-east of Singapore is filled with diverse nature areas and idyllic islands and boasting a rich heritage. With various upcoming enhancements, we re-explore some of the key attractions along this stretch.

Writers **Olha Romaniuk** and **Serene Tng** | Photographer **Chee Boon Pin**

The rustic coast was first identified in the 2003 Master Plan, recognising its laidback charm and many assets and qualities that can be enhanced and celebrated to offer a diverse range of experiences. Since then, various efforts have been made over the years to enable more to enjoy the coast while protecting its natural and heritage gems.

Ho Hua Chew, Nature Society's vice-chairman (conservation committee), shares 3 natural highlights along this coast.

Mandai mangroves

What is unique: It has the largest concentration of Mangrove Horseshoe Crabs (threatened species) and is one of the few remaining mangroves with an extensive mudflat exposed at low tide. It is also an important feeding and resting ground of migratory shorebirds, with most coming from Sungei Buloh Wetland Reserve.

Birds you can spot: The White-bellied Sea Eagle and endangered species such as the Changeable Hawk-Eagle, Grey-headed Fish Eagle, Crested Serpent Eagle and Straw-headed Bulbul, which lets out a distinct, melodious sound.

OTHER ENHANCEMENTS ALONG THE COAST

Changi Point: Local stakeholders and Temasek Polytechnic students have generated ideas to enliven the area with creative new uses for the heritage buildings and recreational activities that can be added in future. See their proposals exhibited at the Civil Service Club@Changi on 30 and 31 March 2019.

Seletar Airbase: To enable more to explore the area, the Round Island Route will be developed through the area and a trail added highlighting Seletar's rich heritage.

Coney Island: In addition to the 50 ha Coney Island Park opened in 2015, a new 2.5 km park connector enables one to enjoy the beautiful view of the Serangoon Reservoir.

What you may not know: Kampong Lorong Fatimah used to be one of the kampongs located in the area and was likely to be one of the last kampongs to be cleared in Woodlands.

Future plans: The Mandai Mangrove and Mudflat will be opened as a nature park in mid-2022. The 72.8 ha park will also be part of future recreational pathways along the Rail Corridor and Round Island Route.



Above | From the top left, Lorong Halus, Ho Hua Chew at Mandai Mangroves and Coney Island.



Above | At the start of the Mandai Mangroves area.

Sungei Khatib Bongsu

What is unique: It is one of the 3 major coastal wetland areas in Singapore and has a large mix of mangrove and secondary forest. The mangrove can be considered the largest in the north-eastern shoreline of Singapore.

What was here before: It was formerly an area of traditional aqua-culture ponds and orchards which had mostly durian and rambutan plantations.

What you can spot: Endangered birds such as the Straw-headed Bulbuls, Chinese Egret, Grey-Headed Fish Eagle and the Changeable Hawk Eagle. At the Simpang area across to the west of Sungei Khatib Bongsu, you can also find wild orchids. 2 nationally rare species of orchids have been discovered here --- *Dendrobium lobii* and *Liparis ferruginea*.

How to access: A large part of the area is used for military training but one can still enjoy the mangrove forests by kayaking from the People’s Association Water Venture in Sembawang.

Lorong Halus

What is unique: The area is well-known and much studied for its birdlife. 120 bird species have been recorded, which is about 32 percent of the total number of birds recorded in Singapore. The Lorong Halus Wetland was created in 2010, serving as both a nature park and an organic water treatment system, collecting and treating water passing through the former landfill.

What you may not know: This is 1 of only 2 known sites for the breeding of the endangered species, Little Grebe. The other site is the Singapore Quarry Lake at the Bukit Timah Nature Reserve but the Grebes are likely to have abandoned this site.

What you can spot: Apart from the Little Grebe, you can find other nationally threatened species such as the Lesser Whistling Duck, Crested Goshawk, the Grey-headed Fish Eagle and Black-crowned Night Heron. You can also find butterflies where 20 species have been recorded¹¹, of which 3 are uncommon. They are the Common Tiger, the Grey Pansy and the Silver Forget-Me-Not.

¹¹ By Nature Society’s Butterfly Interest Group in 2007.



Rail Corridor

Beyond the rustic coast, other major areas across Singapore are also being enhanced. We look at 2 other areas – the Rail Corridor and Kallang River.

The Rail Corridor is a former railway line that stretches 24 km from the north to the south of Singapore. Now a “green corridor”, it will be transformed into a community space that links neighbourhoods and connects communities along the way. About 1 million people live within 1 km of the Rail Corridor.

In the north, the Kranji community node across the Kranji MRT station can serve as a starting point for the journey through the Rail Corridor. The nearby Singapore Racecourse will also be transformed into a recreational hub while Sungei Kadut will be refreshed and house the Agri-Food Innovation Park cluster

to support the growth of existing and new businesses in a clean and green setting.

