OPTIMISING INDUSTRIAL LAND USE: THE CASE OF ENBLOC REDEVELOPMENT

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Abstract

This paper examines the issue of optimization of industrial land in Singapore. Given the limitations of small land area and the various competing uses, the type and intensity of land use needs to be reviewed constantly. From the planning perspective, the use and density of development are two parameters that have been employed to achieve an optimum balance. As Singapore progresses through the industrialization process, industrial land uses have undergone significant changes.

One of the instruments used to ensure the optimization of industrial land uses is en bloc redevelopment. Through en bloc redevelopment, higher density can be achieved. For such a scheme to succeed, the interests of various parties must be taken into consideration. For the existing lessees, the compensation package needs to be attractive for them to be willing to give up and relocate. For the landlord, it needs to decide what constitutes a fair market value to compensate for the remaining lease term.

Using a case study, this paper examines the en bloc redevelopment programme from the planning and valuation perspectives, which are often intertwined. It reviews the mechanism of the programme, in particular, the selection of properties for redevelopment as well as the determination of the fair market value of industrial leases.

Key words: *industrial land use, optimization, fair market value*

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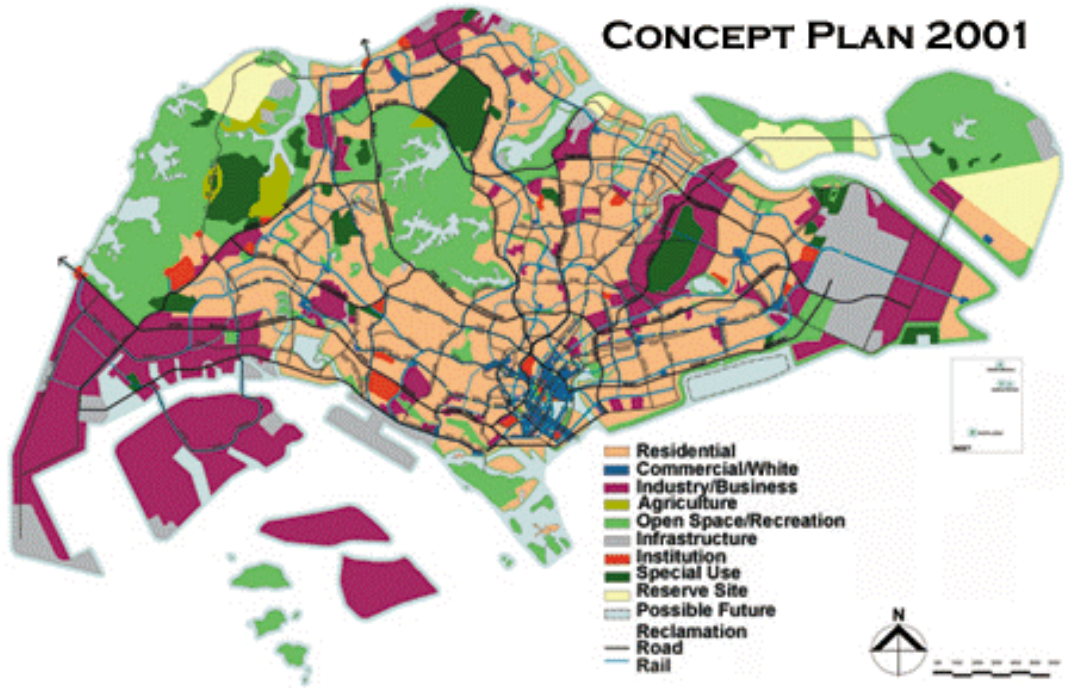
Introduction

