MOVING TOWARDS POST-INDUSTRIAL ERA FOR SINGAPORE INDUSTRIAL MARKET

As Singapore transforms itself from a labour-intensive manufacturing economy to a knowledge-based economy over 50 years, the vision of how we integrate live, work and play elements and to compete globally would change future industrial property development.

"We need to be positive in accepting 'post-industrial' possibilities by inculcating creative architecture designs for the 3R concept, as well as enabling shifts from entrenched paradigms."

LIM KIEN KIM
Executive Director and Head
Industrial

Evolution of Industrial Landscape (1960's – 2000's)

The transformation of Singapore's industrial landscape has played a significant role to propel Singapore from 'Third World to First' within 50 years since independence. The birth of our first industrialization came in the 1960s when the country's focus was on job creation and attracting foreign investments. Coincidentally, entities from developed economies who sought cheaper locations for their manufacturing operations saw a potential in Singapore, who was quick to build supporting infrastructure and prepared its labour force. Basic standard factories made of simple metal frame structures were constructed to house start-ups that supported mass replication of low-value added goods such as garments, textiles and wood products.

The revolution continued into the 1970s where simple functional multi-storey industrial buildings were constructed and these were categorized into two broad types of industrial buildings - (1) heavy industrial estates located in the rural/suburban locations such as Jurong; and (2) light industrial estates around high-density housing estates that can attract workers living nearby, such as Kallang.

The industrial sector further transformed in the 1980s with diversification of the manufacturing sector into the fields of electronics, engineering and various automated processes to support the other sectors, including financial, lifestyle, medical and IT services. By the late 1980s, industrial buildings, while remaining functional and utilitarian, were equipped to house more sophisticated, high-technology assembly lines.

With the aim of strengthening business integration (integrating production and business support functions), significant shifts in the manufacturing landscape gathered pace from the 1990s. The rise of labour-surplus countries like China and Vietnam prompted Singapore to move up the value chain and intensify land use in order to be globally competitive.

Services sector was identified as a major growth area in the mid-1990s, resulting in an intensive restructuring of our industrialization programme. High-technology facilities were required to cater to the expansion in science, technology, skills and knowledge-based arenas. It led to the trend of creating specific cluster developments such as Science Parks and Business Parks, which offered high quality work spaces, catering to the needs of modern businesses and a better-educated workforce. During this period, designs of industrial facilities have also evolved to having an exterior façade of an office while retaining the functionalities for industrial use on the inside.

Through proactive industrialization efforts, the island state's industrial supply has increased over the years at an average annual growth of 2.8 per cent from 2000

to 2014. Total industrial stock reached 461.2 million in 2014, a 4.8 per cent expansion from 2013. Business Park space saw an increase of 12.2 per cent to reach 18.7 million sq ft in 2014, while single-user factory supply registered the lowest annual growth rate of 2.5 per cent, or an increase of 6.1 million sq ft.

Evolving Policies Shape How Industrial Space Is Utilized

Utilization of available industrial space is governed closely with policies stipulated by the authorities to achieve Singapore's long-term economic objectives. Major policy changes could shape the use of available industrial space, taking into consideration the changing needs of industrialists. (See Exhibit 1).

Changes in land policies saw the tenures for most new land leases being reduced to 30 years or less since 2012, partly to reduce initial capital outlays for genuine industrial end-users and curb excessive property speculation by investors. Revisions to usage guidelines were also implemented from time to time to ensure the relevance of the policies to meet the changing needs of the industrial sector.

Advancement of Industrial Landscape

Clustering of industries within self-sustainable zones

Tapping on the successful models of industrial parks, the trend of clustering similar industries within self-sustainable zones has accelerated in the last fifteen years and is set to evolve. Industrialists saw the benefits of cost management and resource sharing from agglomeration. For instance, the clustering of furniture-related industries in Sungei Kadut led to the planned development of International Furniture Park (IFP) in 2002.