In the middle, the former Bukit Timah Fire Station and Beauty World will be rejuvenated. The upcoming completion of the Coast-to-Coast trail, Rifle Range Nature Park and the Rail Corridor will enable the 2 nodes to serve as gateways into the nearby nature and heritage attractions.

In the south part of the corridor, expanded new spaces in developments such as Alexandra Hospital and one-north will be integrated with the Rail Corridor for a more seamless experience. Queenstown, Singapore’s first satellite town, will also see the injection of new housing and community green spaces in future.

Kallang River

Singapore’s longest river, Kallang River winds through several housing and industrial areas such as Bishan, Toa Payoh, Bendemeer and Kallang Bahru, before merging into Kallang Basin. Future plans will bring greater vibrancy along the river and foster new communities.

Since the plans for Kallang River were exhibited in March 2017, public ideas and feedback have been taken in, in the enhancement plans for the river.

To introduce new homes and work places along the waterfront, the existing Kallang Industrial Estate will be transformed into an attractive mixed-use precinct in the longer term. Kampong Bugis, a new residential and recreational precinct will also be developed in future.

Kallang River is currently divided by major roads and expressways that cut across the river. Infrastructure improvements will be carried out from 2020 to create a more seamless walking and cycling experience. The planned works consists of new or improved crossings at strategic locations to connect residents from town to town and encourage walking and cycling.

The river itself will also be enhanced. Several stretches of waterways have been given a facelift through the Public Utilities Board’s Active, Beautiful, Clean Waters projects. At the ‘Kallang Alive!’ Sports Hub area, Sport Singapore is also introducing more sporting and recreational facilities to enliven the precinct. The nearby conserved Old Kallang Airport will also be used in the interim for a variety of community, sports and recreational uses.

Rejuvenating the central area



What does it take to sustain the relevance and appeal of the city centre with evolving lifestyle needs?

Writers **Jennifer Eveland** and **Serene Tng**

The way we live, work and play is changing. These may no longer be confined to specific spaces or time periods of the day. We want more choices in shaping our own lifestyles.

The experience and meaning of physical spaces around us will matter more in determining where we choose to linger and spend our time. The design of environments also has to be increasingly multifaceted, offering multiple experiences and pathways in order to appeal to people of different ages.

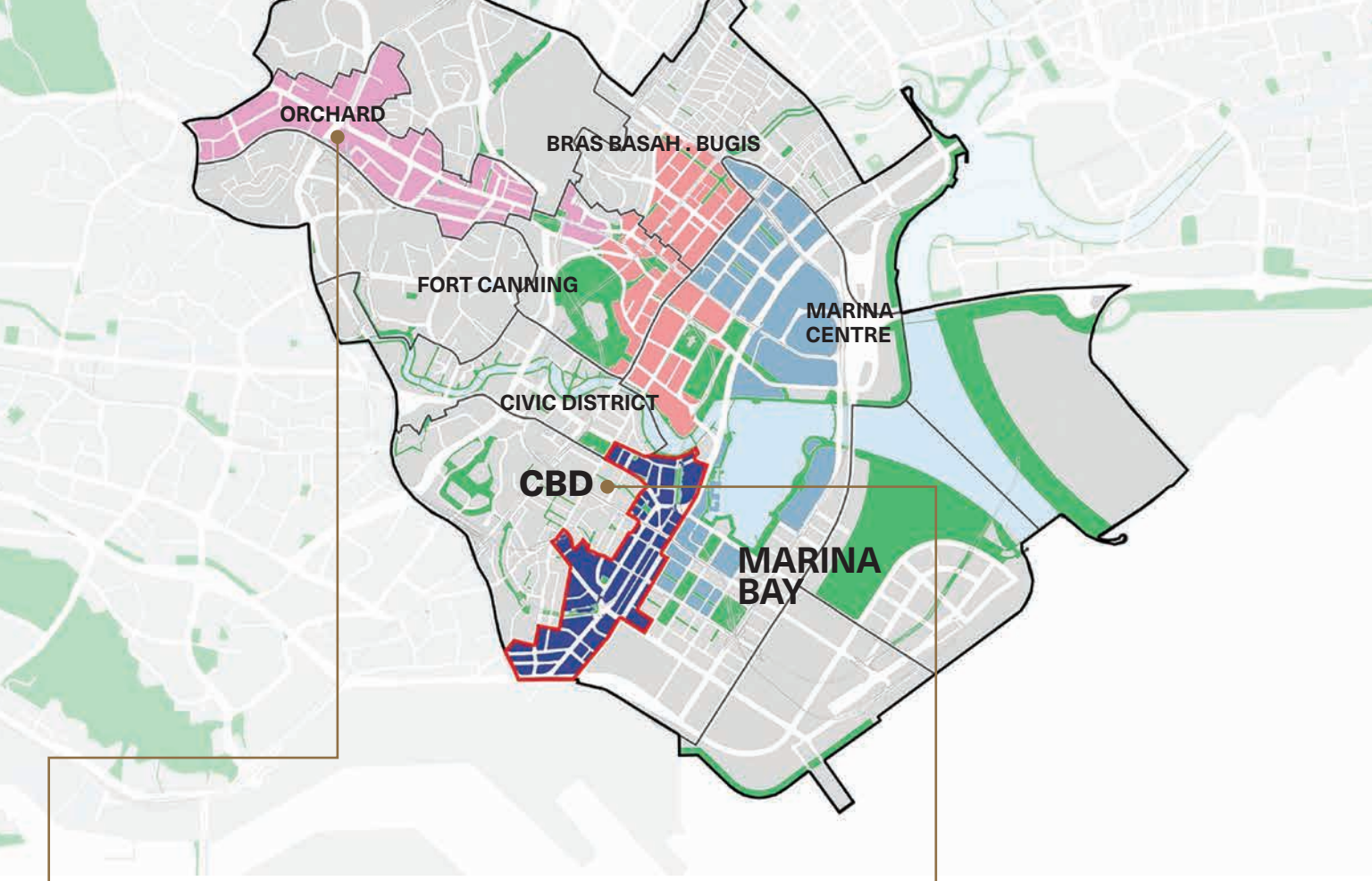
Against such shifts is the larger rise of shared and digital economies and changing demographics from a millennial workforce to an ageing population. All these will influence the relevance and appeal of city centres, presenting new opportunities to renew core areas of activities and life.