In Singapore, industrial space is provided by both the public and private sectors. The public sector refers to public authorities that are government bodies such as the Jurong Town Corporation (JTC) and Housing Development Board (HDB); while the private sector refers to companies that have built industrial properties for owner-occupation and also industrial property developer firms. The Jurong Town Corporation (JTC) is a statutory board established in 1968 to plan, develop and manage industrial estates in Singapore. It is currently the main developer and manager of most of the industrial estates and related facilities in Singapore. To date, it manages some 30 industrial estates in Singapore as well as on some of the Southern Islands, including the Jurong Industrial Estate, the largest industrial estate in Singapore. As a statutory board set up for the purpose of pioneering industries, JTC is allocated land by the government for its industrial developments at prices which are based on the Chief Valuer's estimates. While JTC is the principal developer of industrial estates, it is the private sector that accounts for a higher proportion of built-up factory space. This is because most of the private sector industrial developments are of higher density as compared to those of the JTC. In terms of floor space, the private sector has 75 per cent of the market share in 1999 (Chow, et al., 2002). Furthermore, besides developing factories such as standard factories, workshops, flatted factories, Business Parks and Science Parks, JTC also provides prepared sites for industrialists to build their own space. Most of these buildings come with special design features and are of low density.

From the planning point of view, the challenge for Singapore is the scarcity of land. Demand for land will continue to increase as the economy grows and population expands. The 2001 Concept Plan makes provisions for high value-added industries that will contribute more to Singapore's economic growth. The plan has set aside sufficient land for industries in the future in spite of the land intensive nature of some of these industries. Figure 1 shows the allocation of land for industrial uses and these land uses are concentrated in a few outlying areas, namely Jurong (in Singapore's western part) as the major area, and then Changi (eastern part) and Woodlands (northern part).

Figure 1. Concept Plan 2001



Source: Urban Redevelopment Authority

Planning and Allocation of Industrial Lands

Since its formation in 1968, the JTC has played a major role in the transformation of Singapore from a largely entrepot economy into a modern, diversified industrial and business centre. Its mission is to support the growth of Singapore's economy by providing industrialists with a wide choice of facilities to meet the diversified needs of industries. In the 1960s, JTC transformed over 6,500 hectares of forested swampland in Jurong to kick start Singapore's industrialization process. In the 1980s, it emphasized the development of facilities for high-technology and capital intensive industries to meet global demand. In the 1990s, JTC is challenged with the increasing demand for shrinking land resources and competition from neighbouring emerging markets, especially China and India. Over the last three decades, JTC has been conscious of the importance of optimizing the use of its industrial land. It has done so through intensification of land use, making more productive use of land and improving the planning and development of the supporting infrastructure. It adopted a two-pronged approach in optimizing industrial land: by constantly reviewing the allocation policies for industrial and ready-built factories and by revising the planning and development of industrial estates and factories. The allocation policies for industrial land and ready-built factories are constantly under review so as to ensure that only desirable

industries are admitted. Applications with high planned investment in plant and machinery, turnover per worker per square meter are generally more favoured. It has also constantly revised the design of its factories. These better designed buildings, both functionally and aesthetically, cater to the changing needs of industrialists and also make efficient use of scarce land. The gross plot ratios for such factories have also been raised from a low 0.5 to 2.5. Lastly, older industrial estates are also rejuvenated through refurbishment or redevelopment.

In August 1997, the JTC unveiled a fresh initiative to make more productive use of industrial land and to ensure a continued supply of affordable industrial land to meet the present and future needs of industries (Khor and Tay, 1995). The plan is referred to as the JTC's Industrial Land Plan 21 (IP21). IP21 puts in place various programmes and policies to encourage and effect the intensification of industrial land use and cut space wastage. It tackles the issue on three fronts: 1) provide incentives to improve land productivity[1]; 2) review policies to encourage better use of industrial land; and, 3) introduce measures to aid redevelopment and rejuvenation of old estates.

Optimisation of Industrial Land Use

Singapore has reached a point in its economic growth where it can no longer rely solely on increases in labour and capital investments to fuel further growth. It has to focus on productivity gains and innovation for greater output per unit of input. A study conducted in 1996 (Ko, 1999) shows that companies with low land and labour productivity occupied nearly a quarter of industrial land in Singapore but contributed less than 10% to the manufacturing value-add. In terms of industries, the average land productivity for the manufacturing sector is about $702 per square meter while the pharmaceutical and electronics sector is more than $4,000 per square meter.