Self-sustainable industrial zones are developed to cater to the growth of high-value or new industries including Research and Development (R&D), biomedical, aerospace and other innovation-centric activities (see Exhibit 2). These zones are created with the notion of achieving the Government's vision of creating a conducive "live, work and play" environment, and to ensure a successful transformation of Singapore's industrial landscape to support our next phase of growing our knowledge-based economy. These zones are often situated within close proximity to main transport nodes and amenities. Employees can reduce their commuting time to Fusionopolis with one-north MRT station located right at the doorstep.

Evidently, a conducive work environment can enhance work productivity. The upcoming JTC BioMedOne in Tuas Biomedical Park, with its lush landscaping and green features, will offer amenities like restaurant, gymnasium and clinic for the employees. Firms can benefit from the potential synergies of having similar businesses located nearby to share resources and expertise with added convenience of proximity. For instance, CleanTech Park, next to Nanyang Technological University (NTU), allows for potential collaboration among partners in undertaking research for sustainable urban solutions through alternative energy studies.

Renewal of existing industrial estates provides opportunities to re-zone and rejuvenate existing industrial clusters. Defu Industrial Estate (renamed as Defu Industrial Park) will be redeveloped into a green and sustainable industrial park, by relocating existing industries to the future Defu Industrial City and food industries to the upcoming Bedok Food City. Likewise, Science Park I is undergoing rejuvenation with phased redevelopments to be completed by 2020.

Injecting New Lease of Life for Industrial Property Development

A holistic planning strategy is vital to optimize our scarce land resources. Space relevance, with respect to competing land use and the functionality of industrial properties, must be constantly studied to avoid redundancy, and to meet the changing global manufacturing trends, competing land use needs and industrial end-users' requirements.

There will be a large number of industriala buildings with land leases expiring between 2042 to 2044. Most of these developments have incorporated ramp-up designs for the lower levels and conventional flatted designs for the upper levels. We may also continue to see new industrial developments with greater integration of different property uses being designed to be "more human-centric".

Invariably, adoption of the '3R' environmental sustainability vision - Renew, Reuse and Recycle, will herald a new work-style environment in the immediate years ahead. Secondly, active advocacy of creating a "live, work and play" environment saw the increasing need for industrial developments to incorporate both business and lifestyle facilities. In appealing to changing needs, today's industrial buildings boast conducive, eco-friendly and revolutionary designs. In recent years, some new strata-titled industrial developments promote loft style concept with full height glass windows, high ceilings and allow for flexible configuration of internal spaces. These developments also offer complementary services and recreational facilities such as gymnasiums and swimming pools.

While the authorities seek land use relevance, the idea of converting industrial buildings into residential or mixed-use developments is not new locally or overseas. In Singapore, the former Eng Cheong Tower (industrial) located near Lavender MRT Station was redeveloped into Southbank, a mixed-use development, while former Colorscan Building was redeveloped into The Interweave. These buildings are in good locations, near residential developments. It could make good sense to tear down the former buildings and convert them into residential use when their industrial functionalities became obsolete over time. For instance, the Battersea Power Station, a proposed mixed-use development project in the United Kingdom – envisioned being a holistic new town centre where people live, work and play, was a power station that has fallen into disuse. Adaptive re-use instead of outright redevelopment may be a more cost effective way to 'recycle' industrial properties in the future.