Central Area

We take a look at how the Master Plan is charting the future of Singapore's Central Area. The vision is to continue to sustain the Central Area as a dynamic 24/7 city centre with diverse jobs and business opportunities, where homes are located close to work places and there is an abundance of lifestyle and recreational options. This is achieved through the following strategies:

1. Build up lively and inclusive live-in communities

More homes will be introduced in city locations such as Orchard, CBD, Pearl's Hill, Marina Bay and Marina South, offering residents with greater variety of city living options, with easy access to transport and employment nodes, lifestyle and recreational choices.



ORCHARD ROAD

With changing retail trends and consumer demands, the plans and possibilities for Orchard Road unveiled in January 2019 seek to continue to strengthen its position as a vibrant lifestyle destination with diverse experiences beyond retail.

- Distinct and unique experiences on offer at various sub-precincts (Tanglin, Orchard, Somerset and Dhoby Ghaut) along Orchard Road will be strengthened through innovative retail concepts, attractions and other activities.
- Enhancements of side streets (such as at Orchard Turn and Killiney Road) and future mixed-use developments (at Orchard Interchange MRT station) will create streets of discovery to expand Orchard Road's offerings that extend off the main avenue.
- Orchard Road will be turned into a lush green corridor with a curated showcase of flowering trees and shrubs, connecting the historic green spaces of Singapore Botanic Gardens and Fort Canning Park.

CENTRAL BUSINESS DISTRICT

Beyond just serving as a business precinct, plans for the Central Business District (CBD) aim to introduce more diverse uses, including more residential and creative lifestyle activities and amenities in future, making it a more delightful and mixed-use destination that people want to go to even after office hours.

- Residential communities in the CBD fringe areas such as Anson, Cecil and Tanjong Pagar can enjoy more intimate neighbourhoods with wider and greener streets planned in future and a more extensive network of active public spaces and pedestrian pathways, making the CBD a delightful place to live and work.
- Workers and residents can also unwind and linger longer with more public spaces provided for both respite and activities. Popular spaces such as Raffles Place Park will also be activated further with new activities and events.
- More than just a place for work, the CBD can offer more exciting and interesting new experiences with a repurpose of selected state land and state properties. In the coming months, a call for proposals will also be made to testbed new uses for selected state properties and public spaces island-wide.
- Communities can also look forward to a diverse range of activities and programmes through place-making efforts in areas piloting URA's Business Improvement District programme.

2. Celebrate areas of heritage and identity

Cultural precincts at Fort Canning Park, Bras Basah, Bugis and the Civic District will be better connected and more walkable with wider sidewalks along Armenian, Coleman, and Waterloo Streets. These will also create spill out spaces for arts and cultural activities. A large part of Armenian Street will also be pedestrianised and turned into a park. Our historic districts of Little India, Kampong Glam and Chinatown will retain their rich heritage and keep communities and visitors engaged through continued place making efforts in collaboration with local communities and businesses.

3. Enhance connectivity and encourage active mobility

Access into the Central Area and within will be faster and easier with upcoming train lines and cycling networks planned in future. Plans to study and transform Robinson Road into a Transit Priority Corridor¹² are being explored to strengthen it as a key public transport and pedestrian corridor, with lanes repurposed for further bus priority, cycling and enhanced pedestrian environment.