Measures to improve land productivity could be done through intensification of land use or restructuring to higher value-added activities or improving the productivity of existing use. High rise and higher plot ratios are now the norm except for land-based industries, which by

their nature of operations, cannot be accommodated in a multi-storey environment. However, these industries will still need to use land efficiently through ensuring a higher value-add through investment in new technology and innovations in products, processes, applications or services. To encourage industrialists to engage in product or production reengineering to improve their productivity and hence, the value-add of industrial land, JTC has offered financial assistance schemes and awards. In addition, incentives are also created for industrialists to return excess land. During the early days of industrialization, the objective then was to offer industrialists as much land as possible to boost the industrialization programme. As such, these industrialists pay low rentals for large pieces of industrial land that now lay idle. To return such excess land, industrialists would have to bear the administrative charges, survey and legal fees as well as penalties for termination of leases. IP21 provides that the JTC will waive all these costs for industrialists who return excess land and benefit by paying a reduced rent for the land.

In tandem, the JTC has reviewed the leasing terms for its industrial land. The change is primarily intended to encourage industrialists to use the allocated land more intensively. Factory owners whose 30-year land leases are up for renewal would be granted an extension of another 30 years if they increase their built-up area. In addition, JTC would also liberalise its policy for lease renewal and subletting. Besides encouraging higher density, JTC has also revised its criteria on the investments to be made by the industrialists. The value-add contribution and the type of industry are considered in the renewal of old, and grant of new leases.

The third strategy of LP21 is the redevelopment and rejuvenation of older industrial estates, which is the focus of this paper. Under the plan, JTC will redevelop four estates, covering an area of 252 hectares. A total of 180 industrial lessees will be affected and they are required to vacate their sites three to eight years from implementation. The affected areas are in a variety of industries, including rubber, concrete and wood products, metal fabrication and engineering works.

[1] Land Productivity is the amount of value-added (VA) generated per unit of land area used. VA is the sum of

En bloc Redevelopment Scheme

The En Bloc Redevelopment programme aims to redevelop older estates with low land utilization and inadequate supporting facilities to meet the requirements of modern industries. To acquire these properties, JTC offers a compensation package that comprises the value of the remaining lease based on current market, an ex-gratia relocation allowance, priority allocation and other incentives such as price discounts of 3-5% on JTC's high rise factories.

The basis of compensation of JTC's EBR programme is that the affected lessees are in a "no worse-off" position after their property has been acquired by JTC. The compensation package basically comprises two parts: a current fair market value of the property and other incidental costs, such as relocation. In assessing the market value of the property, it is important to take note of the unique features of JTC industrial property. These include terms and conditions on assignment and subletting. One such condition is the creaming off of 80% of the profit rent (i.e., difference between JTC's current posted rent and the prevailing rent payable or contracted rent), upon assignment. JTC's Valuation Department is to advise on the current market value of the property being affected by the EBR programme. The valuation is normally carried out using the market comparison and income capitalization methods. Clearly, the valuation of the remaining lease is a key bone of contention between JTC and the industrialists.

Case Study

The particulars of the case study property earmarked for en bloc redevelopment are given in Table 1.

net operating surplus, wages, depreciation and indirect taxes.

Table 1: Property Details

Location	Tanjong Kling Road/Liu Fang Road
Land area	5,000 sq m
Plot ratio	0.4
Built up area	2,000 sq m
Existing lease	30 years with effect from 1 July 1984
Unexpired lease as at 1 July 2000	14 years
Condition	Average
Utility services	Served by electricity, potable & industrial water, sewerage facilities, telephone, telex, facsimile & teleprinter services
Current ground rent payable	$12.50 psm as at 1 July 2000
Current market ground rent	$20.00 psm as at 1 July 2000

The case study is typical of the industrial properties selected for en bloc redevelopment. First, the location of the property is nearer to the Central Business District than the majority of the industrial estates in Jurong. It is well served with roads and expressways and is within five kilometers of population catchment. Second, the existing industrial use – metal fabrication – is low in land and labour productivity. Such industries also face strong competition from the regional countries, which offer cheaper labour and lower land and capital costs. And third, the low plot ratio of 0.4 reflects gross under-utilisation of land. The combination of these factors therefore identifies the site as suitable for en bloc redevelopment.