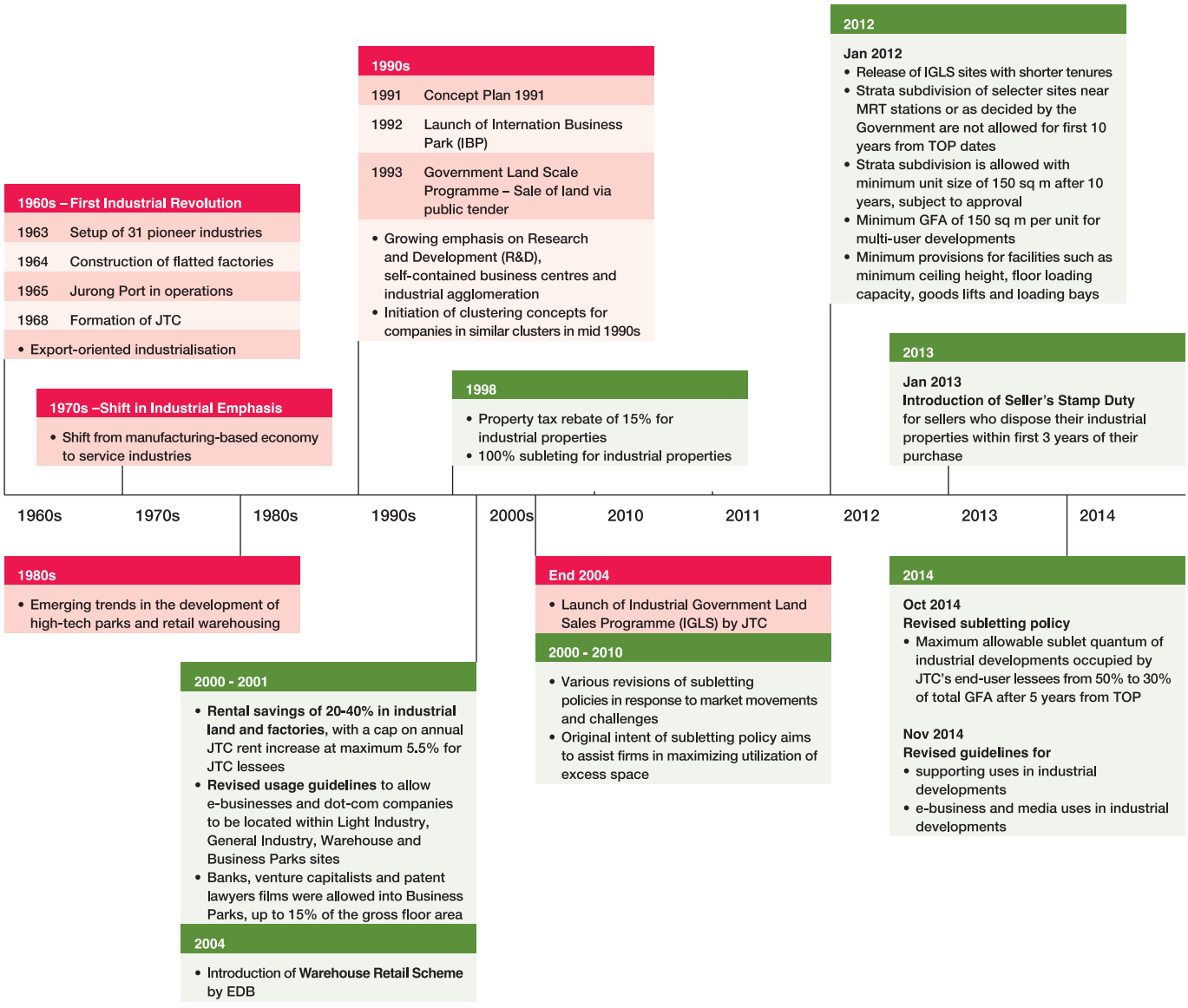
Amid the increasing demands in spatial needs, we are likely to face daunting challenges in the future transformation of our industrial space to tackle the ever-changing competitive landscape at the global manufacturing marketplace. We need to be positive in accepting "post industrial" possibilities by inculcating creative architecture designs for the

3R concept, as well as enabling shifts from entrenched paradigms. With the Government's quest to implement progressive policies and planning strategies, achieving new grounds in creating industrial concepts is set to be the key mantra by 2030. Potential trends include 'Smart Work Centres' not only within a township but within each development, and preserving our heritage of old buildings and forge new phase of injecting regeneration could materialize at notable scales in the foreseeable future.