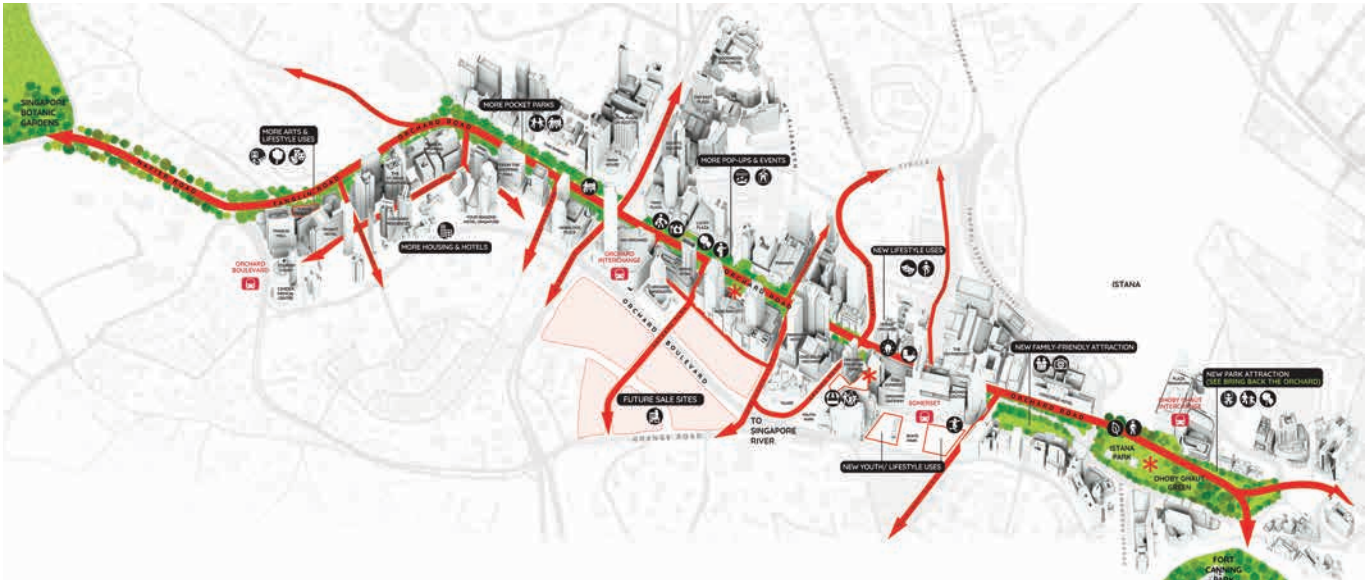
4. Improve access to and the experience of parks and open spaces

Green linkages will be added to connect various green and open spaces between the Singapore Botanic Gardens, Fort Canning Park, Pearl's Hill and to Tanjong Pagar and Marina Bay, for a more seamless experience. Green spaces within some of the attractions (such as the Fort Canning Park and Istana Park), will also be expanded and enhanced.

5. Rejuvenate distinctive areas to offer diverse uses and experiences

With evolving lifestyle needs and consumer demands, active efforts are made to rejuvenate key areas such as Orchard Road and the Central Business District, introducing more diverse uses and offerings, creating more multi-experiential precincts and enhancing their appeal and relevance as a whole.

¹² Transit Priority Corridors give priority to road-based mass transit and active modes through infrastructural and technological means



Refreshing Orchard Road

Continually ranked among the world's top shopping destinations, Orchard Road is flanked by malls selling everything from haute couture to cheap chic. It is connected by the MRT system, which in 2021 will include a new station linking Tanglin at Orchard's western-most end.

But with stiffer competition and changing consumer demands, how can Orchard Road continue to reinvent itself to remain relevant to new generations of people and technologies? Cistri experts who were involved in the review of plans¹³ for the area discuss retail trends and key ideas shaping Orchard Road's future.

What's trending

While the Internet has influenced the future of shopping, the study revealed that the proportion of online shopping in Singapore is only about 5 or 6 percent. Beyond online shopping, there are other changes impacting the retail landscape. As the world travels more, Singaporeans can choose to shop overseas and international tourists have their pick of any number of new shopping destinations from China to Indonesia. Asian cities are also ramping up to grab tourism dollars.

Malls are changing too. Department stores don't attract millennials the way they did with previous

generations. Young people prefer independent stores, and when they shop, they don't linger – they buy and move on. Malls are also seeing a greater proportion of floor space allocated to food and beverage.

Then there are changes within shoppers themselves, in the way many now view the world through lenses of environmental, health, wellness and community issues. The lifestyle concept has grown in relevance, as shopping habits become an extension of personal aspirations. Combined with a feeling of choice overload from countless shops vying for attention, shoppers sometimes struggle to know what to buy and where to buy it.

Despite all of these influences, Cistri director Jack Backen doesn't believe this is the "end of retail as we know it. The market will continue to change," he says, "but probably more gradually than some expect."

Orchard outlook

It's a time when most of the world's shopping destinations are seeking to reinvent themselves, but Cistri regional director Peter Hyland says it's worth mentioning that a lot of them are changing in response to seeking to address issues relating to public safety or sanitation concerns, so in that regard Orchard Road is ahead of the pack.