Two approaches to valuation were adopted for the determination of the fair market value of the remaining lease. The first approach was market comparison. Two comparables in the vicinity were identified. The main factors that were accounted for are the land area, the date of transaction and the remaining lease period. Adjusting for these factors gave a price range of $600 to $875 per square meter. The other was the income approach. Using the current market rent for factory space and deducting the ground rent and other expenses, the net rent is capitalized at a market yield of 7% for the remaining lease. A more detailed discounted cash

flow was also analysed, adjusting for change in rental over the remaining lease and discounting at an appropriate cost of capital. Both produced a market value of about $185 per square meter of the land area. Clearly, there is a substantial difference in the market value derived by the two approaches.

Valuation Issues

The vast disparity in the valuation of the case study using the two approaches reflects the inherent difficulties in the valuation of industrial properties. First and foremost, many of the physical attributes are difficult to assess, including the amount of fixed assets such as plant and machinery and other industrial systems. The terms and conditions of the remaining lease will also have considerable impact on the value of the property. These include the amount of ground rent and rebates each lessee has to pay and the provisions for adjustments to the ground rents and other expenses. It is interesting to note that in the development of an automated valuation model for JTC's industrial properties, the overall regression coefficient is also much lower than similar models for residential and commercial properties (Yu, 2002). In fact, the study identified that the three most significant attributes are the land area, the gross floor area and the remaining lease period, which are the same factors adjusted for in the valuation of the subject property using the comparison method. One significant missing variable is that of location. Unlike other studies, for example Fehribach et al (1993) and Asabere & Huffman (1991), location does not have a significant impact on industrial property values in Singapore. This has been attributed to the close spatial distribution on the island as well as the excellent transport infrastructure (Yu, 2002).

The quality of information and the absence of a rigorous methodology for the adjustment of the different factors also compound the differences in the valuations. The subjectivity in the adjustment process in the comparison approach, in particular, is compounded as a result of the diverse attributes of industrial properties.

Besides the uncertainty in the assessment of the various attributes which would impact on the market value, the disparity in value is very much due to the state of the property and its ability to let on a reasonable rent. Properties selected for en bloc redevelopment have a low

plot ratio and hence, could only generate a low income, especially in a weak market. The ground rent, however, remains competitive due to the limited land supply. In such a scenario, the income method would likely provide a very much more pessimistic answer. On the other hand, the transacted prices adopted in the comparison approach could belie the intangible but significant business component. Whether the recorded transaction price includes items such as machinery and equipment is difficult to ascertain. It is therefore not surprising that the two approaches produced vastly different answers.

The limitations of both the comparison and income approaches to the valuation of industrial leasehold properties, despite their popularity and common usage, have therefore cast serious implications on the determination of a fair market value for the purpose of compensation. One alternative is to consider the use of the cost or contractor's test method, given that this is acceptable for statutory valuations such as property tax assessments. However, this method has never been considered by both JTC valuers and private sector valuers acting on behalf of the industrialists. This is primarily due to the argument that cost does not equal value. A greater disparity between the valuations of both parties is also favoured by the industrialists as this provides them a greater opportunity to negotiate for higher compensation. From JTC's viewpoint, the valuation cannot be considered as "willing buyer and willing seller" since it is a case of forced buy-back. This deviation from the general definition of "Open Market Value" (RICS, 1995 and IVSC, 1997) therefore allows JTC to negotiate with the industrialists to arrive at an "acceptable" valuation for the purpose of compensation.