Extracts of this Research House View were published in The Business Times Property Supplement, titled "Singapore's Industrial Evolution" on 19 March 2015.

EXHIBIT 1

Major Policies and Milestones of Singapore's Industrial Sector



Source: Government Web sources, Knight Frank Research and Industrial

EXHIBIT 2

Selected Industrial zones with known upcoming developments

General Industrial Zones	Location	Main Industry Focus	Recently Completed Buildings/Under Construction (Estimated Year of Completion)
Science Park I	Science Park Drive	R&D in the industries of: • Biomedical Sciences • IT and software development • Telecommunications • Electronics • Food technology, Flavours • Materials and Chemical	Currently undergoing "rejuvenation" and likely to be completed by 2020
Science Park II	Science Park Road		Construction of extension block for Teletech Park and The Aries
International Business Park	Jurong East	• Information Communications Technology (ICT)	
Changi Business Park	Changi South	• Aviation • Financial - Backroom • ICT	• Das Spektrum (2014) • Haite Building (2014) • Rigel Technology (2015) • Soo Kee Jewellery (2015)
Tuas Biomedical Park I & II	Tuas View/Tuas South	Biomedical areas including: • Pharmaceutical • Biotechnology • Medical Technology	• JTC BioMed One (2015)
MedTech Park	Tukang Innovation Park	Medical Technology related industries	• JTC MedTech One (2014)
Seletar Aerospace Park	Seletar Aerospace Drive/ Seletar Aerospace Heights	Aerospace related industries	• JTC Aviation One @ Seletar Aerospace Park • JTC Aviation Two @ Seletar Aerospace Park (2015) • JTC Aerospace (Phase 2) (2015)
CleanTech Park	Cleantech View/Cleantech Loop (Jurong West)	R&D and test-bedding site in the areas of new sustainable technology and energy solutions	• JTC Clean Tech Two (2014)
one-north precinct			
Biopolis	Buona Vista	• Biomedical Sciences	• Nucleos (2014)
Fusionopolis		• ICT • R&D • Physics, Sciences and Engineering • Media	• Phase 2A – Innovis, Synthesis, Kinesis (2015) • Phase 5 – Galaxis (2014)
Mediapolis		• Creative Media	• Seagate Singapore Design Centre - The Shugart (2014) • Mediacorp Campus (2015)
JTC LaunchPad@one-north		• Infocomm and Media start-ups	• 3 blocks completed in 2014
Specialised zones			
JTC Food Zones	Senoko	• Food manufacturing and related industries	• Single-user factory developed by Select Group (2015) • JTC Food Hub @ Senoko (2017)
	Jurong Industrial Estate (Pandan / Fishery Port / Jalan Besut / Chin Bee/ Tuas / Tuas West)		• SEJ Food Hub (2014) • Singapore Wine Vault Building (2014) • Single-user factory developed by Commonwealth Food Services (2015) • Westview Food Factory (2018)
JTC Chemicals Hub @ Tuas View	Tuas View	• Chemical manufacturing and Dangerous Goods	• Target completion by 2016
JTC Nanospace @ Tampines	Tampines	• Cleanroom technology related industries	• Target completion by 2017
Defu Industrial Park	Defu Industrial Estate	Light and general industries for: • Logistics • Precision Engineering • Media • Electronics • Clean Energy • Biomedical	• Phase 1 – target completion by 2017 • Defu Industrial City (u/c)
Bedok Industrial Park	Bedok North Avenue 4	• Food industries	• Bedok Food City (u/c)

Source: JTC, HDB, Knight Frank Research and Industrial

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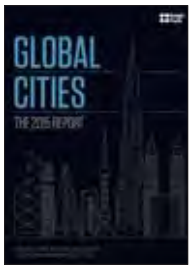

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