Over the past 20 years, however, regional malls like Nex and VivoCity have influenced Orchard Road's share of sales. And if younger generations fail to form the same emotional connections to Orchard Road that their parents have, they may be more likely to choose regional malls when they grow up.

Peter says this is why it's important to keep improving and renewing Orchard Road, "to keep creating reasons for people to visit over the next 10 to 20 years, so that it is constantly reaffirming its position in the minds of Singaporeans."

And winning over Singaporeans is the key to winning over tourists, Peter adds, as tourists will always want to shop and eat where the locals do.

Experiencing the journey

The future of retail can be summed up in a word: experiential. Brands no longer just provide goods and services but are drawing visitors to brick and mortar shops with curated experiences.

The idea of experience isn't limited to the shops, either. It includes shopping malls and extends to shopping precincts. The simple act of walking down the street presents a sense of journey, of engaging with the street itself through welcoming spots to rest and play, curiosities to explore and exciting places to hang out with friends. London and cities in North America come to mind, where people can just chance upon novel outdoor performances or pop-up amusements while going about their business.

For Orchard Road, Jack says the study suggests adding organised spaces for non-specific events, and not just big events and spaces but numerous smaller areas engaging people with a wide range of cultural and creative activities on a continuing basis. "People need to think, 'Yeah, I love that place, there's always something different on,'" he says.

The experience can also be enhanced when shops and outlets in malls spill out into the open spaces, whether in kiosks and sidewalk cafes at street level or from "urban verandahs" overlooking the hustle and bustle.

¹³ The review was carried out by a multi-agency group consisting of URA, Singapore Tourism Board, National Parks Board and the Land Transport Authority. During the review, private sector stakeholders and consumers were engaged and a study was carried out by international property consulting firm Cistri with the support of DP Architects, Arup Singapore, DataSpark, Future Cities Laboratory and Rider Levett Bucknall.
Above | A map showing the various future possibilities and ideas for Orchard Road.

Above | From the top, Tudor Court with its backyard turned into an attractive courtyard with new activities, the possible future mixed-use development at Orchard Interchange MRT and a potential new vantage point at the Orchard Road/Paterson junction.

It helps that Orchard Road has a unique quality – lush greenery. The precinct begins at the Botanic Gardens, a UNESCO World Heritage site, and continues along a 3 km green corridor to Dhoby Ghaut and beyond. This Garden City factor is an asset that the study recommends capitalising on.

Pocket-sized parks, playgrounds and water play areas along Orchard Road would introduce experiential opportunities with appeal for all ages, while the cool, refreshing feeling that comes with tall, shady trees and lush landscaping, combined with other cooling measures, is a crucial consideration when creating comfortable and inviting outdoor spaces in tropical Singapore.

Go with the flow

Any good journey comes with a spirit of wandering. Orchard Road is challenged by its long and linear layout, sub-divided by distinct areas that are anchored by MRT stops. It's typical for visitors to enter Orchard Road at one of these points, and then move around within close proximity. This is where infrastructure can benefit the ease of movement within each sub-area as well as between them.

A prime example of a shopping district that does this well is Bangkok's Sukhumvit Road, where there's been almost no coordinated effort to make the place singularly special, and yet the malls are thriving due in large part to their inter-connectivity.

By contrast, Orchard Road has by far the longest intervals between crosswalks of all the precincts the study looked at. Regularly-spaced crossings where pedestrians can wait under shade would enhance the flow of foot traffic.

Similarly, the study also concluded that Orchard Road would benefit from clearer methods for wayfinding to guide people through the maze of underground passages, that can confuse even seasoned visitors. Such measures would also shift crowds from the south side of the road, where the MRT stops are located, to the north side, which by comparison is underserved by public transport.

“Orchard Road has plenty of pedestrian footpaths, but the ability to transit across the road and the volume of automobiles just makes it a little bit less friendly,” says Jack. In the future, he says that car-lite and pedestrian-friendly infrastructure will eventually play a role here.

Another characteristic that stood out to researchers was the precinct's distinct separation from surrounding neighbourhoods, unlike Hong Kong's Causeway Bay or New York City's Fifth Avenue, where shopping districts aren't as strictly delineated.

“In all of these amazing shopping streets you have this capacity to just wander unimpeded,” says Jack. “You can go into back streets and come out and cross the road, then go down another back street, so that everywhere you go there's something new to discover.”

Mix it up

It helps that Causeway Bay and Fifth Avenue have a diversity of mixed-use buildings, with shopping integrated alongside offices, housing and other urban amenities. Neighbourhoods with multiple uses tend to be more vibrant, and that benefits shops. According to the study, Orchard Road had the highest proportion of retail than any other precinct they looked at.

The shopping malls themselves can also address issues of mixed use by diversifying their tenant mix with smaller independent retailers as well as entertainment venues, museums and exhibition spaces, libraries and other public services which would give people other reasons to visit besides shopping.