Nevertheless, the problems and difficulties encountered in the valuation of JTC industrial properties have led to the development of separate guidance notes. The development of separate valuation standards and guidance notes in different countries has been necessitated by the professional bodies in these countries. In Australia and Singapore, for example, while recognizing the standards provided by the Royal Institution of Chartered Surveyors (RICS) and the International Valuation Standards Committee (IVSC), the respective professional body, the Singapore Institute of Surveyors and Valuers (SISV) and the Australian Property Institute (API) have seen the need to develop its own set of standards and guidelines (Yu and Lee, 1990 and Newell and Fibbens, 1991)

Planning and Other Issues

Since independence, Singapore has adopted an industrialization strategy to spearhead its economic growth. The timely provision of adequate and state-of-the-art industrial facilities is therefore of paramount importance. Over the years, mounting demand has resulted in industrial land becoming increasingly scarce, leading to high industrial land prices, which in the long run will erode Singapore's competitiveness. As the public sector industrial authority, the JTC has made continuous efforts to enlarge its industrial land stock as well as increasing the supply of space through intensification. However, given Singapore's small size, there is a limit to the amount of additional land that may be made available.

Due to its limited supply and high acquisition and preparation costs, it is crucial for the JTC to make sure that industrial land is used optimally to achieve Singapore's long term economic goals. The industrial land allocation policy has been formulated to serve this purpose. It regulates the use of scarce industrial land by allocating sites to the most deserving users, usually those operating in high value-added, capital intensive industries. Low value-added industries which occupy sizeable land area developed at low plot ratios would therefore have to make way for redevelopment. Besides, given the high cost structure in Singapore and the low cost structures in the developing countries, such industries have become uncompetitive.

The En Bloc Redevelopment Programme is a key instrument in the JTC's industrial planning. It is intended to be a win-win policy for both the JTC and the industrialists. Although the compensation payable by JTC may raise redevelopment costs, the long term benefits through greater intensification of land use should offset the costs. For the industrialists, the compensation package should enable them to continue their business or offer them an opportunity to move out of an unprofitable business. In a survey of an estate selected for en bloc redevelopment (Tan, 1997), the general profile of the industries is that of low value-added, dependent on a lowly skilled and lowly educated labour force, and without external or inter-sectoral linkages. Land usage is also very unproductive with the majority having built-up areas less than 50% of the land area. The majority of the respondents have also sublet their premises, an indication of the extent of under-utilisation of the intended use. Two-thirds of the respondents are also uncertain or pessimistic about their future business performance. These findings confirm the need to implement the en bloc redevelopment programme.

On the other hand, opposition to land use intensification has often argued that increasing densities through higher plot ratios would have an impact on the quality of the environment and put a strain on local amenities. From the developer's viewpoint, the reduction in rent for higher floors of industrial space also does not justify the high construction costs necessitated by high-rise buildings. Clearly, the intensification of industrial land needs to be carefully planned and implemented for it to reap the benefits it is intended for.

Concluding Remarks

As the largest industrial landlord in Singapore, the JTC is not only responsible to attract the types of industries which the country needs as well as optimize the allocation and use of industrial land given the small land area. The Industrial Land Plan 21 is introduced with the objective to encourage and effect the intensification of industrial land use. Besides providing incentives to improve land productivity and reviewing policies to encourage better use of industrial land, the IP21 has also put in place the En Bloc Redevelopment programme to redevelop under-utilised old industrial estates.

Using a case study, the paper discusses the valuation and planning issues, which need to be addressed in the implementation of the EBR programme. While the progamme offers a compensation package to the industrialists whose factories have been acquired for redevelopment, it is the determination of the market value of the remaining lease, which is the core of the compensation that has been problematic. The two commonly used valuation approaches, direct comparison and income capitalization, produce vastly different results. The main reason for the disparity is the unavailability of specific data relating to the property, and the terms and conditions of the remaining lease and transaction agreement. On the other hand, however, it could be argued that since the valuation cannot strictly be regarded as an open market transaction, JTC should perhaps consider using other bases to determine the amount of compensation.

From the economic and planning perspective, the need to intensify land use through increasing plot ratio has to be balanced by the value-add of the industries. Some high value-add industries such as wafer fabrication plants and pharmaceutical firms are land based with no possibility of increasing the density. Furthermore, higher plot ratios would have an impact

on the quality of the environment as well as the development cost. These considerations, however, do not negate the importance of the EBR. The long term gain of weeding out uncompetitive industries and the accumulation of industrial land bank from the EBR are strong arguments for its implementation.

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