Shared spaces within malls also have the potential to create experiential journeys, as the study notes how retail developers and management can consider adopting the same approach that brands do to appeal to lifestyle choices of shoppers. It's a sense of place-making, discovering each property's individual strengths and positioning it to appeal to various audiences. From a structural point of view, malls can also seek to incorporate design features with the power to attract attention.



Cistri director Rahul Mittal highlights elements such as mezzanine level al fresco cafes or even unconventional escalator rides, things he says will not only pull people in, but up to floors that get less footfall.

“Overseas, both retailers and landlords are trying out new concepts to bring people back,” says Rahul. “It's all related to the experience and journey.”

In the end, place-making happens within each shop, each mall and in all the spaces in between, and it's this sense of place that makes people want to come and spend time.

“I think in the future, city pride will come from the fact that Orchard Road is not just about shopping,” says Jack. “It's about something bigger than that, something that exudes our active and vibrant way of life.”



Above | New flowering shrubs envisioned to be planted along Orchard Road to show the colours of the tropics.

Seeing the old anew

It takes a village to balance both old and new in neighbourhoods such as Jalan Besar and the airbase area in Seletar. With a continued focus on identity for the Master Plan, we find out how residents and stakeholders are helping to sustain memories and keep such places relevant.

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Working in partnership with the community, many of the unique characters of neighbourhoods and heritage buildings have been retained while adapting them to new uses as part and parcel of the Master Plan. Communities are also increasingly playing active roles in sharing stories about buildings and organising activities to keep people engaged to these areas.

Residents and tenants of 2 different neighbourhoods reflect on what these areas mean to them and how they are keeping memories alive.

Jalan Besar: 593 Serangoon Road

The Jalan Besar Conservation Area has a rich history with an eclectic mix of landmarks and shophouses of diverse architectural styles that reflect the growth and progress of urban development in the area. It was first given conservation status in 1991, when 445 buildings were gazetted for conservation. Public engagements were carried out at various phases of its conservation journey where another 51 buildings and 2 structures were conserved in 2010. In 2018, URA conserved an additional 8 buildings along Balestier Road and Lavender Street to add to the critical mass of conserved buildings and complete the streetscape.

A key landmark is the prominent two-storey building at 593 Serangoon Road, which has been operating as the Singapore Institute of Science (SIS) since 1940.

With its rows of teak workbenches and glass shelves displaying ammeters and other chunky apparatuses, the SIS is far from the image of a modern and sleek science laboratory. But the institute's chief executive, Thomas Jacob, insists in keeping the retro-looking setting.



Not only are the furnishings working fine, they were the same pieces Thomas as a student of this private education institute used between 1966 and 1968. He is one of thousands of students – including his children – who have conducted science experiments on these workbenches and sat on these stools for classes since 1952. That was when the SIS moved into the second-floor of this shophouse at 593 Serangoon Road.

“A lot of people have told me to throw the furniture... (but) they are important because they provide an emotional tie to the place.” says the 66-year-old who has spent almost half his life working in the SIS. In 1989, Thomas joined the institute and became its CEO in 2002.

He is not oblivious to the need for renewal. While Thomas had to bear with the heat as a student, he points out that the institute is fully air-conditioned today. “Where the equipment and apparatus have to be changed, we have renewed them as required, he says. “In that sense, we cannot avoid change.”

Above | The landmark Singapore Institute of Science building at 593 Serangoon Road in the Jalan Besar neighbourhood and Thomas Jacob (top right), the SIS CEO in one of the classrooms where some of the furniture has been kept.



This delicate balancing act of retaining the past while staying relevant to the present has played out in SIS's neighbourhood of Jalan Besar too. His neighbour, the over 100-year-old Kwong Wai Shiu Hospital, is still standing proud and recently added a towering 12-storey nursing home continuing its original use while expanding to accommodate new uses.

Curved frontage

The two-storey building has an unusual curved frontage that makes it a unique icon for Jalan Besar. "When you talk to somebody about the institute, they will say, 'Oh, the building with a semi-circular front!'" says Thomas. He recalls how a fellow bus passenger once identified his destination as the stop after the "semi-circular building". "Most people who pass this area identify it with the building too."

Beyond its distinct architecture, 593 Serangoon Road has become a landmark because it has "continuity", says heritage blogger Jerome Lim. The shophouse has been around for decades and so have its people. The grandparents of the current owner, Teng Tieu Guan, used to operate the Sin Peng coffee shop in the ground floor unit. In the 1970s, they converted it into a bar that is still running today.

"It's a permanent fixture that many people identify with, and it transcends generations," says Jerome. He is familiar with the building because his father also studied in the SIS, which was one of the first private education institutions in Singapore to hold science laboratory classes.



Understanding the past

Such stories are also important in giving the neighbourhood its identity besides conserving buildings. This is why Jerome has been blogging about places in Singapore and also conducts tours of them. He also points to ground-up initiatives such as My Community, which has helped the estate of Queenstown stand out by conducting regular heritage tours and even developing a museum dedicated to its past.

"Buildings come alive when people know about history and the stories connected with them," says Jerome who is also currently a member of URA's Heritage and Identity Partnership. Together with 18 other individuals from diverse backgrounds and specialists, he has been sharing his views on how to better shape and promote Singapore's built heritage and identity.

One effort he hopes to see more of is involving the youth in learning about the heritage and identity of places. "They are our future and if they can identify with a place, there is a greater chance of preserving unique aspects of a neighbourhood," he says. "It will also give them a greater sense of belonging to Singapore, a sense of rootedness to a place."

An understanding of the past may also inspire new ideas to help the neighbourhood stay relevant. Amongst the emergence of many hip cafes and hotels in Jalan Besar, Jerome says the revival of Kam Leng Hotel is a standout example. This hotel along Jalan Besar Road started in 1927 and was mysteriously abandoned in the 1970s. It was reopened in 2012 as a boutique hotel. The new owners retained its heritage by keeping the name and creatively restoring the original décor.

"What's nice to see is some of these buildings being repurposed or used in a similar way and more hip," says Jerome. "It's a transformation, an evolution. What it shows is you can't expect everything to be the same all the time."



Above | From left, George Pasqual (member), Ginger Tiah (vice-chairman) and Percival Jeyapal (chairman) of the Seletar Hills Estate Residents' Association at The Oval in Seletar Aerospace Park.

Seletar airbase

As headquarters of the Far East Command, Seletar was home to one of the most important Royal Air Force (RAF) stations in the Far East that guarded vital trade and transport routes. Originally an area with mangrove swamps, coconut and rubber plantations, the Straits Settlement government bought about 240 ha of land in 1923 and gave it to the British RAF as a site for its military air base in Singapore and officially opened in 1930.

The base also served a dual function as Singapore's first civil airport before the completion of Kallang Airport in 1937 and hosted many aviation luminaries including Kingsford-Smith and Amy Johnson, famous aviators who stopped over in Singapore on their record breaking flights.

As the birthplace of Singapore's air defence, with buildings and bungalows which remain today that are reminiscent of the colonial era, Seletar plays an important role in retelling a key facet of Singapore's military history.

"It was like a 'Little England,'" recalls George Pasqual who moved into the nearby Seletar Hills Estate some 50 years ago. That was when the British military withdrew from Singapore in 1971 and the base split into 2. While the eastern end remained a military facility that was overseen by the Singapore Armed Forces, the western side was used by commercial aircraft and the residences leased out to civilians. But with few roads leading into the base, it remained hidden from most Singaporeans.

"There was a kind of exclusiveness (to the base)," adds George. "It was completely cut off from the public."

Retaining the past

Today, Seletar is alive with visitors, particularly on the weekends. They come to hang out at cafes and restaurants at "The Oval", a sprawling lifestyle hub that is the epicentre of the Seletar Aerospace Park. The 320-ha park was started by the Economic Development Board and JTC Corporation (JTC) in 2006 to revive the once sleepy airbase into a thriving aviation industrial hub.

The rejuvenation has retained much of Seletar's rich aviation history, including its airport and the 32 colonial-era black and white bungalows that make up The Oval. Enhancements to the neighbourhood have also been made by creative interpretations of Seletar's past. For instance, JTC has installed colonial-style lamp posts and bus shelters that resemble the wings of the British Supermarine Spitfire aircraft. The agency is also working with the National Parks Board (NParks) to landscape the area with species that are relevant to its history, such as the Flame of the Forest which has been planted in Seletar since the RAF established its base.

Residents like George welcome the increasing recognition of their neighbourhood's heritage. He is part of the Seletar Hills Estate Residents' Association (SHERA), which was set up in 1967 to represent the interests of the estate's residents. Some 5 years ago, SHERA's current vice-chairman, Ginger Tiah, reached out to JTC to propose promoting Seletar's storied past amidst the many new developments that were coming up. "We wanted to have a little museum or shophouse where we can show residents this is what happened in the base," explains Ginger, a resident of Seletar Hills Estate since the 1980s. "It's to keep the history of this site alive. Nobody realises how important this area is!"

Breathing new life

This kick started a conversation with various government agencies that has continued since. One outcome is an upcoming trail along the Round Island Route that will go through Seletar Aerospace Park and also highlight the area's history. Working with the National Heritage Board and NParks, SHERA contributed its historical knowledge of the area based on 2 books it had produced: *Down the Seletar River: Discovering A Hidden Treasure of Singapore* (2013) and *Uncovering Seletar* (2018).

The transformation of Seletar has brought out new opportunities to share its heritage with more, say Ginger. For instance, the adaptive reuse of conserved black and white bungalows for food and beverage establishments in The Oval have provided residents new amenities to enjoy the rustic setting.



It has even attracted visitors who are surprised that such a place exists in highly urbanised Singapore.

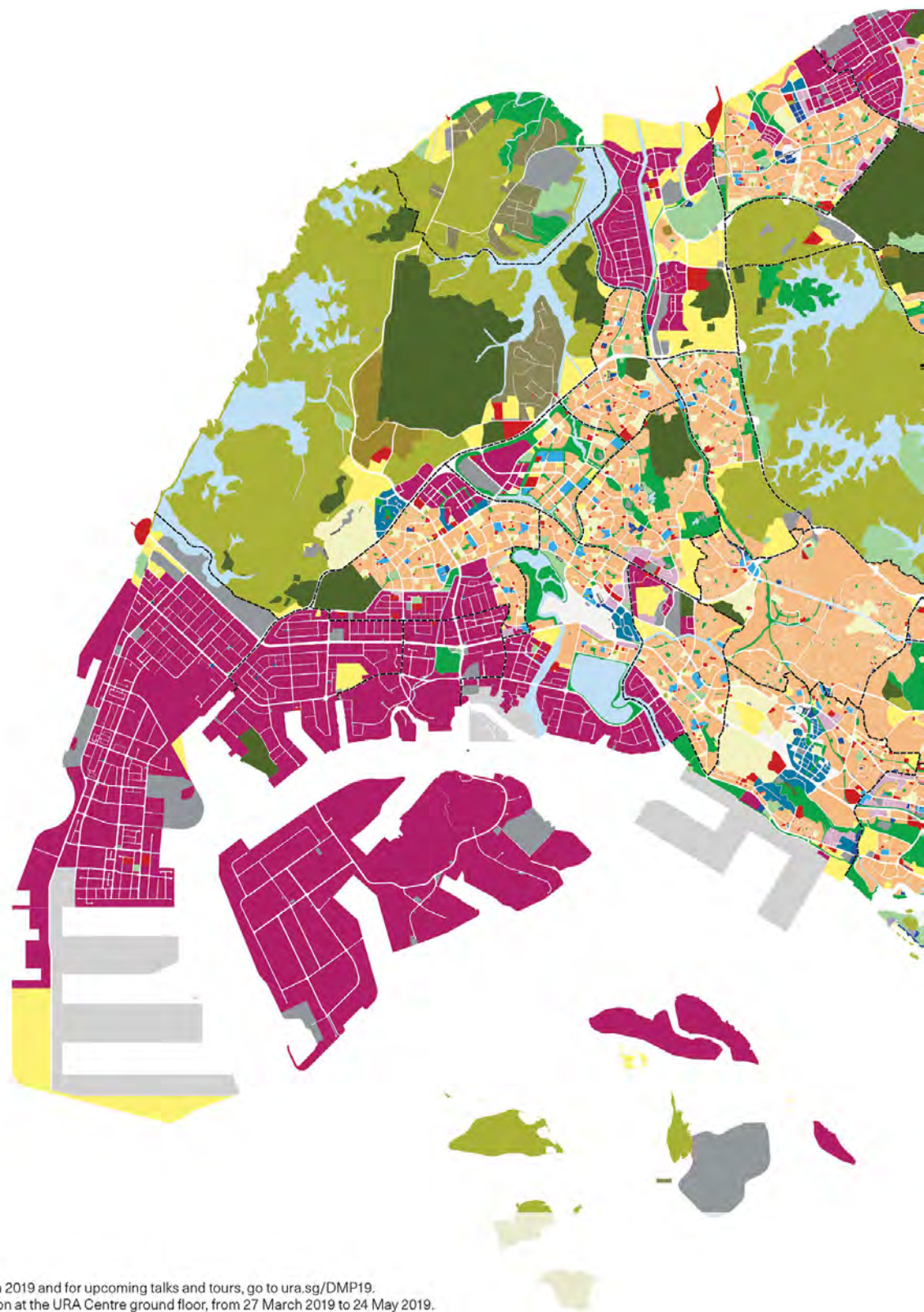
"Otherwise nobody would come to visit here," she says. "It's good that we're bringing new life into these buildings. When you think years ago it was a commander's house, look at what it is now!"

As the Seletar Aerospace Park continues to grow in the coming years, JTC will collaborate closely with community partners such as SHERA to shape the park's development. Ginger and George hope SHERA can play a bigger role in shaping its development. This includes participating in the drawing up of future plans beyond giving feedback. One thing they are sure of is that Seletar must never lose its laidback charm.

"(It's where) people can get away from the urbanised areas... and you have some place like this that you can relax," says George. "This is the spirit of Seletar!"



Above | One of the key buildings at The Oval, the epicentre of the Seletar Aerospace.



For more information on the Draft Master Plan 2019 and for upcoming talks and tours, go to ura.sg/DMP19.
The Draft Master Plan 2019 exhibition is now on at the URA Centre ground floor, from 27 March 2019 to 24 May 2019.